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Entrepreneurial intention studies: A hybrid bibliometric method to identify new directions for theory and research

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Abstract

Fragmentation is the main obstacle to scientific progress on entrepreneurial intention. To address this issue, we systematise the current literature with a hybrid bibliometric method that combines co-citation and bibliographic coupling analysis for the first time in entrepreneurial intention studies to show the field's knowledge base and research fronts and to examine how divergent perspectives have challenged the core knowledge of the field. We highlight three recurring dimensions of entrepreneurial intention studies: (1) personal factors, (2) social factors and (3) investigational settings. In addition to introducing new constructs, divergent perspectives have emphasised the interplay between these components and challenged the mechanisms connecting them. Based on these findings, we extend previous classifications in the literature by providing a framework that integrates divergent perspectives with the field's knowledge base, helping establish future research avenues and improving the theorising process of entrepreneurial intention.

KEYWORDS

bibliometrics, conceptual framework, divergent perspectives, entrepreneurial intention, entrepreneurship, literature review

INTRODUCTION

Entrepreneurship studies often focus on why some individuals become entrepreneurs, whereas others do not (Baron, 1998; Krueger et al., 2000; Salavou & Lioukas, 2019; Van Gelderen et al., 2018). In an attempt to answer this question, a growing body of research has investigated the mechanisms behind entrepreneurial intention, which is defined as the conviction to establish a new business venture (Thompson, 2009).

Although the relevance of the topic has not been questioned yet (Chandra, 2018; McMullen et al., 2020; Meyer et al., 2014), it is quite evident that entrepreneurial intention studies are enhanced by multi-disciplinary research approaches rather than a single approach. However, there are different interpretations about whether and how research on entrepreneurial intention actually

contributes to the various research streams it draws upon, hence raising the need for a coherent framework to map it (Donaldson, 2019; Hsu et al., 2019; Liñán & Fayolle, 2015). Previous endeavours to map the intellectual contributions of research on entrepreneurial intention have focused on the impact of entrepreneurship education (e.g. Bae et al., 2014; Nabi et al., 2017), the entrepreneurial process (e.g. Shook et al., 2003), nascent behaviours and entrepreneurial success (e.g. Martin et al., 2013), social entrepreneurship (Zaremohzzabieh et al., 2019), gender (Haus et al., 2013), values (Hueso et al., 2021) and personality (Zhao et al., 2010).

As entrepreneurial intention studies grow in the literature, researchers need to be aware of the developments and emerging trends in the various areas where intention is studied. This is essential because knowledge about entrepreneurial intention can be substantially enriched by

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the scattered, interdisciplinary and, sometimes, contradictory contributions that have explicitly or implicitly framed the entrepreneurship literature (e.g. Ferreira et al., 2019). Thus far, four different approaches of literature reviews have been employed to streamline the topic.¹ Various scholars have conducted meta-analyses to delve into the mechanisms surrounding the formation of entrepreneurial intention (e.g. Brownell et al., 2021; Schlaegel & Koenig, 2014; Zhao et al., 2010). Through systematic or narrative reviews, others have classified the contributions of previous studies to build a comprehensive picture of the knowledge base, which advanced with the growing number of studies (e.g. Donaldson, 2019). Some scholars have also discussed new models of entrepreneurial intention based on new perspectives (e.g. Hou et al., 2018). In addition, through keyword co-occurrences (e.g. Ruiz-Alba et al., 2021) and co-authorship analysis (e.g. Dolhey, 2019), bibliometric studies have described how the field of entrepreneurial intention has evolved scientifically worldwide.

The common underpinning of the extant reviews is that entrepreneurial intention studies struggle to develop a consolidated theoretical ground. This appears in studies published both before 2003 (Shook et al., 2003) and more recently (Donaldson, 2019). The field is lacking theoretical clarity and empirical precision because of the fragmentation and interdisciplinary nature of entrepreneurial intention research (Schlaegel & Koenig, 2014). Moreover, there is a lack of systematisation and categorisation in the field, as shown in the tendency to start anew with each study (Liñán & Fayolle, 2015). Recently, Donaldson (2019) argued that the rate of progress in the recommendations of previous reviews is insufficient and countermeasures to prevent fragmentation have not been taken.

To consistently take stock of previous entrepreneurial intention research and contribute to its progress, we use a hybrid bibliometric method (Dabić et al., 2020; Sassmannshausen & Volkmann, 2018; Vallaster et al., 2019; Zupic & Čater, 2015) that combines co-citations and bibliographic coupling, allowing us to focus on key contributions in the knowledge base and research fronts of this field and better understand divergent perspectives that are challenging its core knowledge. A study diverges when it introduces new constructs/mechanisms and connects different streams of research (Woolley & Fuchs, 2011). We conceptualise these divergent perspectives into a framework that summarises the challenges in the field and provides a basis for identifying avenues for future research. Integrating the knowledge base and divergent perspectives into an overarching framework helps scholars reduce eclecticism, contrast fragmentation and improve the theorisation of entrepreneurial intention.

In addition to creating a solid foundation that future studies can use to take stock of and advance existing knowledge, our study makes three distinct contributions to the literature. First, to the best of our knowledge, this study is the first to systematically map the knowledge base and research fronts of entrepreneurial intention studies with co-citations and bibliographic coupling by relying on quantitative methods rooted in bibliometrics. Our work thus extends the findings of qualitative analyses (e.g. Donaldson, 2019; Liñán & Fayolle, 2015), meta-analyses (Bae et al., 2014; Brownell et al., 2021; Zaremohzzabieh et al., 2019) and co-occurrence or co-authorship analyses (Ruiz-Alba et al., 2021) by showing the core knowledge and research fronts of entrepreneurial intentions studies.

Second, although previous work has classified the field by highlighting the main topics addressed in entrepreneurial intention studies (e.g. Donaldson, 2019; Lortie & Castrogiovanni, 2015), our analysis systematises how the field is evolving in terms of perspectives that can significantly change the current knowledge base. By extending the current classifications, we highlight how divergent perspectives have challenged central topics and current thinking. This approach allows us to identify new theoretical and practical implications that can drastically change one of the most central topics in entrepreneurship (McMullen et al., 2020).

Finally, by extending valuable future lines of research (e.g. Fayolle & Liñán, 2014; Hueso et al., 2021), our study provides a rationale for reorganising new knowledge base concepts and perspectives. By drawing a conceptual framework that integrates the core knowledge with divergent perspectives and future research avenues, this study provides a schema that scholars can adopt to position their studies, allowing them to counteract the fragmentation of perspectives that besets the field.

The rest of the paper is structured as follows. First, we present the bibliometric method we used to determine the knowledge base and research fronts, and we show the coding protocol for identifying the divergent perspectives. Second, we present the results, and, third, we describe the emerging framework and discuss avenues for future research and the study's contributions.

BIBLIOMETRIC METHOD TO DETERMINE THE KNOWLEDGE BASE AND RESEARCH FRONTS

Bibliometrics systematises scientific knowledge through statistical methods (Boyack et al., 2005) and is instrumental for achieving the research goal of the present study. To explore the divergent perspectives, it is important to recognise the core knowledge and research fronts, making it possible to examine how recent research has challenged such knowledge. Following specific guidelines (McCain, 1990; Tranfield et al., 2003; Zupic &

¹An overview of the existing literature reviews on entrepreneurial intention is available under request.

Čater, 2015), we use two bibliometric methods: (1) co-citations, which are suitable for discovering the knowledge base of a field (Andersen, 2019; Grégoire et al., 2006), and (2) bibliographic coupling, which can be used to delimit the research fronts (Kovács et al., 2015; Van Oorschot et al., 2018). By combining these two techniques, which rely on two different but complementing sources of information (i.e. citations and references) (Zupic & Čater, 2015), we attempt to overcome the limitations of each method—the retrospective and dynamic approach characterising co-citations and the contemporary but static approach characterising bibliographic coupling (Zhao & Strotmann, 2014). Moreover, unlike qualitative analysis, this combination manages filters and summarises a wider range of publications and bibliographic data, thus producing a complete and more accurate overview of the field.

On the one hand, the co-citations method is based on the number of times that two different studies are cited together (Small, 1973) under the assumption that the higher the number of researchers making the same co-citations, the higher their similarities (Acedo et al., 2006). Applying this logic to a large number of articles can help identify the so-called intellectual structure of a topic, which symbolises how scholars shape science and organise available research by citing other studies (Boyack & Klavans, 2010; Castriotta & Di Guardo, 2016). On the other hand, the bibliographic coupling method is based on the number of references that two different articles have in common. The underlying assumption is that the higher the number of equal references between the two articles, the higher their similarities (Kovács et al., 2015). This method is the most suitable for detecting research fronts, as it can be used to unfold current debates (Ferreira, 2018; Zhao & Strotmann, 2014).

