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# A Review of Research Methods in Entrepreneurship 1985-2013

## Structured Abstract:

**Purpose:** This study addresses the research questions: *Which methodologies and data gathering methods are employed by researchers publishing in top entrepreneurship journals, and how has this changed over time?*

**Design:** The data gathering methods of research published in five top entrepreneurship journals between 1985 and 2013, a period of nearly three decades, were recorded.

**Findings:** The data demonstrate that entrepreneurship research is dominated by positivist approaches and data gathering methods, but that this picture is changing over time. The data also reveal differences in methods used in research published in North American and European journals.

**Research implications:** It is argued that increased discussion of the limitations, benefits and implications of research methods is needed across the field as a whole. It is concluded that although there is some methodological reflexivity in the field of a macro, abstract nature, there is little at the micro level of individual research designs.

**Originality/value:** There is a number of existing reviews of methods in the field but none over such a long time period that include such a large corpus of papers. Of particular value to scholars engaged in debates about the proportions and merits of different research methods is the identification of long term trends away from primary data gathering in general and survey approaches in particular. Debates surrounding the existence of different regional 'schools' of entrepreneurship will be informed by the differing patterns of methods found in the five outlets included in the study.

## Introduction

Entrepreneurship has already established a tradition of reviewing itself as a field of inquiry. Since the early 1980s researchers have debated the state of development of entrepreneurship as a discipline (e.g. Low and MacMillan, 1988) and mapped out the topics of concern (e.g. Busenitz et al., 2003). This interest in the nature of the field is very appropriate for an expanding discipline. However, this study falls in line with a third group of enquiries: those that consider

*how* entrepreneurship is studied (e.g. Paulin *et al.*, 1982). The primary aim of this study is to ascertain which data gathering methods and methodological approaches have been used in the research published in top entrepreneurship journals. Thus the analysis provides a mapping over time of the different research methods that have been considered sufficiently robust to merit publication in top entrepreneurship journals.

There are several reviews of the entrepreneurship literature which concentrate on substantive issues (see for example, Bull and Willard, 1993; Cooper, 1998; Bruyat and Julien, 2000; Hisrich and Drnovsek, 2002; Busenitz *et al.*, 2003; Gartner *et al.*, 2006; Blackburn and Smallbone, 2008). These represent various strategies for describing or defining the field in terms of its content. In contrast, the concern of this study is research process. Some studies which seek to explicate process have focused their analysis on issues such as the ranking of journals (Romano and Ratnatunga, 1996), the impact of individuals and institutions (Shane, 1997), or regional groups (Hjorth, 2008), citation patterns (Gartner *et al.*, 2006), improvement of research quality (Sexton, 1987; Gartner, 1989; Smith *et al.*, 1989; Hofer and Bygrave, 1992) or the policy relevance of entrepreneurship research (Brockhaus, 1988) rather than methodological issues per se (Grégoire *et al.*, 2002; McElwee and Atherton, 2005). Although this study is concerned with a similar field of analysis, its aim is to contribute by focussing on the research designs implemented by entrepreneurship researchers and how these individual decisions build into a cumulative picture of the field. This is important because mapping methods indicates how the field is being shaped; whether questions about “what” or “how” have come to dominate entrepreneurial enquiry.

In the next section the extant literature that reviews the field of entrepreneurship in terms of methods and/or methodology will be examined in order to describe the specific contribution of this study. Following that the research design is discussed in some detail. This is followed by an analysis of the data gathering methods and methodologies used by researchers published in top journals which are dedicated to entrepreneurship. Finally, the implications of this accumulation of research decisions for the current and future shape of the field are discussed.

### *Previous methodological reviews*

As early as 1982, Paulin *et al.* set a precedent for examining entrepreneurship research methodologically. They examined a sample of 81 journal articles and conference papers and recorded a range of research decisions, such as research purpose, research strategy, and data collection and analysis techniques. This line of inquiry was taken up by Churchill and Lewis (1986). These studies were as concerned with the topics researched as they were with the methods used. Later, Aldrich (1991; Aldrich and Baker, 1997) formalised and replicated this work in order to ask questions about the methodological norms within the field.

Perhaps the most famous study of research methods in entrepreneurship is the one undertaken by Low and MacMillan (1988). They examined the research decisions made by researchers in the US entrepreneurship literature. They do not indicate the scope of their study, either in terms of time or journals, but rather present their work in the form of a literature review. In the same period Bygrave (1989) published his seminal critique of the methodological and theoretical underpinnings of entrepreneurship scholarship. These two critical reviews of the field set the scene for a number of more comprehensive and systematic empirical studies of entrepreneurship research. Grégoire *et al.* (2002) attempted to characterize the field of entrepreneurship in terms of a number of research design elements such as dependent variables, levels of analysis, data collection methods and analysis methods and found an increasing reliance on firm-level analyses fuelled by archival datasets, regression-based analysis techniques and a focus on performance. Kyrö and Kansikas (2005) also made a methodological survey of the field. They uncovered a dominance of statistical methods of analysis in their survey of 337 articles from entrepreneurship and management journals in 1999-2000. Chandler and Lyon (2001) reviewed and evaluated the methods used in 416 articles published in nine 'influential' management journals in the period 1989-1999 to determine whether the mix of methods employed were apposite for the development of the field. Interestingly, their study focussed more on indicators of research quality with an emphasis on the deployment of statistical techniques rather than methodology *per se*. Although they uncovered more sophisticated analysis techniques and more evidence of good research practice since earlier reviews (Wortman, 1987; Low and MacMillan, 1988), they still found the field lacking in terms of its treatment of reliability and validity and its use of longitudinal data.