In the present study, we identify the knowledge base and research fronts using the VOS-viewer programme, which has been widely adopted in bibliometric studies (e.g. Appio et al., 2016; Vallaster et al., 2019). The advantage of using this programme is that it provides a unified and updated approach to clustering and visualising bibliometric mapping networks (van Eck & Waltman, 2014). It also quantitatively identifies clusters obtained through the weighted variant of modularity-based clustering (Waltman et al., 2010). In our case, such clusters correspond to the core topics that form the knowledge base and research fronts in the field.

The database and period of analysis

This study adopts the Institute for Scientific Information's Web of Science (WoS) database because it is one of the most comprehensive and legitimised databases of peer-reviewed journals (Baker et al., 2020; Benavides-Velasco et al., 2013). It has also been extensively used in bibliometrics, as it covers a vast amount of literature and

provides advanced ad hoc tools for descriptive analyses (Zhao & Strotmann, 2014).

To identify the knowledge base, our research period is from 1990 to 2018. This period is methodologically appropriate for producing co-citations, as it is sufficiently long for producing such citations (Pilkington & Meredith, 2009) and is in accordance with the historical trend that characterises entrepreneurship as a legitimate academic discipline since the 1990s (Landström & Harirchi, 2018; Meyer et al., 2014). Moreover, this period is based on previous bibliometric studies on entrepreneurship that considered 15 to 30 years as a proper temporal range for investigating the field (Busenitz et al., 2014; Sassmannshausen & Volkman, 2018; Vallaster et al., 2019). Finally, to identify the research fronts, we considered the period from 2016 to 2018, as previous studies have shown that a two-year temporal range is the most appropriate for analysing recent research (Kovács et al., 2015).

The keywords and unit of analysis

Table A1 presents the keywords used to identify articles containing such strings in their titles, abstracts and keywords. For instance, the first keyword was 'entrepr* intent*'. After the first list of studies was produced, we checked their contents for possible synonyms, including those used in other literatures (Meyer et al., 2014). A total of 786 papers were found, including original articles ($n = 763$) and reviews ($n = 23$).

For both co-citations and bibliographic coupling, a set of filters was applied to the initial list to discard any irrelevant papers. Figures 1 and 2 show the entire workflow of our research steps for conducting co-citations and bibliographic coupling, respectively.²

Regarding co-citations, the present study follows previous research (Di Stefano et al., 2012; Zupic & Čater, 2015) to obtain the unit of analysis that appropriately balances the citations and their publication dates (Small, 1973; Vogel & Güttel, 2013). For bibliographic coupling, filters as described in Figure 1 were used to select articles that are relevant to the present study and published in highly regarded journals (Ferreira et al., 2021; Grégoire et al., 2006). After filtering, 77 articles were selected for the knowledge base (Figure 1), and 61 articles were selected for bibliographic coupling (Figure 2).

The framework for analysing the divergent perspectives

After identifying the clusters shaping the knowledge base and research fronts, we examined the selected studies to

²A detailed list of exclusion and inclusion criteria and excluded papers is available under request.

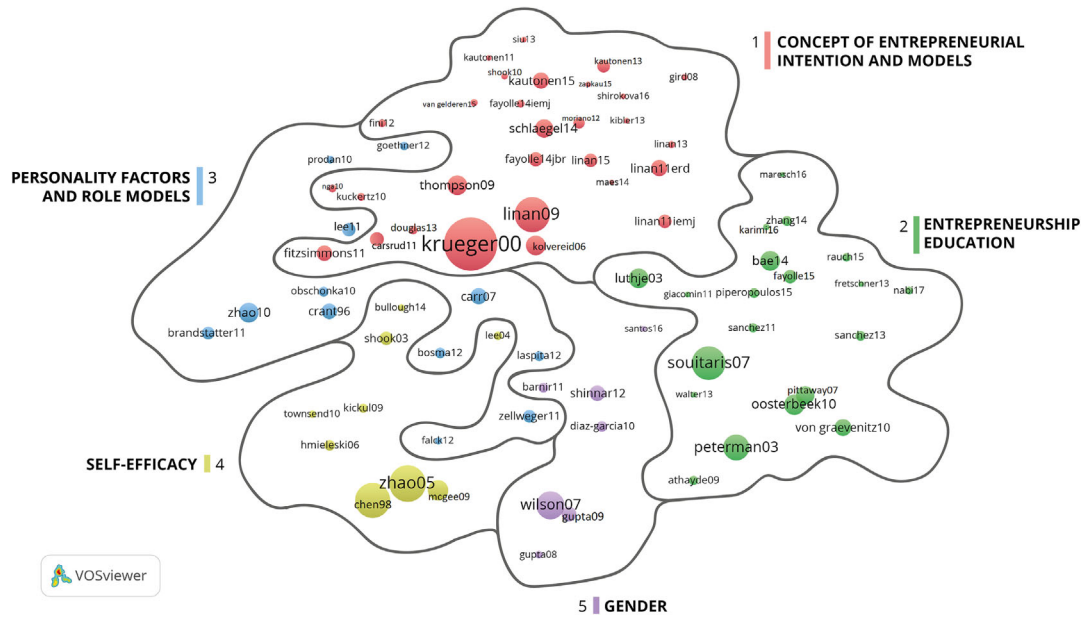


FIGURE 1 Workflow diagram for conducting co-citation analysis.

detect the divergent perspectives. Here, our aim was to identify studies that introduced new perspectives and/or bridged previously disjointed areas of research. To do so, the co-authors of this study jointly established a coding scheme, which involves classifying each study in the knowledge base and research fronts, based on the framework proposed by Woolley & Fuchs (2011). Because several questions were used to identify the presence of a divergent perspective,³ we adopted an initial coding procedure in which at least two co-authors independently classified each study, assuming that an affirmative answer to any of the questions is sufficient for detecting the presence of a divergent perspective. The second step in this coding procedure was comparing the co-authors' classifications and discussing any differences that emerged. This coding procedure was performed for each cluster in the knowledge base and research fronts. Overall, the Cohen's kappa coefficient is 0.85 ($p < 0.001$), which indicates a high level of inter-rater reliability or a high level of agreement among the raters (Landis & Koch, 1977).

RESULTS

We focus on the knowledge base from the co-citations method and the research fronts from the bibliographic

coupling method when presenting the results. For both the knowledge base and research fronts, the emerged clusters are categorised according to the results of the aforementioned coding procedure.

The knowledge base of entrepreneurial intention

As shown in Figure 3, five clusters constitute the knowledge base of entrepreneurial intention (their respective papers are shown in Table A2).

Cluster 1: The concept of entrepreneurial intention and the related models

Besides reviewing the field (e.g. Fayolle & Liñán, 2014; Liñán & Fayolle, 2015), the studies in this cluster clarify and delimit the construct of entrepreneurial intention (Thompson, 2009) showing that the diverse conceptions of the construct have different antecedents (Douglas, 2013).

Other studies in this cluster use new mechanisms that address the tension between competing models of entrepreneurial intention (Fitzsimmons & Douglas, 2011; Krueger et al., 2000). Based on the contingency perspective, some of the studies introduce the social dimension to complement the perspectives that focus on the individual level at the expense of the contextual level (Moriano et al., 2012). Finally, some of the studies have introduced various sub-types of personal constructs, such as sustainability orientation into the field (Kuckertz & Wagner, 2010), by delving into the motivational processes of entrepreneurial intention (Carsrud &

³Several questions were used to identify the presence of a divergent perspective; examples are 'Is this study bringing new concepts into the existing paradigm?' 'Is this study specifying an alternative model that explains a phenomenon better than the dominant model?' 'Is this study attempting to connect disconnected fields?' 'Is this study trying to create a new field of inquiry at the boundaries between two existing fields?' and 'Is this study introducing a new methodology to open up a new field of inquiry?'

Conceptual framework of Entrepreneurial Intention

From the knowledge base and research fronts
to divergent perspectives and avenues for future research

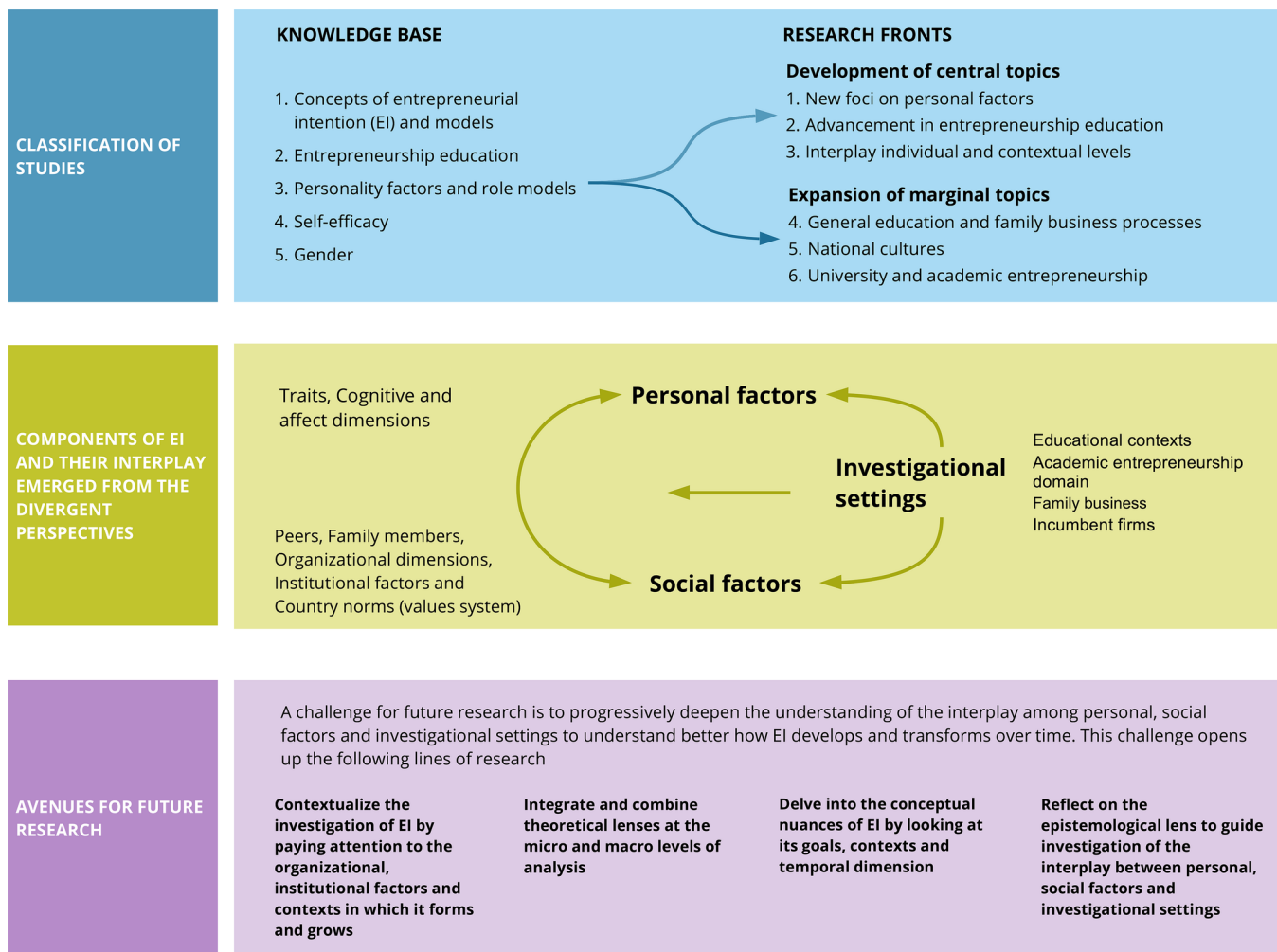


FIGURE 2 Workflow diagram for conducting bibliographic coupling analysis.

Brännback, 2011) and the work values associated with such intention (Fayolle et al., 2014).

We note that the studies in this cluster are foundational to the extent that they establish a definitional basis for the concept of entrepreneurial intention. The theoretical underpinnings of this cluster are rooted in the theory of planned behaviour (Ajzen, 1991, 2002; Ajzen & Fishbein, 2005) but also integrate Shapero’s ideas on the social processes leading individuals to undertake an entrepreneurial path (Shapero, 1975; Shapero & Sokol, 1982), attempting to integrate such theoretical roots via the notions of feasibility and desirability (Fitzsimmons & Douglas, 2011; Krueger et al., 2000). At a methodological level, this cluster offers deep reflections and efforts to develop valid and reliable measures of entrepreneurial intentions (Liñán & Chen, 2009; Thompson, 2009). The divergent

perspective in the cluster predominantly adds new variables to the foundational model, problematizing it to a lesser extent.

Cluster 2: Entrepreneurship education and its impact on entrepreneurial intention

The prevailing logic underlying the studies in this cluster is that through entrepreneurship education, students can become more confident about their entrepreneurial skills, which, in turn, strengthens their entrepreneurial intention. The theoretical underpinnings of this cluster are also predominantly rooted in the theory of planned behaviour (e.g. Souitaris et al., 2007) but emphasise the role of experience and learning, building upon self-efficacy theory to explain the effects of entrepreneurship education on

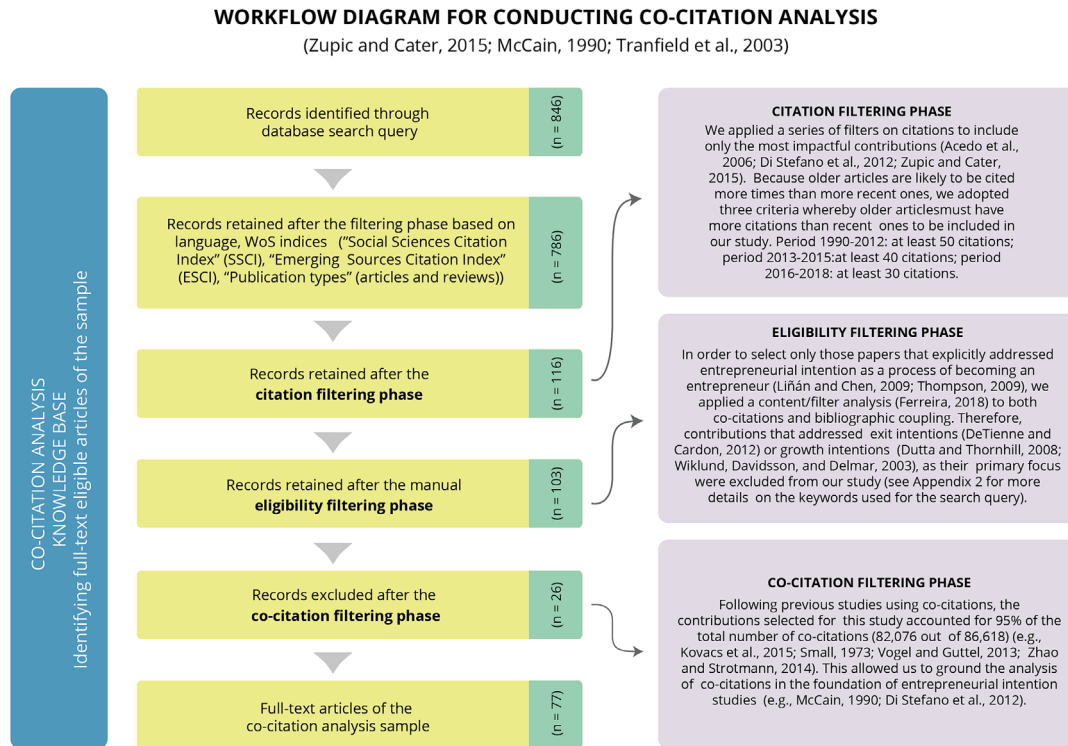


FIGURE 3 Map of the knowledge base.

self-assessed entrepreneurial skills, attitudes and feasibility and desirability perceptions (e.g. Athayde, 2009; Peterman & Kennedy, 2003; Von Graevenitz et al., 2010).

We notice a divergent perspective in these theoretical extensions as well as in the bridging of two research streams: one focusing at the individual level and another focusing at the organisational or contextual level. For instance, Lüthje and Franke (2003) found that both personal dispositions and perceptions of contextual conditions affect entrepreneurial intentions, whereas Walter et al. (2013) showed that the university–industry connection strengthens entrepreneurial intention, especially among male students, providing empirical support for the role of the environmental context in entrepreneurship.

Empirical evidence on the impact of entrepreneurship education on self-assessed entrepreneurial skills and intentions is, nevertheless, mixed and nuanced. Some studies found an insignificant and even negative effect (e.g. Oosterbeek et al., 2010), others found both positive and negative effects depending on participants' previous experience (e.g. Fayolle & Gailly, 2015), whereas a systematic review supports a generally positive effect but highlights a lack of consensus on what entrepreneurship education actually 'is' when implemented in practice (Pittaway & Cope, 2007).

Cluster 3: Personality factors and role models as antecedents of entrepreneurial intention

The studies in this cluster focus on the impact of personality factors (Brandstätter, 2011; Zhao et al., 2010) and role models on the formation of entrepreneurial intention in adults (Carr & Sequeira, 2007; Laspita et al., 2012) and teenagers (Falck et al., 2012).

In this cluster, theoretical developments include meta-analyses of the Big Five personality dimensions (Brandstätter, 2011; Zhao et al., 2010) as well as empirical examinations of other additional personality traits. Results suggest positive associations with most of the Big Five (conscientiousness, openness to experience, emotional stability and extraversion) as well as with risk propensity (Zhao et al., 2010) and proactiveness (Crant, 1996).

Other studies examine the mechanisms through which role models act, thus embracing a more divergent perspective. For instance, Bosma et al. (2012) show that role models with strong ties, such as parents, are more powerful in influencing entrepreneurial intention than role models with weak ties. Furthermore, those with a family business background might have different entrepreneurial intentions, depending on their motivation for independence or their perception of control (Zellweger et al., 2011). Finally, by introducing an alternative perspective of analysis based on the developmental

approach, Obschonka et al. (2010) demonstrated that researchers' engagement in spin-offs is related to both personality traits and entrepreneurial tendencies in adolescence. This finding is consistent with the assumption that appropriate life-stage achievements in childhood are likely to be correlated with such achievements in adulthood, offering a nice complementary and divergent perspective for entrepreneurial intention studies.