Methods have also been used as one means of characterizing sub-sets of the entrepreneurship literature. McElwee and Atherton (2005) for example, examined the methodological trends in the 70 articles that had been published in the *International Journal of Entrepreneurship and Innovation* to consider the extent to which their espoused editorial policy had been realised. Brush (1992) examined the methodologies used by 57 papers on women's entrepreneurship as part of a more general review aimed at generating questions for future research. Coviello and Jones (2004) reviewed 55 articles on international entrepreneurship published between 1988 and 2002 to look at a wide range of methodological issues. Romano and Ratnatunga (1995) examined 42 articles pertaining to marketing in small business research from six journals between 1986 and 1992. Although the determination of methodologies is not the primary focus of their article, the study uses Churchill and Lewis' (1986) seven classes of methodology to classify articles with the aim of identifying the ways in which marketing issues were being addressed within small enterprises. Jack (2010) has surveyed the methods used to study entrepreneurial networks and identified issues that have been left untackled by a reliance on quantitative methods.

Some writers have confined themselves to looking at more specific methodological issues. For example, Davidsson and Wiklund (2001) examined articles in *Entrepreneurship, Theory and Practice*, *Journal of Business Venturing and Entrepreneurship* and *Regional Development* in 1988 and 1998 in terms of their levels of analysis. At a deeper philosophical level, Grant and Perren (2002) use Burrell and Morgan's paradigmatic taxonomy to categorise a sample of 36 articles published in 2000 in six key journals. These data were used to build a meta-theoretical analysis of contemporary entrepreneurship research.

More recently, a trend for employing sophisticated bibliometric techniques to survey the entrepreneurship literature can be observed (see Gartner *et al.*, 2006 for an introduction to a special issue of *Entrepreneurship, Theory and Practice* on this topic). One of the first studies of this kind in entrepreneurship is by Déry and Toulouse (1996) who employed co-citation analysis to study the 237 articles in *Journal of Business Venturing* between 1986 and 1993. The systematic nature of these techniques has been welcomed by some commentators who feel that they provide a strong basis for making claims about the field. For example, Grégoire *et al.* (2006: 339) note that co-citation analysis, "has many advantages over other epistemological approaches.

First, it is inherently empirical. In this light, the results it offers are fully replicable, and are not mired by the kind of idiosyncratic biases that may plague conceptual syntheses and other literature reviews...”. However, these bibliometric reviews are aimed at mapping out themes within the field and their techniques are not easily deployed in the investigation of methodological patterns.

For many of these studies their common purpose is to show the different ways in which questions about entrepreneurship are being addressed. Some have made recommendations about how the future should look, based on their surveys of the past (e.g. Aldrich and Baker, 1997). Others have made assessments about the maturity (or otherwise) of the field (e.g. Low and MacMillan, 1988) and still others have used their data in order to make calls for specific kinds of research, such as ethnographic (Borch and Arthur, 1995; Hill and McGowan, 1999; Dana and Dana, 2005; de Bruin *et al.*, 2007) or longitudinal (Bygrave, 1989; Hofer and Bygrave, 1992; Hill and McGowan, 1999; Chandler and Lyon, 2001) or more sophisticated techniques of analysis (Wortman, 1987, Chandler and Lyon, 2001) or higher research quality (Chandler and Lyon, 2001). Some studies have set out to identify areas not already tackled by the extant literature or in need of development (Wortman, 1987; Brush, 1992).

Whatever their methods or purpose, the outcome of these studies is unequivocal: quantitative techniques are predominant (e.g. Churchill and Lewis, 1986; Roessl, 1990; Aldrich, 1991; Landström and Huse, 1996; Brush *et al.*, 2008; Jack 2010). Kyrö and Kansikas (2005) state that despite all the published reviews and unpublished conversations about the relationships between entrepreneurship and methods, little has actually changed; moreover the issues about the appropriateness of particular methods continue to be unresolved. Further, much of the debate is based on opinion or limited evidence and it is contended here that a major survey of what is in print in top journals over a significant period provides concrete evidence for this debate. This study supplies systematic, longitudinal empirical evidence to explore the primary research questions:

*Which methodologies and data gathering methods are employed by researchers publishing in top entrepreneurship journals, and how has this changed over time?*

## Research Design

### *Sample*

It was not possible to sample every piece of published material in the Entrepreneurship field. Below, the sampling decisions made and the reasons behind them are detailed with the aim of demonstrating that these decisions were taken with great care and consideration for their effect on the ability of the research design to deliver meaningful answers to the research question identified above. Given that all research involves some trade-offs, the following sections describe the decisions made about the time frame and the number and type of outlets to define the final sample of articles for examination. This study incorporates a number of the features of the previous studies discussed above but is distinct in several important ways.

Table 1 illustrates the tradeoffs made by other studies of the field and how these decisions compare to the ones made for this study. Each row represents one of the research design decisions that the research team has made (e.g. timeframe, number of outlets). Those studies with the same research design are listed in the left hand column of the table, whilst studies that have made different choices are listed on the right. The purpose of the table is to illustrate that this study takes a more comprehensive approach to the review of methods than previous work. For example, studies with consensus samples tend to have employed restricted searches (e.g. Covellio and Jones, 2004), or adopted shorter timescales (e.g. Déry and Toulouse, 1996). In the same vein, studies with longer timescales have utilised less comprehensive sampling techniques (Watkins, 1994; 1995). All these approaches have resulted in smaller sample sizes. The only exception to this is Aldrich and Baker's (1997) study which utilises a 15 year time span that has been achieved by incorporating the results of previous studies (Paulin *et al.*, 1982; Churchill and Lewis, 1986; Aldrich, 1991). Clearly tackling this topic comprehensively presents problems, so the section that follows now turns to a discussion how these issues were addressed here.