Cluster 4: The role of self-efficacy in the formation of entrepreneurial intention

This cluster fully builds upon and extends self-efficacy theory in the domain of entrepreneurial intention. Based on the study of Chen et al. (1998), which showed that the level of confidence in entrepreneurial skills is higher for entrepreneurs than non-entrepreneurs, the studies in this cluster focus on the relationship between self-efficacy and entrepreneurial outcomes (Zhao et al., 2005). By criticising how previous studies have operationalized the construct, McGee et al. (2009) sharpened a composite entrepreneurial self-efficacy scale that embodies the concept of task specificity to assess the level of confidence in entrepreneurial skills.

Embracing a divergent perspective, studies in this cluster have introduced concepts and explored mechanisms that connect self-efficacy to entrepreneurial intention (Bullough et al., 2014; Hmieleski & Corbett, 2006), providing a more nuanced view of such relationship. For instance, Kickul et al. (2009) found that an intuitive cognitive style is associated with higher levels of confidence in one's ability to identify and recognise opportunities, whereas an analytic cognitive style is associated with higher levels of specific self-efficacy to assess, evaluate, plan and marshal resources.

Cluster 5: The impact of gender on entrepreneurial intention

The studies in this cluster examine the relationship between gender and entrepreneurial intention, seeking to clarify the mechanisms through which they interact. At the theoretical level, they build upon self-efficacy theory and cultural approaches to entrepreneurship and gender.

Findings are consistent in demonstrating that females have significantly lower levels of self-efficacy and entrepreneurial intention than males (Díaz-García & Jiménez-Moreno, 2010; Wilson et al., 2007). This pattern is also evident across national cultures (Santos et al., 2016; Shinnar et al., 2012). Furthermore, gender modifies the relationship between education and self-efficacy, indicating that education has a greater impact on increasing self-efficacy in females than in males (Wilson et al., 2007). This effect can also be seen in the relationship between social context and entrepreneurial intent.

Females, for example, are more sensitive to social norms than males (BarNir et al., 2011; Díaz-García & Jiménez-Moreno, 2010), whereas males are more susceptible to social legitimisation (Santos et al., 2016).

Diverging from the predominant perspective characterising this cluster, Gupta et al. (2008) introduced gender stereotypes to determine how gender modifies the level of entrepreneurial intention, especially when assessing the concept of entrepreneurship as more adherent to masculine or feminine profiles. Interestingly, gender stereotypes can be neutralised when entrepreneurship is presented as a gender-neutral phenomenon.

The research fronts of entrepreneurial intention studies

Our analyses of the six clusters in the research fronts (see Figure 4) revealed two different tendencies: Three clusters continue to develop topics that were central in the knowledge base, whereas the other three expand sub-topics that were marginal in such foundations. The papers in each cluster are presented in Table A3.

Development of the central topics

Extending topics that were already central in the knowledge base, several studies in the research fronts focus on personality factors (Cluster 1), learning processes (Cluster 2) and the interplay between the individual and contextual levels (Cluster 3). We discuss these clusters below.

Cluster 1: Recent studies have introduced new perspectives on personal factors

The recent studies in this cluster delve into the mechanisms connecting entrepreneurial intention to well-known variables in entrepreneurship, such as passion and creativity (Biraglia & Kadile, 2017; Entrialgo & Iglesias, 2020), optimism and overconfidence (Giacomin et al., 2016). In addition, the studies in this cluster have introduced new perspectives for understanding the conditions that nurture entrepreneurial intention. Some are rooted in neurophysiology (Geenen et al., 2016), whereas others focus on mental disorders or malevolent behaviours, such as hyperactivity (Antshel, 2018), narcissism (Hmieleski & Lerner, 2016), risk mania (Johnson et al., 2017) and survivalism (i.e. the practice of preparing for major emergencies or disasters) (Jackson, 2018). In emphasising the prosocial perspective, other studies have examined the role of empathy (Bacq & Alt, 2018) or prior experience in dealing with social problems (Hockerts, 2017). Finally, based on prospect theory, Hsu, Wiklund and Cotton (2017) cast light on the cognitive dimension to understand re-entry into entrepreneurship after success or failure.

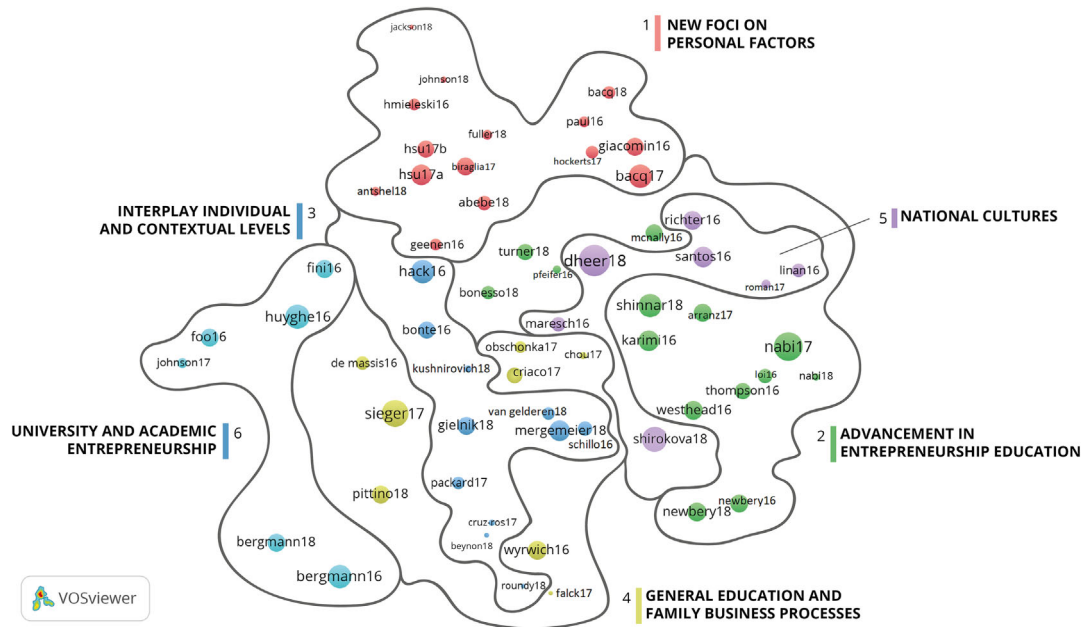


FIGURE 4 Map of the research fronts.

Taken together, the studies in this cluster explore relatively new personal factors and theoretical mechanisms linking such personal factors to entrepreneurial intention. Although the focus is still on personal factors, the theoretical approaches start shedding some new light at the interaction between the person and the context, offering a more complex and richer view of how entrepreneurial intention emerges.

Cluster 2: Recent studies have corroborated and advanced the impact of entrepreneurship education on entrepreneurial intention

The impact of entrepreneurship education is a pressing concern in this cluster (e.g. Nabi et al., 2017), reflecting and extending a research stream that was already present in the knowledge base. Focusing on pedagogy, recent studies have provided alternative perspectives to observe the results of entrepreneurship education. For instance, Turner and Gianiodis (2018) show that blended courses (i.e. those that combine online and offline activities) have an impact on entrepreneurial intention, depending on students' characteristics (e.g. entrepreneurial passion). Moreover, related studies indicate that educational games, as proxies for real-life experiences, can enrich experiential learning approaches and serve as useful research tools for testing entrepreneurship education (Newbery et al., 2016, 2018).

At the theoretical level, although the studies in this cluster remain strongly anchored on the theory of planned behaviour (e.g. Karimi et al., 2016), they also extend it by applying other theories—such as social role theory (Shinnar et al., 2018), identity theory (Newbery et al., 2018) and human capital and socially learned

stereotypes theories (Westhead & Solesvik, 2016)—allowing them to integrate and explore additional factors connecting entrepreneurship education and entrepreneurial intention. All in all, their focus on pedagogical tools and learning processes constitute a step towards surmounting the methodological challenges associated with assessing the impact of entrepreneurship education.

Cluster 3: Recent studies have added new reflections on the interplay between the individual and contextual levels

In this cluster, the individual and contextual dimensions are both investigated in tandem as critical factors of entrepreneurship. For example, Bönnte et al. (2016) showed that genetic determinants are complementing mechanisms of the social perspective. In a similar vein, that is exploring the interplay between the individual and the context, Packard (2017) introduced an epistemological reflection based on interpretivism, emphasising the individual's role in responding to social stimuli. Conversely, when introducing the ecosystem perspective, Roundy et al. (2018) advocated that feedback loops among the ecosystem's elements, which include individual, organisational and societal forces, shape the ecosystem itself.