*Insert Table 1 Here*



### *Time frame*

A number of studies used quite limited timescales to define their sample articles. For example, McElwee and Atherton (2005) selected a five year timeframe, whilst Chandler and Lyon's (2001) study examines a decade of entrepreneurship articles. Coviello and Jones (2004) favoured a longer study which spanned 15 years, albeit in a much more restricted subset of entrepreneurship scholarship. However, because this study aims to examine trends over time, the first decision was to take a long term view and therefore present an analysis of methods used over a 29 year period. The decision to use a long time span had a knock on effect on the number and type of outlets that could be included in the study (see discussion in next section). Nonetheless, the authors strongly believe that in research of this kind, seeking to characterise the methodological development of a field, it is important to take a long term view to see trends in the methods used over time (Stokes and Miller, 1985; Vijayalakshmi *et al.*, 1996). The extended time period avoids mistaking change resulting from any stochastic variation, such as special issues or editors with a methodological agenda, for genuine trends.

For this study, the period from 1985 to 2013 was selected. As Romano and Ratnatunga (1996: 10) note, "any approach to selecting cut-off points is inherently arbitrary" (see also Shane, 1997). However, this particular 29 year time period is appropriate to entrepreneurship as it represents a period of maturity for the field (Déry and Toulouse, 1996; Cooper, 1998; Bruyat and Julien, 2000; Grant and Perren, 2002), development for the associated journals (Fried, 2003), and attention from mainstream management academics (Shane, 1997; Landström and Huse, 1987). Further, the 1985 starting point is in line with other studies of the field (Grégoire *et al.*, 2002; Busenitz *et al.*, 2003).

### *Outlets*

In terms of sampling strategy, it was decided that any of the reductive techniques, such as sampling from a population (in Entrepreneurship cf.: Paulin *et al.*, 1982, in other disciplines cf.: Vijayalakshmi *et al.*, 1996; Swygart-Hobaugh, 2004) would limit the usefulness of the sample. A selective sample (for example reviewing a proportion of the articles in a journal each year, or

only reviewing every other year in the time period) would reduce the numbers of papers per journal per year and also the instances of each method per journal and/or per year in the sample, making our inferences more vulnerable to, for example, the skew produced by a special issue. Equally, it was felt important to provide a longitudinal view of the field with a continuous rather than cross-sectional sample (e.g. Watkins, 1994; Watkins, 1995; Davidsson and Wiklund, 2001) to look at whether research methods are changing over time. There was a wish to move away from the less systematic nature of defining a field through literature review (e.g. Low and MacMillan, 1988). Having decided to use a consensus sample, the authors faced the question of whether to define the population in terms of outlets (e.g. specific journals) or searches (e.g. using keywords in a database). Although using searches has been popular in the past, more recent studies have favoured defining specific outlets to study (see Table 1) and this research follows that tradition.

A number of studies survey the methods used in conference proceedings, either on their own (Watkins, 1994; Watkins, 1995; Ritchie and Lam, 2006), or along with journal articles (e.g. Churchill and Lewis, 1986; Wortman, 1986; Wortman, 1987; Low and MacMillan, 1988; Brush, 1992). Conference papers offer the advantage of being in print very quickly compared with journal articles (Ritchie and Lam, 2006), but over a 29 year time period, this is not an issue. Further, conference proceedings are not all as widely accessible (Covellio and Jones, 2004), widely disseminated (Wortman, 1987), or as closely reviewed as journal articles. Published books of conference proceedings have been particularly important within European Entrepreneurship research in the past (Watkins, 1994; Watkins, 1995; Veciana, 1993; Anderssen, 1994; Landström and Huse, 1996). Nonetheless, many of the debates are moving into the journals, with, for example, special issues of top journals dedicated to European research (Welter and Lasch, 2008). Studies by Watkins (1995) and Déry and Toulouse (1996) have shown that the use of journal articles in entrepreneurship citations is rising and, as a result, entrepreneurship journals are an increasingly important means of disseminating research in the field (Romano and Ratnatunga, 1996).

Further, due to the peer review system, material published in journals tends to be held in the greatest esteem by other researchers (Grant and Perren, 2002; Katz, 2003; Perren et al., 2001) and funding bodies (HEFCE, 2000). Van Doren and Heit (1973: 67) state that “academic

journals mirror the direction of a discipline's research". Furthermore, citations from journals "occupy a special place... [which is] proof of the importance accorded to periodicals as a central authority ...in the field" (Déry and Toulouse, 1996: 293). The 'top' entrepreneurship journals have been shown to have had a significant influence on the field (Ratnatunga and Romano, 1997). Pragmatically, electronic access to journal articles through bibliographic databases has both increased their influence on the field (Watkins, 1995; Romano and Ratnatunga, 1997) and facilitated their study. Journals' regular and long term publication also provides longitudinal data that suit a study concerned with illustrating trends. Taking all of these factors into account, selected peer reviewed journals were selected as the most appropriate population of academic work to survey.