Some studies in this cluster have tried to observe the link between entrepreneurial intention and behaviour from new perspectives, suggesting that this should be considered in relation to the innovation level of the country in question (Cruz-Ros et al., 2017) and from an implementation intention perspective (Van Gelderen et al., 2018). Introducing a dynamic temporal perspective

to revisit the role of age in the entrepreneurial process, Gielnik et al. (2018) advance that future perspective and work experience explain why young adults and adults differ on how they transition from opportunity identification to entrepreneurial intention and action.

Taken together, the studies in this cluster adopt a variety of theoretical perspectives that complement the renewed focus on personal factors in Cluster 1, leaving more room for contextual variables. Similar to the first two clusters in the research fronts, the studies in Cluster 3 add nuance and complexity to the theoretical underpinnings that were already present in the knowledge base of entrepreneurial intention research.

Expansion of marginal topics and the rise of well-bounded research streams

The next clusters in the research fronts expand on topics that were marginal in the knowledge base, suggesting the emergence of new research streams with a focus on (i) the human capital dimension and the role of education and family business processes in the formation of entrepreneurial intention (Cluster 4), (ii) the cultural dimension in the formation of entrepreneurial intention (Cluster 5) and (iii) the role of universities in supporting students' inclinations towards entrepreneurship, with a specific focus on academic entrepreneurship (Cluster 6).

Cluster 4: The human capital dimension and the role of education and family business process in the formation of entrepreneurial intention

The theoretical underpinnings in this cluster relate to the notion of human capital, with most studies empirically examining how education and family might influence individuals' human capital and therefore explain their entrepreneurial intention. Findings on the role of education show, for example, that computer self-efficacy affects entrepreneurial intention (Chou et al., 2017). Moreover, students educated through a free-market approach have a stronger entrepreneurial intention than those educated through a non-free-market approach (Falck et al., 2017), whereas entrepreneurial competencies developed in adolescence play a mediating role in the relationship between personality factors and entrepreneurial intention (Obschonka et al., 2017).

Regarding the role of family business processes, some studies in this cluster have deeply explored the dynamics of family business, pointing out a holistic approach to better capture the configurational paths underpinning intergenerational transmission processes (Pittino et al., 2018). Moreover, the introduction of new perspectives, such as social comparison (Criaco et al., 2017) and sender–receiver (Wyrwich et al., 2016), can help develop a nuanced understanding of how role models affect entrepreneurial intention.

Human capital and educational and family business processes were marginal topics in the knowledge base of entrepreneurial intention research. The studies in this cluster of the research fronts give a central place to these notions and contribute to providing a more nuanced understanding of the mechanisms shaping entrepreneurial intention.

Cluster 5: The cultural dimension in the formation of entrepreneurial intention

Most of the studies in this cluster have examined how entrepreneurial intention forms in different national contexts. The theoretical lenses are still predominantly rooted in the theory of planned behaviour and self-efficacy theory, but the studies in this cluster also add interesting theoretical frameworks such as embeddedness (Shirokova et al., 2018) and identity integration (Dheer & Lenartowicz, 2018), exploring nuances in terms of differences in socio-cultural environments and personal factors such as gender (e.g. Santos et al., 2016).

To this extent, an emerging and slightly divergent focus is on using personal and national values to better understand the mechanisms underlying national differences (Dheer & Lenartowicz, 2018). For instance, the cultural archetype approach is introduced to overcome conventional approaches that focus on national differences from a single cultural dimension. By embracing a holistic perspective, this new approach states that different configurations related to entrepreneurial intention are plausible, regardless of national boundaries (Richter et al., 2016).

All in all, the studies in this cluster contribute to enriching our understanding of the factors influencing entrepreneurial intention by integrating a cultural dimension and proposing a more nuanced view of the mechanisms fostering or hindering entrepreneurial intention. The empirical challenge is that most studies provide only correlational evidence, although their theoretical lenses call for causal inference and suggest a process-based approach.

Cluster 6: The role of universities in supporting students' inclinations towards entrepreneurship, with a specific focus on academic entrepreneurship

The studies in this cluster focus on two distinct but related phenomena. On the one hand, some studies expand current knowledge on universities that foster students' entrepreneurial intention, indicating that the interaction between organisational factors and individual characteristics better represents how these institutions play such a role (Bergmann et al., 2016, 2018). On the other hand, some studies explore academic entrepreneurship processes (Johnson et al., 2017). Although the contextual environment continues to emerge as a crucial factor for entrepreneurial scientists (Foo et al., 2016), the cognitive dimension is somewhat

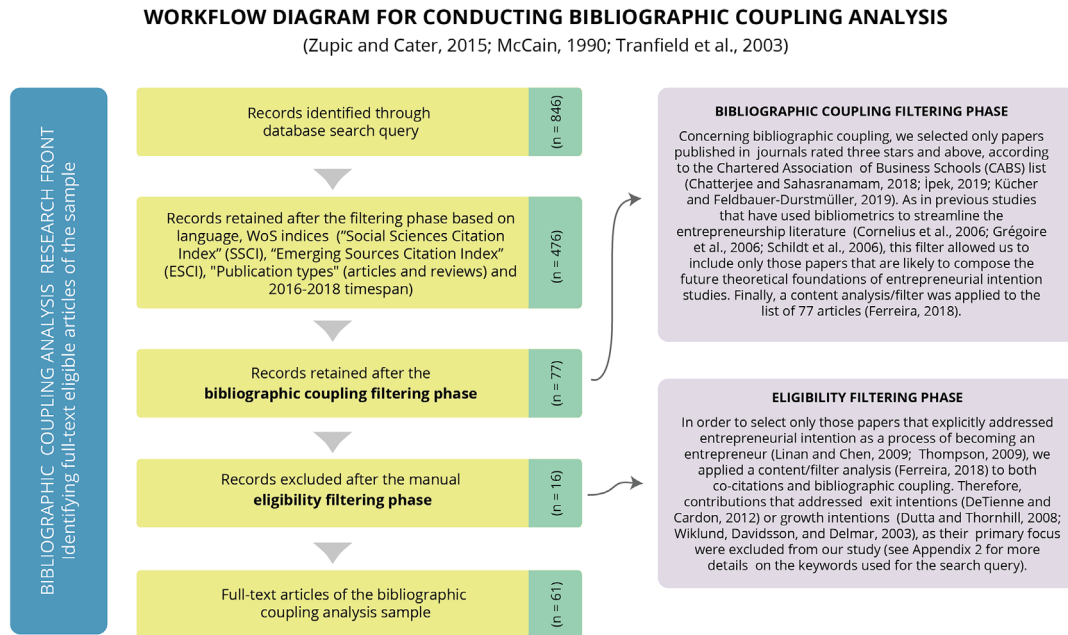


FIGURE 5 Conceptual framework.

distinctive. For instance, scientific passion and awareness of one's technical competencies can explain the creation of spin-offs (Huyghe et al., 2016) and the differences between academics and non-academics regarding how entrepreneurial intention is formed (Fini & Toschi, 2016).

Taken together, the studies in this cluster seem less rooted in the traditional theories of the knowledge base (e.g. theory of planned behaviour) and clearly emphasise the interplay between specific individual factors and the context in which students and academics evolve. With an explicit focus on student and academic entrepreneurship, this research has clear practical relevance. At the theoretical level, it has offered important insights on how context matters and shapes entrepreneurial intentions at the university.

DISCUSSION

Focusing on the knowledge base and research fronts, we explore divergent perspectives developed in entrepreneurial intention studies.⁴ Figure 5 depicts a conceptual framework that (i) describes the clusters identified through bibliometric analysis; (ii) synthesises the framework based on the divergent perspectives in each cluster, with the goal of providing an integrated view of the results and their elaboration (Imenda, 2014); and (iii) discusses open challenges and future research directions. Based on this framework and examination of the

knowledge base and research fronts, we make several observations.

First, entrepreneurial intention studies are an area of study of great vitality (Woolley & Fuchs, 2011), as shown by the tendency to introduce new concepts and perspectives in both the knowledge base and the research fronts. This trend is more visible in the research fronts, because it is easier to recognise whole clusters that propose new approaches rather than individual studies in a single cluster in the knowledge base. These exploratory tendencies are critical for a field's evolution and development (Chavalarias & Cointet, 2013).

Second, by exploring the divergent perspective, our study reveals the main trends on which research fronts have expanded the knowledge base. Recent studies have developed topics that are central to the knowledge base and have expanded topics that are marginal in the knowledge base. The newer and more divergent research comes from building upon complementary theoretical lenses—especially human capital and cultural and contextual approaches—as well as engaging with relatively less investigated (thus far) settings and phenomena, such as family business processes, pedagogical approaches and academic and organisational contexts. The combination of divergent theoretical lenses and research settings in the research fronts contributes to a better understanding of the complex dynamics that link individual and social factors in the emergence and development of entrepreneurial intention.

Third, in the process of conceptualising these findings, we highlight three recurring components in entrepreneurial intention studies: (1) personal factors, (2) social factors and (3) investigational settings. In

⁴A summary of the divergent perspectives that emerged from the reviewed studies is available under request.

addition to introducing new constructs, divergent perspectives have emphasised the interplay between these components. Moreover, recent studies have challenged ways of conceptualising the mechanisms that link these components. The investigated models have not only revealed indirect mechanisms and complex interaction dynamics but also emphasised the role of investigational settings by relying either on the contingency perspective (e.g. Richter et al., 2016; Shirokova et al., 2018) or the system perspective (e.g. Schillo et al., 2016) in which the characteristics of individuals and social factors may interact differently.

To build a holistic and comprehensive theory of entrepreneurial intention, the challenge for future research is to integrate these different components into current conceptualisations of entrepreneurial intention. We outline these three components below, based on the divergent perspectives that emerged from our analysis.

Divergent perspectives and the three components of entrepreneurial intention studies

Regarding personal factors, in addition to the inclusion of self-efficacy and personality traits, which are essential nodes in the knowledge base, previous studies have also incorporated new constructs, such as work values (Fayolle et al., 2014), motivation (Carsrud & Brännback, 2011), resilience (Bullough et al., 2014), propensity to improvise (Hmieleski & Corbett, 2006), cognitive styles (Kickul et al., 2009) and entrepreneurial readiness (Schillo et al., 2016), among others. This tendency to investigate new constructs and integrate them in the study of entrepreneurial intention increased in the research fronts, with the emergence of additional theoretical perspectives associated with such new constructs. For example, prospect theory (Kahneman & Tversky, 1979) has been introduced to better understand framing effects explaining entrepreneurial risk taking (Dubard Barbosa et al., 2019; Hsu, Wiklund, & Cotton, 2017), whereas prosocial motives research has been mobilised to explain how empathy (Bacq & Alt, 2018) and prior experience (Hockerts, 2017) contribute to determine social entrepreneurial intentions.

Building upon the knowledge base, specific clusters with a distinct focus on social factors have emerged in the research fronts. In addition to considering the family as a source of inspiration for becoming an entrepreneur, divergent perspectives have focused on how culture and values may influence how individuals steer their careers towards entrepreneurship (e.g. Liñán et al., 2016). Beyond the regional factors (e.g. Kibler, 2013) and role models (e.g. Bosma et al., 2012; Falck et al., 2012) highlighted in the knowledge base, especial attention has been paid to understanding environmental characteristics that may hinder or enhance entrepreneurial intention.

For example, the entrepreneurial climate in universities (e.g. Bergmann et al., 2018), organisational factors in incumbent firms (e.g. Hsu, Shinnar, et al., 2017) and cultural influences (e.g. Santos et al., 2016; Shirokova et al., 2018), all illustrate how the field has explored new phenomena and integrated additional theoretical lenses to better understand the social dynamics associated with entrepreneurial intention. Indeed, interest in taking a holistic approach to studying social dimensions has emerged as an overarching goal to improve our understanding of individuals and social dynamics embedded in ecosystems (Roundy et al., 2018).

Finally, the field has opened up to new investigational settings, which define the work or training contexts in which intention develops. In addition to the educational context (which was already present in the knowledge base), three other settings attract much scholarly attention in the research fronts: (1) the domain of academic entrepreneurship, (2) family businesses and (3) incumbent firms.

The academic entrepreneurship domain contributes to entrepreneurial intention studies by introducing different perspectives of analysis that highlight specific interactions between individual and contextual variables. For instance, the trait-activation theory (Foo et al., 2016) explains that scientists with a high level of promotion focus tend to engage in entrepreneurship if they perceive that the context supports it. Moreover, in the context of academic entrepreneurship, technical skills seem to be more predictive of entrepreneurial action than self-efficacy and managerial skills (Fini & Toschi, 2016).

In family businesses, research that focuses on the mechanisms through which entrepreneurial intention is formed has gained increased attention. These studies have expanded the knowledge base by investigating the conditions under which the family promotes or inhibits entrepreneurship (e.g. Pittino et al., 2018). The central question here is not whether the family acts as a role model but how it shapes intergenerational transmissions and new venture creation.

Research about incumbent firms has investigated the mechanisms underlying employees' choice to pursue an entrepreneurial career. The focus is on the process of re-entry into entrepreneurship (e.g. Hsu, Shinnar, et al., 2017) and organisational factors that in combination with personal characteristics, such as job satisfaction, play a crucial role in sustaining entrepreneurial intention in workplaces (Hsu, Wiklund, & Cotton, 2017; Lee et al., 2011).

Avenues for future research

By adopting a hybrid bibliometric method, our review shows that apart from introducing new concepts, entrepreneurial intention research has progressively deepened

the understanding of the individual-contextual interplay to reveal how it develops and transforms over time. Complex dynamics have been found in the formation of entrepreneurial intention and the intention-behaviour relationship. Although we observe significant progress in entrepreneurial intention studies over time, our analysis also reveals several avenues for future research to move forward.

A first set of research avenues stem from potential ways to complement our findings and overcome some of our study's limitations. First, although the WoS is the most frequently used database in the field (Loi et al., 2016; Zupic & Čater, 2015), future research that employs bibliometrics should consider other databases to complement the findings. Second, as this study adopts the co-citations method, which is sensitive to the passing of time, it can lead to an underestimation of more recent works—an issue that we have balanced with the bibliographic coupling method. However, future research should build upon complementary bibliometric methods, such as co-word analysis, to update and extend this study's findings, construct more objective measures of divergence and track the evolution of the entrepreneurship field.

Besides these limitations, our analysis of the literature also reveals four main avenues for further research to focus upon. First, future research should contextualise the interplay between personal and social factors by paying attention to the organisational settings, institutional environments and contexts in which intention emerges and grows. Understanding the role of context is key if we want to develop our ability for intervention. Hence, future studies need to further pay attention to context and how it impacts individual dynamics in the emergence and development of entrepreneurial intention. This is consistent with the contingency perspective, according to which embeddedness plays a crucial role in explaining the dynamics of entrepreneurial intention and entrepreneurship processes in general (Dahl & Sorenson, 2009; Murzacheva et al., 2020). Thus, future research should systematically consider the investigational settings to further explore the interplay of personal and social factors. Recent studies have also suggested that future research should consider the role of culture at the national level as well as institutional factors that may influence how entrepreneurial intention develops (Kushnirovich et al., 2018; Richter et al., 2016). Empirical evidence shows that apart from the regulatory dimension, that is, national policies that support entrepreneurship, the normative (values) and cognitive (perceived knowledge and skills) dimensions of a country's institutional profile are strongly correlated with entrepreneurial self-efficacy at the individual level (Farashah, 2015). Therefore, and in line with studies that reflect on the complexity of the entrepreneurial process (e.g. Futonge Nzembayie & Buckley, 2020), future research should consider the role of places (organisational and national) and their values system in explaining

how individuals' entrepreneurial intention is formed, grows and influences entrepreneurial behaviour.

Second, to strengthen the theoretical foundation of entrepreneurial intention and better understand the interplay between personal factors, social factors and investigational settings, future research should adopt a more holistic approach based on the integration of micro- and macro-level theoretical perspectives. Although the micro-perspective, which focuses on the individual level, has been extensively addressed in entrepreneurial intention studies, the macro-perspective, which considers group, organisation or country dimensions, has been less studied. Nevertheless, our review shows insightful empirical results about the interaction between these two levels of analysis. Thus, future research should pursue a more theory-driven approach to understanding how they interact to form and develop entrepreneurial intention. For example, Feola et al. (2019) integrated the triple helix for academic entrepreneurship (Etzkowitz & Leydesdorff, 1995) with the theory of planned behaviour to explain how government, industry, financial and university support influenced doctoral students' entrepreneurial intention and its related variables at the individual level. Combining and integrating the micro-perspective, such as the theory of planned behaviour or the social cognitive theory of career (Lent et al., 1994), with the macro-perspective, such as the person-environment fit for existing businesses (Hsu et al., 2019), seems appropriate for developing a better theoretical understanding of how entrepreneurial intention is formed in specific investigational settings.

Third, in both the knowledge base and research fronts, entrepreneurial intention emerges as a multifaceted, context-dependent construct whose formation and predictive power over subsequent behaviour has a temporal component. Therefore, this concept is characterised by several nuances that require scholarly attention as they may have important implications for how entrepreneurial intention is formed and transformed over time. In the knowledge base, some studies have distinguished business creation from the choice of self-employment as a career path (Liñán & Chen, 2009; Thompson, 2009). Moreover, other studies have indicated that different dimensions, such as motivation (Douglas, 2013) or social aspects (Nga & Shamuganathan, 2010), have contributed to a fine-grained conceptualisation of entrepreneurial intention. On the research fronts, new subtle distinctions have emerged between intentions to create a spin-off/start-up in academic settings (Huyghe et al., 2016), towards formal or informal commercialisation of research findings (Johnson et al., 2017), and to re-enter the business creation process (Hsu, Shinnar, et al., 2017). These nuances increased the level of behavioural specification, thereby increasing our knowledge about entrepreneurial intention formation. According to the theory of planned behaviour, this level of specification is

crucial to developing a comprehensive understanding of the mechanisms linking entrepreneurial intention to subsequent behaviours (Ajzen & Fishbein, 2005). In addition, empirical evidence shows that the temporal dimension is also relevant for refining the concept of entrepreneurial intention (Kwong & Thompson, 2016). For example, the temporal construal theory (Liberman & Trope, 1998) postulates that distant and future situations are conceptualised at a more abstract level, whereas near situations are related to more concrete characteristics. Therefore, individual actions follow a different path depending on how far they have been planned to occur in the future. In applying this theory to entrepreneurial intention, studies have shown that a distinction between short- and long-term entrepreneurial intention is necessary to better predict how intention is formed and its link to future entrepreneurial behaviour (Hallam et al., 2016). Finally, as demonstrated in entrepreneurship education contexts, entrepreneurial intention may evolve as the entrepreneur gains experience (Fayolle & Gailly, 2015; Fretschner & Lampe, 2019). However, very little is known about these evolutionary dynamics. Based on these findings, it seems appropriate to further explore the nuances of entrepreneurial intention to refine current conceptualisations and develop a more realistic view of entrepreneurial intention dynamics throughout its temporal processes and diverse investigational settings.