Having identified peer reviewed journals as the target population, decisions were made about which journals to include. As Table 1 shows, two main strategies have been employed in the entrepreneurship literature. Some studies surveyed only literature published in entrepreneurship journals (e.g. Davidsson and Wiklund, 2001; de Bruin *et al.*, 2007; Brush *et al.*, 2008; Mullen *et al.*, 2009), whilst others have defined their samples through searches which identify material relevant to entrepreneurship, no matter where it is published (e.g. Brush, 1992; Covellio and McAuley, 1999; Chandler and Lyon, 2001; Kyrö and Kansikas, 2005). It is argued here that Entrepreneurship journals offer a natural population to sample because the work presented in these outlets has already been identified as relevant to the field by the authors, editors and reviewers. Furthermore, given the scope of entrepreneurship; the process of drawing subjective boundaries around work which is, or is not, entrepreneurship could be an inexact process.

This review is necessarily limited by the number of journals that could be examined in such detail. Long running and well respected journals were chosen which are international and foster high quality work through a system of double blind peer reviewing (Katz, 1991; Harzing, 2005). To identify the 'best' entrepreneurship research, five journals were selected which are widely recognised as top journals in the field, both in the subjective sense that they are identified as such by commentators in the field (Landström and Huse, 1996; Ratnatunga and Romano, 1997; Chandler and Lyon, 2001; Davidsson and Wiklund, 2001; Grant and Perren, 2002; Hisrich and Drnovsek, 2002; Fried, 2003; Mullen *et al.*, 2009; Rosa, 2013), and in the more objective sense that they have the top impact factors (Thompson Reuters, 2012) (see Table 2). In order to

provide balance, top journals from both the US and Europe have been selected. Landström and Huse (1996) defined the geographical genesis of journals through a consideration of the affiliations of their reviewers, and their conventions have been adopted here. Each journal has been associated with whichever region was associated with the majority of that journal's current editors and review board (calculations correct as of January 2014). The journals included in this study are shown in Table 2:

*Insert Table 2 Here*

This sampling strategy allowed the study to maintain a long term view and still obtain a manageable, but meaningful, number of articles (3749) to survey. It combines many of the advantages of the sampling strategies of bibliometric studies with a focus on methodological issues rather than citation patterns. As a result, this study offers the most comprehensive survey of research methods in entrepreneurship journals to date. This provides a large and concrete dataset to underpin the ongoing debate about which methods are employed by entrepreneurship researchers.

### *Method*

For each of these journals, every article from 1985 to 2013 was examined and all the methods used were noted. In accordance with the purpose of demonstrating the methodological practices within the entrepreneurship field, work which does not contain empirical material was not examined. Articles which have no empirical content have been coded as conceptual papers. These tend to be either theoretical pieces, literature reviews or a combination of both, depending on the nature of their contribution. Editorials, informal commentaries, book reviews and other such material have not been included in the study so that the dataset contained only material which was peer reviewed and not invited by editors (Busenitz et al., 2003; Grégoire *et al.*, 2002; Shane, 1997). For every article standard citation information (author(s), date, article title, journal title, volume, issue and page numbers), and method codes have been recorded. Method codes were only applied to parts of the study which were actually presented in that paper. This means, for example, that if an author presents a survey but mentions that some of the questions were pre-

tested using a focus group, a method code will only be entered for focus groups where the data from that stage of the research are presented or discussed directly. Otherwise, focus groups would be recorded as a preliminary method but not included in the analysis presented here. The method codes were generated inductively from the review process rather than fixed in advance (Hill and Wright, 2001). The accuracy of coding was checked by having a sample of articles from each journal coded independently by two members of the research team. Each coder noted the methods for each paper. Due in part to the mostly unambiguous nature of the data involved, inter-rater reliability was very high (greater than 90%). These data were then entered into a large Excel spreadsheet. This body of data was examined using filtering, sorting and searching techniques offered by Excel as well as descriptive statistics.

In all, 3749 articles were assessed. For each article in the database every data gathering method used in the study was recorded. Note that the unit of analysis is the data gathering method rather than the article. This allowed the inclusion of all the methods being employed by researchers publishing in the sample without having to make value judgements about which methods constitute the 'main' method for any given study.

Primary and secondary methods were treated separately. Primary methods are those used by researchers to generate data directly from the field, whereas secondary methods are those that use data collected by others, such as published research results or financial databases. This distinction has been made here partly because the study is interested in how new data are being generated in entrepreneurship (Aldrich, 1991). It is also because it was found that secondary methods are almost exclusively quantitative in nature and have no qualitative equivalent. Thus secondary methods were treated as a different research approach rather than included as a method to avoid distorting the picture of how data are generated. This also avoids the problem of double counting some quantitative material; once when it is generated, and again when it is 'mined' by secondary researchers.

## Findings

When the articles were reviewed, 714 (19%) were found to have no empirical content as they were either in the form of a literature review or were purely theoretical, a similar proportion to other studies of the field using less comprehensive sampling frames (e.g. Ritchie and Lam, 2006). A further 931 (25%) of the methods employed were secondary research techniques which relied on published or other publicly available data, such as financial databases. This figure is somewhat higher than Aldrich's finding that 17% of studies published in journals between 1985 and 1990 were based on 'surveys of public data' (Churchill and Lewis, 1986). The remaining articles contained methods for collecting data for the express purpose of that study and could therefore be classed as primary research. Figure 1 shows the trends in these categories over time.

*Insert Figure 1 Here*

As can be seen in Figure 1, the proportion of secondary research has remained relatively stable over the period of the study, but there has been a slight decrease in the proportion of papers containing primary data since the 1980s. During the 29 years of entrepreneurship research reviewed, the decrease in the proportion of primary empirical work is matched with a corresponding rise in conceptual papers. This is in line with the rise in archival data driven studies found by Grégoire *et al.* (2002) in entrepreneurship research published in the mainstream management journals.