Finally, future research should reflect on epistemological issues as it investigates the interplay between the three components of our conceptual framework—personal factors, social factors and investigational settings. To enhance our understanding of how individuals and contexts interact, scholars should reflect on the theoretical implications of adopting an interpretive or positivist approach to integrating the macro- and micro-perspectives. Recent studies have shown that established connections between entrepreneurial self-efficacy and intention at the individual level can change their magnitude depending on intervening variables at the personal and contextual levels. For example, two randomised studies about college students showed the link between entrepreneurial self-efficacy and entrepreneurial intention based on the perceived fit between an individual's supply needs (i.e. the need for achievement, independent thought and action and personal freedom) and entrepreneurship (Hsu et al., 2019). The connection between entrepreneurial self-efficacy and intention is lower when students perceive that entrepreneurship poorly fits their needs, whereas it is higher when they perceive that entrepreneurship fits their needs. These complex dynamics require a better explanation of how the environment and perceptions about it shape and change entrepreneurial attitudes and intention. Different epistemological postures might provide different explanations and different methodological tools to study such complex dynamics.

Theoretical and practical contributions

To the best of our knowledge, our review is the first to systematically map the knowledge base and research fronts of entrepreneurial intention studies with citations and bibliographic coupling by relying on quantitative methods rooted in bibliometrics. Our work thus extends the findings of previous qualitative analyses (e.g. Donaldson, 2019; Liñán & Fayolle, 2015), meta-analyses (Bae et al., 2014; Brownell et al., 2021; Zaremohzzabieh et al., 2019) and co-occurrence or co-authorship analyses (Ruiz-Alba et al., 2021). Such previous work has shown that studies on entrepreneurial intention revolve around several central themes, making this field an eclectic domain of inquiry (Liñán & Fayolle, 2015). Enriching these previous systematisations, our review highlights that in addition to opening new avenues of research, the mechanisms investigated become more complex as research progresses. Such mechanisms concern both the formation of entrepreneurial intention and its link to subsequent behaviour. On the former, there is an increased awareness that entrepreneurial intention is formed through intertwined mechanisms that link personal and contextual factors, and these dynamics are linked to the settings of inquiry. On the latter, there is relatively less empirical research on the mechanisms connecting intention and behaviour, but the existing evidence also indicates complex interactions between the person, the context and the investigational setting in determining the extent to which intention translates into behaviour. Thus, a fundamental theoretical implication from our review is that new dimensions of analysis are needed to understand how the micro-perspective, which is about the individual level of analysis, can be integrated with a macro-perspective, which considers social factors related to the context and the investigational setting.

Furthermore, previous works have emphasised the need for future research to address relevant theoretical and methodological gaps (Fayolle & Liñán, 2014; Hou et al., 2018). In addition to this important suggestion, our study adds that future research should also reflect on the practical implications of an increase in the complexity of the investigated mechanisms on how entrepreneurial intention forms. Our focus on the divergent perspectives has shown that one-size-fits-all interventions are unlikely to enhance entrepreneurial intention regardless of the investigational settings and cultural domains (e.g. Al-Mataani et al., 2017; Santoro et al., 2020). Therefore, different approaches are needed to understand the peculiarities of an ecosystem and the diffusion of an entrepreneurial mindset. By understanding how the different components, which are relevant for entrepreneurial intention, interact, it is possible to identify multiple paths supporting entrepreneurial intention. This also implies that both policymakers and scholars should elaborate the

interventions by reflecting on the contingency perspective.

Finally, previous studies have shown that the fragmentation of the field needs to be carefully addressed to make entrepreneurial intention more relevant from a theoretical and practical perspective (Donaldson, 2019). To address this gap and extend the approach of previous studies to categorise relevant themes of entrepreneurial intention, our systematic review integrates divergent perspectives into a conceptual framework, showing that the introduction and integration of new perspectives are vital to this field, as they provide new opportunities to make new inquiries that contribute to and challenge the knowledge base. To counteract research eclecticism without reducing the possibility of gaining new insights, our review might help scholars determine if their studies diverge from existing lines of research, thereby encouraging them to reorganise and recognise how their contributions impact the collective process of theorising.

AUTHOR CONTRIBUTIONS

All the authors have jointly and equally contributed to the development of the paper.

CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX

TABLE A1 WoS database search query.

Filters	Search terms	No.
Indexes: SSCI, ESCI Timespan: 1990–2018	TS = (((entrepr*) near/1 (intent*) or ('enterpris* intent*') or ('startup* intent*') or ('start-up* intent*') or ('startup* intent*') or ('spin off* intent*') or ('spin-off* intent*') or ('spinoff* intent*') or ('ventur* creation intent*') or (('ventur* creation' and (intent*)) or ('firm* creation intent*') or (('firm* creation' and (intent*)) or ('business creation intent*') or (('business* creation') and (intent*)) or ('compan* creation intent*') or (('compan* creation') and (intent*)) or ('emerg* organiSation* intention*') or (('emerg* organiSation*') and (intention*)) or ('entrepreneur's intention*') or ('intent* founder*') or (('opportunit* intent*') and (entrepr*)) or ((entrepreneurship) and (intentionality)) or ('self-employ* intent*') or ('selfemploy* intent*') or ('intent* to become self-employ*') or ('intention toward self-employment') or ('entrepr* career intent*') or (('entrepr* career reason*') and (intent*)) or ('intent* of entrepr*') or ('intent* as entrepr*') or ('intent* to become entrepr*') or ('intent* to be entrepr*') or ('intent* to be* an entrepr*') or ('intent* to start business*') or ('intent* to start a business') or ('intent* to create a business*') or ('intention to set up one's own business') or ('intent* to develop an entrepr* idea*') or ('intent* to develop the entrepr* idea*'))	846
Language	English	801
Pub. Type	Articles (763) and Reviews (23)	786
Indexes	Social Sciences Citation Index (SSCI), Emerging Sources Citation Index (ESCI)	
Date of Data Export	October 2019	

Note: The entrepreneurial intention studies were retrieved by using truncated strings with the wildcard asterisk (*), which included any group of characters (including those with no characters) according to the WoS search rules. This means that the string entrepr* includes the keywords 'entrepreneur', 'entrepreneurs', 'entrepreneurial' and 'entrepreneurship'. The dollar sign wildcard (\$) was also used to represent zero or one character. This means that the string organiSation* includes the keyword 'organization'. Moreover, the field tag 'TS' (which stands for topics) was used to search for the keywords in the titles, abstracts, keywords and databases (keywords Plus). Furthermore, only scholarly studies/reviews in the social sciences (published in English) were selected. In this regard, the sample items were categorised into multiple categories in the WoS database. The full list of 786 selected items is available upon request.

TABLE A2 The unit of analysis for the knowledge base—co-citation analysis.