In the following section this primary empirical work is examined more closely, breaking it down both by method and by methodology to address the primary research questions:

### **Which methods and methodologies are employed by entrepreneurship researchers, and how has this changed over time?**

Table 3 summarises the primary data collection methods used over the 29 years surveyed. In total, in the 3749 articles in the consensus sample, 3169 primary methods were found. The code for 'survey' was used for a data gathering method if the data were collected by questionnaires and were predominantly numerical or translated into numerical form and analysed using statistical, or other quantitative, techniques. By contrast, an interview was defined as a method

that employs an interview protocol designed to secure narrative data which are analysed using qualitative techniques. In this way the coding has distinguished between face to face (quantitative) surveys and interviews (qualitative) regardless of the terminology employed by the original researchers.

*Insert Table 3 Here*

It is clear from the percentages presented in Table 3 that entrepreneurship research is dominated by the survey method. This is in line with both studies that have surveyed entrepreneurship as a field using either shorter time frames or different sampling strategies (Churchill and Lewis, 1986; Roessl, 1990; Aldrich, 1991; Landström and Huse, 1996; Aldrich and Baker, 1997; Chandler and Lyon, 2001; Mullen *et al.*, 2009) as well as those who have studied subsets of the field (Brush 1992; Covellio and McAuley, 1999) and other subsets of management research (Bryman, 2011; Lee and Cassell, 2013).

The ways in which these surveys are administered has changed over time. In the first year of the sample, 1985, 75% of surveys were mailed to respondents with the remaining 25% being surveyed via the telephone. By 1993 postal questionnaires had become ubiquitous with over 90% of surveys being administered through the mail. Ten years later in 2003 we see the first real use of the internet to administer questionnaires through email and social media (10%) and a rise in telephone surveys to 24%, with a corresponding reduction in mailed surveys (53%). In the final year of the sample, 2013 the picture has changed again with a much larger proportion of surveys being administered face to face (40%) and via the internet (22%) and only 24% being mailed to participants.

The pre-eminence of the questionnaire is a trend that is echoed in other social sciences (Riddick *et al.*, 1984; Stokes and Miller, 1985; Powell, 1999). In fact, not only is the survey method ubiquitous in this field, but it was also found that it is largely unquestioned in the entrepreneurship literature (e.g. Wortman, 1987). Moreover, some authors who use surveys do not even state whether they use mail or face-to-face research designs. In some cases it was deduced that surveys were mailed from the very large sample sizes used. On the whole, there is very little discussion of research design. This problem is not one which is confined to

entrepreneurship (Ball and Foster, 1983; Riddick *et al.*, 1984; Stokes and Miller, 1985). It is not unusual for writers to simply state that they used ‘survey methods’ without saying, for example, whether surveys were mailed to named recipients, whether recipients were telephoned in advance, whether any incentives were offered, whether reminder letters, phone calls or emails were used. The review of literature also found little critique of surveys in this body of research amongst the researchers who employ them. Few authors examined the advantages and limitations of their own surveys as a research method, or made any attempt to justify their design choices. Surveys, and mailed surveys in particular, seem to have become so de rigueur in entrepreneurship research circles that they are used without comment or evaluation.

Although the numbers of surveys published has remained relatively stable over the sample period, the number of papers published has risen steadily (from 84 in 1985 to 102 in 2005 to 220 in 2013) and the number of surveys therefore represents less and less of a proportion of the primary methods employed over time. The other methods common in entrepreneurship research are case studies and interviews. These qualitative methods have had a much smaller impact in the field, but as Figure 2 shows, the proportion of interviews used has increased slowly over the 29 years examined. Given that the proportion of primary methods as a whole is dropping over time (Figure 1) and that the number of papers per year is rising, these figures represent a real shift towards qualitative data collection. The proportion of case studies has remained relatively stable over the period. There are no other data gathering methods used in entrepreneurship research to any noteworthy extent. It is interesting to note that only 9.7% of the papers in this sample reported more than one primary method.

*Insert Figure 2 Here*

Rather than treating methods and methodologies as synonyms (Kryö and Kansikas, 2005) this study distinguishes between methodology (e.g. qualitative, quantitative approaches), data-gathering methods (e.g. interview or survey instruments) and data analysis techniques (e.g. grounded theory, descriptive statistics, regression analysis). However, as the vast majority of the studies included in this survey do not discuss their methodological approach explicitly, it has been deduced from the data gathering method employed. Although there will not be a perfect correlation between method and methodology, it is contended that, in most instances, this is a



reasonable assumption. Case studies have been treated separately here as they are a research strategy rather than a method (Eisenhardt, 1989) and cannot be assumed to be either qualitative or quantitative. In fact, many deployed mixed methods.

Overall these data show that entrepreneurship research reported in these top international journals is predominantly quantitative (1743 (55%) on aggregate). If you add in the quantitative methods used for secondary data gathering that were found in papers which also reported primary data (410 (11% of methods)) and the large proportion of papers which contained *only* quantitative secondary data analysis (931 (25% of all the papers in the sample)) then a picture emerges of a field dominated by quantitative enquiry. This finding is in line with what others have suspected (Gartner and Birley, 2002) or reported on a smaller scale (Chandler and Lyon, 2001; Grégoire *et al.*, 2002; Coviello and Jones, 2004). However, this picture is beginning to change. Figure 3 shows that although the proportion of primary methods is falling overall, qualitative methods and case study approaches are falling less sharply than quantitative primary methods. It is interesting to note that the further back in time one looks, the more quantitative the field. This is perhaps a paradoxical situation where explanatory methods have been most popular when the field was most emergent.