Articles	Journals	Cluster	Citations	Co-citations
1 Krueger et al., 2000	Journal of business venturing	1	1354	5591
2 Liñán & Chen, 2009	Entrepreneurship theory and practice	1	574	4019
3 Kolvereid & Isaksen, 2006	Journal of business venturing	1	289	1917
4 Thompson, 2009	Entrepreneurship theory and practice	1	241	1775
5 Carsrud & Brännback, 2011	Journal of small business management	1	241	1003
6 Schlaegel & Koenig, 2014	Entrepreneurship theory and practice	1	202	1999
7 Liñán, Urbano, & Guerrero, 2011	Entrepreneurship and regional development	1	194	1170
8 Kautonen et al., 2015	Entrepreneurship theory and practice	1	189	1599
9 Fitzsimmons & Douglas, 2011	Journal of business venturing	1	181	1239
10 Kuckertz & Wagner, 2010	Journal of business venturing	1	165	374
11 Fayolle & Liñán, 2014	Journal of business research	1	153	1406
12 Liñán & Fayolle, 2015	International entrepreneurship and management j.	1	146	1411
13 Liñán, Rodríguez-Cohard, & Rueda-Cantucho, 2011	International entrepreneurship and management j.	1	146	463
14 Kautonen et al., 2013	Applied economics	1	140	1217
15 Nga & Shamuganathan, 2010	Journal of business ethics	1	138	333
16 Moriano et al., 2012	Journal of career development	1	112	962
17 Douglas, 2013	Journal of business venturing	1	87	571
18 Fini et al., 2012	Entrepreneurship theory and practice	1	77	517
19 Fayolle et al., 2014	International entrepreneurship and management j.	1	68	1122
20 Van Gelderen et al., 2015	Journal of business venturing	1	67	440
21 Kautonen et al., 2011	Small business economics	1	65	328
22 Gird & Bagraim, 2008	South african journal of psychology	1	59	440

(Continues)

TABLE A2 (Continued)

	Articles	Journals	Cluster	Citations	Co-citations
23	Kibler, 2013	Entrepreneurship and regional development	1	55	421
24	Shook & Bratianu, 2010	International entrepreneurship and management j.	1	52	1022
25	Liñán et al., 2013	Revista de economiamundial	1	50	334
26	Siu & Lo, 2013	Entrepreneurship Theory and Practice	1	47	375
27	Zapkau et al., 2015	Journal of business research	1	44	409
28	Maes et al., 2014	European Management Journal	1	43	365
29	Shirorova et al., 2016	European Management Journal	1	40	326
30	Souitaris et al., 2007	Journal of business venturing	2	610	3483
31	Peterman & Kennedy, 2003	Entrepreneurship theory and practice	2	533	2187
32	Pittaway & Cope, 2007	International small business journal	2	434	1188
33	Oosterbeek et al., 2010	European economic review	2	338	1592
34	Lüthje & Franke, 2003	R and D management	2	307	1638
35	Bae et al., 2014	Entrepreneurship theory and practice	2	250	1761
36	Von Graevenitz et al., 2010	Journal of economic behavior and organization	2	218	1303
37	Fayolle & Gailly, 2015	Journal of small business management	2	143	552
38	Athayde, 2009	Entrepreneurship theory and practice	2	110	582
39	Sánchez, 2013	Journal of small business management	2	100	662
40	Piperopoulos & Dimov, 2015	Journal of small business management	2	94	753
41	Sánchez, 2011	International entrepreneurship and management j.	2	93	549
42	Nabi et al., 2017	Academy of Management Learning and Education	2	85	386
43	Zhang et al., 2014	International entrepreneurship and management j.	2	83	750
44	Rauch & Hulsink, 2015	Academy of management learning and education	2	72	606
45	Karimi et al., 2016	Journal of small business management	2	55	424
46	Giacomin et al., 2011	International entrepreneurship and management j.	2	50	1167
47	Walter et al., 2013	Entrepreneurship Theory and Practice	2	49	460
48	Maresch et al., 2016	Technological Forecasting and Social Change	2	47	340
49	Fretschner & Weber, 2013	Journal of small business management	2	44	473
50	Zhao et al., 2010	Journal of management	3	356	1233
51	Crant, 1996	Journal of small business management	3	280	1025
52	Carr & Sequeira, 2007	Journal of business research	3	216	1503
53	Brandstätter, 2011	Personality and individual differences	3	179	597
54	Zellweger et al., 2011	Journal of business venturing	3	170	1106
55	Bosma et al., 2012	Journal of economic psychology	3	163	571
56	Lee et al., 2011	Journal of business venturing	3	159	592
57	Laspita et al., 2012	Journal of business venturing	3	100	738
58	Prodan & Drnovsek, 2010	Technovation	3	96	459
59	Obschonka et al., 2010	Journal of vocational behaviour	3	93	583
60	Goethner et al., 2012	Journal of economic psychology	3	82	571
61	Falck et al., 2012	Small business economics	3	75	310
62	Chen et al., 1998	Journal of business venturing	4	848	2801
63	Zhao et al., 2005	Journal of applied psychology	4	740	3399
64	McGee et al., 2009	Entrepreneurship theory and practice	4	298	1648
65	Shook et al., 2003	Journal of management	4	236	457
66	Hmieleski & Corbett, 2006	Journal of small business management	4	130	624
67	Kickul et al., 2009	Entrepreneurship theory and practice	4	125	604
68	Townsend et al., 2010	Journal of business venturing	4	112	356
69	Lee & Wong, 2004	Journal of business venturing	4	110	1002
70	Bullough et al., 2014	Entrepreneurship theory and practice	4	87	400

TABLE A2 (Continued)

	Articles	Journals	Cluster	Citations	Co-citations
71	Wilson et al., 2007	Entrepreneurship theory and practice	5	513	2581
72	Gupta et al., 2009	Entrepreneurship theory and practice	5	276	979
73	Shinnar et al., 2012	Entrepreneurship theory and practice	5	199	1293
74	BarNir et al., 2011	Journal of applied social psychology	5	120	927
75	Gupta et al., 2008	Journal of applied psychology	5	106	425
76	Díaz-García & Jiménez-Moreno, 2010	International entrepreneurship and management j.	5	104	878
77	Santos et al., 2016	Journal of small business management	5	47	410
	Total		N/5 cluster	14,822	82,076

TABLE A3 The unit of analysis for the research fronts—bibliographic coupling analysis.

	Articles	Journals	Cluster
1	Abebe & Alvarado, 2018	Journal of small business management	1
2	Antshel, 2018	Academy of management perspectives	1
3	Bacq & Alt, 2018	Journal of business venturing	1
4	Bacq et al., 2017	International small business journal-researching entrepreneurship	1
5	Biraglia & Kadile, 2017	Journal of small business management	1
6	Fuller et al., 2018	Personality and individual differences	1
7	Geenen et al., 2016	Personality and individual differences	1
8	Giacomin et al., 2016	International small business journal-researching entrepreneurship	1
9	Hmieleski & Lerner, 2016	Journal of small business management	1
10	Hockerts, 2017	Entrepreneurship theory and practice	1
11	Hsu, Wiklund, & Cotton, 2017	International small business journal-researching entrepreneurship	1
12	Hsu, Shinnar, et al., 2017	Entrepreneurship theory and practice	1
13	Jackson, 2018	Personality and individual differences	1
14	Johnson et al., 2018	Academy of management perspectives	1
15	Paul & Shrivatava, 2016	International business review	1
16	Arranz et al., 2017	Studies in higher education	2
17	Bonesso et al., 2018	Journal of small business management	2
18	Karimi et al., 2016	Journal of small business management	2
19	Loi et al., 2016	International small business journal-researching entrepreneurship	2
20	McNally et al., 2016	Entrepreneurship and regional development	2
21	Nabi et al., 2017	Academy of management learning & education	2
22	Nabi et al., 2018	Studies in higher education	2
23	Newbery et al., 2018	Information technology & people	2
24	Newbery et al., 2016	Journal of business research	2
25	Pfeifer et al., 2016	Journal of small business management	2
26	Shinnar et al., 2018	International small business journal-researching entrepreneurship	2
27	Thompson & Kwong, 2016	International small business journal	2
28	Turner & Gianiodis, 2018	Journal of small business management	2
29	Westhead & Solesvik, 2016	International small business journal-researching entrepreneurship	2
30	Beynon et al., 2018	Journal of business research	3

(Continues)

TABLE A3 (Continued)

	Articles	Journals	Cluster
31	Bönte et al., 2016	Entrepreneurship theory and practice	3
32	Cruz-ros et al., 2017	Psychology & marketing	3
33	Gielnik et al., 2018	Journal of applied psychology	3
34	Hack et al., 2016	Small business economics	3
35	Kushnirovich et al., 2018	European management review	3
36	Mergemeier et al., 2018	Entrepreneurship and regional development	3
37	Packard, 2017	Journal of business venturing	3
38	Roundy et al., 2018	Journal of business research	3
39	Schillo et al., 2016	Small business economics	3
40	Van Gelderen et al., 2018	Small business economics	3
41	Chou et al., 2017	Studies in higher education	4
42	Criaco et al., 2017	Small business economics	4
43	De Massis et al., 2016	Family business review	4
44	Falck et al., 2017	Journal of economic geography	4
45	Obschonka et al., 2017	Small business economics	4
46	Pittino et al., 2018	Family business review	4
47	Sieger & Minola, 2017	Journal of small business management	4
48	Wyrwich et al., 2016	Small business economics	4
49	Dheer & Lenartowicz, 2018	Entrepreneurship theory and practice	5
50	Liñán et al., 2016	International small business journal-researching entrepreneurship	5
51	Maresch et al., 2016	Technological forecasting and social change	5
52	Richter et al., 2016	Journal of international management	5
53	Roman & Maxim, 2017	Studies in higher education	5
54	Santos et al., 2016	Journal of small business management	5
55	Shirokova et al., 2018	Journal of small business management	5
56	Bergmann et al., 2018	Research policy	6
57	Bergmann et al., 2016	Small business economics	6
58	Fini & Toschi, 2016	International small business journal	6
59	Foo et al., 2016	Ieee transactions on engineering management	6
60	Huyghe et al., 2016	Journal of business venturing	6
61	Johnson et al., 2017	Journal of product innovation management	6