*Insert Figure 3 Here*

To move to the question of whether specific journals favour different methodological approaches, a further analysis of the methods employed in the various journals was undertaken. Figure 4 shows a breakdown of all the methods used by journal.

*Insert Figure 4 Here*

As can be seen from this breakdown, although surveys are the most commonly used method by authors published in every journal, this does vary considerably, from about a third for Entrepreneurship and Regional Development at one end of the spectrum, to about two thirds for Journal of Business Venturing at the other. The dominance of quantitative methods is less dramatic within the European journals which show signs of greater heterogeneity of method (Landström and Huse, 1996; Blackburn and Smallbone, 2008; Rosa, 2013). There is considerable proof that positivist approaches dominate entrepreneurship research, particularly within the

North American community (Aldrich, 2000). However there are new voices gathering strength in some regions and some journals which promote a multiplicity of methods (Ritchie and Lam, 2006; Blackburn and Smallbone, 2008; Down, 2010). This evidence lends further support to the argument that there are multiple communities within entrepreneurship and further suggests that each has their own research norms and trends (Gartner, 2008; Hjorth, Jones and Gartner, 2008; see Davidsson, 2013 for an alternative view).

In summary, in terms of the primary research questions it has been found that Entrepreneurship research which is reported in top journals is most likely to make use of survey techniques to gather data, implying a positivist underpinning. However, an analysis of data collection methods over time shows that this picture has been changing gradually. Overall, the proportion of articles containing primary data is falling, with a corresponding rise in conceptual papers. Within this decreasing proportion however the amount of studies reporting data from studies based on interviewing, continues to grow year on year. Surveys, on the other hand, and quantitative primary methods more generally are used by a decreasing proportion of the papers published in these five top journals. Further analysis of the five outlets included in the study demonstrates different patterns of methods in evidence.

## **Discussion**

These findings address a number of issues which are pertinent to the development of contemporary entrepreneurship research. This section will address debates surrounding paradigms and convergence in entrepreneurship research, the extent to which entrepreneurship-specific methods are appropriate for the development of the field and, finally, issues relating to research design quality.

### *Paradigm(s) and Convergence in Entrepreneurship research*

These aggregate data show a field which until recently has been dominated by survey methods. The findings presented here have considerable resonance with earlier work that found entrepreneurship research to be a 'mono-method field' (Aldrich, 1991), dependent on mailed surveys and other questionnaire-based techniques (cf.:Chandler and Lyon, 2001; Grant and Perren, 2002; Coviello and Jones, 2004). It is not the intention here to raise issues with the survey method itself, but to point to the normative effect that this partiality has on entrepreneurship researchers and the ways they choose to approach their research.

Commentators have discussed the notion of 'paradigm' in relation to entrepreneurship research (for a full discussion of the concept of a paradigm, see Kryö and Kansikas, 2005). This term has specific connotations in different fields of social science research, but generally hails from the work of Kuhn (1970). Within this study, a more generalised view of this term will be taken, defining paradigm in Gummesson's (1999: 18) terms as, a world view representing "people's value judgments, norms, standards, frames of reference, perspectives, ideologies, myths, theories, and approved procedures that govern their thinking and action".

Within the field of entrepreneurship, Aldrich and Baker (1997: 377) offer a framework which outlines different kinds of paradigm that are possible within a field of enquiry. They propose three possible paradigm types: a unitary, normal science view (not to be confused with Kuhn's notion of 'normal science' which he uses as an alternative phrase to mean 'paradigm'[1]); a multiple perspective view; and a totally pragmatic view. In the normal science view the ideal is the accumulation of empirically tested hypotheses, developed through incremental research designs, quantitative data and statistical techniques. This view requires strong theories, so that investigators can test hypotheses to replicate or refute previous findings. In contrast, Aldrich and Baker (1997) describe the multiple perspective view as welcoming diversity in theory and methods. Rather than convergence in method, each sub-field would have different principles, frameworks and even outlets for their work. In the pragmatic view, research is directed to end users, such as practitioners or policy makers.

Both Aldrich and Baker (1997) and Landström (2008) have discussed these different perspectives of research endeavour and how they might be applied to Entrepreneurship research. In terms of the methods used within this field, the aggregate data presented here (See Table 3) give clear evidence of the domination of positivism generally, and surveys in particular, suggesting that a normal science paradigm prevails. However, Figure 2 shows that in the 21<sup>st</sup> century this picture is changing. The converging proportions of quantitative and qualitative methods being used in the field (Perren and Ram, 2004) suggest that the primacy of quantitative methods may be breaking down and giving way to a more plural research tradition, more in line with a multiple perspective paradigm. In their review of the field more than a decade ago, Aldrich and Baker (1997: 398) did not feel that there was ‘evidence for multiple coherent points of view’. However these data suggest that qualitative methods are becoming more accepted. Further, this analysis of the data gathering methods privileged by different journals within entrepreneurship research provides strong evidence for the existence of distinct communities with differing approaches to knowing which, in Hill and McGowan’s (1999: 8) terms “governs their thinking and action” (For example, Figure 4 presents evidence, at least methodologically, of Gartner’s (2001) informal homogenous communities).

This move towards a more plural tradition of data gathering, and the growth in qualitative approaches to entrepreneurship problems more specifically, is welcomed by many (Bygrave, 1989; Hofer and Bygrave, 1992; Landström and Huse, 1997; Covellio and McAuley, 1999; Sarasvathy, 1999; Bruyat and Julien, 2000; Davidsson and Wiklund, 2001; Gartner, 2001; Hill and Wright, 2001; Fuller, 2002; Gartner and Birley, 2002; Cope, 2003; Coviello and Jones, 2004; Dana and Dana, 2005), though by no means all (e.g. Guth, 1995). Every method has its own strengths and limitations (Smith et al., 1989): it is in a sense a way of looking at the world. Any field which favours a single approach to data collection is privileging one empirical perspective to the point where the limitations of that method become the limitations of a whole field of enquiry. In a critique of the field of rural sociology, Stokes and Miller (1985: 543) state,

‘Concern must be expressed over the almost total adoption of a single data-gathering procedure. [...] Fundamental issues that can be raised in this connection include the types of research problems or questions that are or can be addressed, the units of analysis that are employed, the levels of abstraction or generality that can be attained, and the likely policy impacts of the

research. In short, a series of meta-theoretical assumptions [...] are implicit in any methodology [...]. When one procedure dominates work [...] such assumptions, paradigms and theoretical perspectives deserve close scrutiny’.

### *Entrepreneurship-specific methods*

In the debate over which methods are most appropriate for the study of entrepreneurship, as well as the advocates of qualitative and/or quantitative approaches, there has been the suggestion that entrepreneurship as a field ought to develop its own, distinctive methods. Bygrave (1989), for example, argues for the need for a distinct methodology due to the unique nature of entrepreneurship as a problem for study. Likewise, Hill and Wright (2001: 441) state that, “new, innovative methodologies must be developed, or at the very least, existing approaches and models must be substantially tailored for this unique research context”. Whilst it is agreed that methodological development is needed in order to advance the field, the authors of this study would not concur that entrepreneurship-specific methods are necessary, or even possible. Instead, what is needed is methodological openness (Aldrich, 2000; Huse and Landström, 1997; Welter and Lasch, 2008) and pragmatism (Collin *et al.*, 1996) in terms of matching research designs to specific entrepreneurship problems and specific research questions (Anderson and Starnawska, 2008). Rather than an increase in the sophistication of statistical techniques (Wortman, 1987) or entrepreneurship-specific approaches (Bygrave, 1989), it is felt that this could best be achieved through more imaginative borrowing of methods from other fields (Sexton, 1987; Kryö and Kansikas, 2005).

### *Quality in Entrepreneurship research*

However, far more important than the discussion of *which* methods are utilised in entrepreneurship research is the question of *how* these are deployed and reported. Rather than debating whether or not there is, or even whether there should be, a normal science paradigm, and the attendant convergence that entails, it is of paramount importance to increase discussion

about research design and methodological approach to a point where a critical and open debate about the usefulness of particular approaches for solving particular problems can be supported. In other words, an informed, critical, rigorous and active methodological debate is advocated for the development of the entrepreneurship research field. Interestingly although, as the review of the literature shows, there is a substantial amount of debate in the field about which methods and methodologies should be used to advance entrepreneurship as a discipline, there is little evidence of this practice at the level of individual studies.

Despite the fact that this research centres on top journals in the field, only a fraction of the studies that were reviewed discussed their approaches in methodological terms. This is consistent with the study undertaken by Kryö and Kansikas (2005). Fletcher (1997) underlines the fact that the choice of methodology reflects a particular epistemological stance, rather than the mere application of data collection technique. This is important because, “the procedures and techniques we use to study social phenomena influence the substantive questions we ask, the information we obtain, and the answers we are willing to accept” (Stokes and Miller, 1985: 546). Pittaway (2003) and Ogbor (2000) note that entrepreneurship research often fails to recognise the implications of the underlying philosophy. Grant and Perrin (2002: 201) call for more discussion of epistemological issues in entrepreneurship research so that each study starts from, ‘a thoughtfully articulated philosophical position’. Gartner, (2001: 28) in discussing the plurality of entrepreneurship theory, argues that there is a need to recognise the very significant differences in the beliefs that are held about entrepreneurship. Sarasvathy (2004) makes the very salient point that the questions that are asked often prevent other questions being raised. Without reflection on these issues, entrepreneurship cannot move forward into new areas of enquiry.

Some studies engage with this debate at the level of method (see for example, Mullen *et al.*, 2009; Crook *et al.*, 2010), rather than methodology, but there are countless examples of articles who do not even fully articulate their methods, and many where no justification of their selected research design is offered. This echoes the findings of Brush *et al.* (2008) who found that more than 11% of US empirical studies in their study did not state the method used. Few authors in this sample engaged in reflexivity or critiqued the methods employed or discussed their data in the light of the limitations of their approaches. This is a serious problem for the field as a whole

that may have its roots in the strong research norms that have been prevalent in the past and that are still to be found in some regions.

What seems to be required to address this problem is an increase in methodological rigour (Brush, 1992); not in the sense of a drive towards ever more complex techniques, but in terms of establishing a more critical and transparent tradition of debate at the level of method as well as methodology. Coupled with a robust heterogeneity of method, increased examination of methods and the role that they play in shaping individual enquiries and ultimately, the shape of the field, this will allow entrepreneurship to address a rich variety of problems and promote empirical and methodological triangulation (Denzin and Lincoln, 1994; Jick, 1979).

#### *Implications for practice and policy*

The dominance of quantitative methods means that entrepreneurship scholars have concentrated on research questions which can be answered using quantitative data. As a result, more is known about, for example, the who, where, what, when, how big, how long, how many and how much of entrepreneurship than the how and why. This will necessarily affect the data with which practitioners and policy makers can work. However valuable this view of entrepreneurship is, it is a limited picture. A plurality of methods has the benefit for practice and policy stakeholders that it can provide a more complex, multifaceted picture of entrepreneurship. In particular, the growth of qualitative methods can inform practice and policy related to the social norms, practices and contexts of entrepreneurship. This richness of understanding of these phenomena will benefit practitioners and policy makers in the same way that it will benefit the entrepreneurship scholars themselves: by providing a deeper understanding. However a plural approach to studying entrepreneurship may not be welcomed by all. Researchers within other disciplines have argued that policy makers are more comfortable with the process of, and evidence from, quantitative research (Finch, 1986; Mercier, Garasky and Shelley, 2000). This may provide further challenges for qualitative researchers in presenting their research to those outside academe.

### *Implications for Entrepreneurship Research*

The data presented here show that the use of deductive methods is decreasing over time, although they still dominate. On the one hand, this is counter-intuitive because it could be argued that theory testing approaches might be more appropriate when a field is more rather than less developed and yet the data demonstrate the proportion of surveys dropping off as the field develops. On the other hand, the data also show that papers presenting data from interviews are on the increase, suggesting more variety of methods, which would seem to signify a maturing of the field to encompass more than one methodological tradition. It could also be argued that this maturity reflects a deepening understanding of the capacity and complexity of the phenomenon itself (Korsgaard and Anderson (2011)). What is clear is that this plurality will be a more appropriate approach to understanding such a complex and multifaceted phenomenon than any single research convention could ever be.

There is also a general rise in the number of conceptual papers and a drop in the proportion of papers reporting primary data. Again, this could be interpreted as a maturing of the field (more conceptual development building on the empirical efforts of the past three decades) or as a distancing of the researchers from the field (a movement away from researching practices to debating theory) or even as evidence of a degree of introspection of the field (given the evidence of how many papers have begun to consider the nature of the field of entrepreneurship research (see Table 1, for example), rather than entrepreneurship itself). In practical terms, it could simply reflect the increasing difficulty of securing funding for primary research. Or it could be that the kinds of research favoured by these five top journals is changing. Whatever the reason for this gradual decline in primary research, it suggests a disconnect with entrepreneurship practices which may facilitate individual research careers but will not necessarily stand the field in good stead collectively over the longer term.

### **Conclusions**

These data show that there has been a prevailing quantitative methodological bias in entrepreneurship research. This raises some interesting issues about the nature of the knowledge



about the complex phenomenon of entrepreneurship. The evidence presented here shows that the frequency and pervasiveness of quantitative methods and methodology in the last century does demonstrate that entrepreneurship research has been treated in the past as if it were a normal science (Aldrich and Baker, 1997; Landström, 2008). However it is suggested that this has given rise to a situation where the presence of strong methodological norms has lessened the need to discuss and defend individual research design decisions.

Entrepreneurship researchers need to be transparent in their reasoning and explicit in their rationale for the use of whatever methods and methodologies they employ. Entrepreneurship researchers must increase their methodological awareness (Ball and Foster, 1983) and their willingness to explain and justify their research designs. The lack of explicit treatment of issues of method and methodology in the entrepreneurship literature may be linked to the enacted view of the field as a normal science with an unquestioned acceptance of positivism and its associated methods. However in a multiple perspective paradigm of entrepreneurship research, this silence is unproductive. What is needed is an open and critical focus on the implications of all the different kinds of methodological choices made by entrepreneurship researchers. This will enrich debates about the suitability of both research questions and the methods with which to approach them. This in turn will raise the quality of the research across the field in each of the methodological perspectives, changing the focus of the discussion from, 'which method is best', to, 'which method is best for addressing this specific research question'.

This study provides a comprehensive picture of the research methods used by those who are published in the five top journals investigated. However an obvious limitation of this work is that it is far from comprehensive in terms of the field of entrepreneurship as a whole. These five journals only represent a proportion of the entrepreneurship scholarship in print. It has been argued here that these five top journals represent an important section of entrepreneurship scholarship, but it is acknowledged that the picture presented here is necessarily a partial one. Further, the research design selected means that only the methods utilised by authors are reported here, with no insight into what the meanings of those choices were for the authors involved, or for the motivations behind them. A further, qualitative study would better address these questions.

The data presented here show that the field of entrepreneurship is changing. The analysis of how the proportion of methods used varies over a 29 year time span has revealed a different picture, and makes an important contribution to these debates. In Aldrich and Baker's terms, (1997) some evidence of an emerging multiple perspective paradigm in entrepreneurship research has been uncovered. This shift should not be seen as a threat to the existing positivist status quo. In a multiple perspective paradigm there is room for many different, coherent research streams. In the long term, methodological pluralism may avoid the compartmentalism that restricts rather than enriches the understanding of entrepreneurship. As Anderson (2012) points out, how a field "measures" has important implications for what can be measured; in turn this is informed by the assumptions that are made about the very nature of entrepreneurship itself.

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## Notes

[1] Throughout the rest of this article we use the term 'normal science' in Aldrich and Baker's (1997) terms, rather than in the Kuhnian sense.

Research design element	Selected research design	Alternative research design
<b>Sampling strategy</b>	<p><b>Consensus based on output</b>            Brush et al. 2008            Chandler and Lyon 2001            de Bruin, Brush and Welter 2007            Déry and Toulouse 1996            Kyrö and Kansikas 2005            Landström and Huse 1996            McElwee and Atherton 2005            Mullen, Budeva and Doney, 2009            Ritchie and Lam 2006</p>	<p><b>Percentage of articles</b>            Paulin, Coffey and Spaulding 1982</p> <p><b>Comparative cross section</b>            Davidsson and Wiklund 2001            Watkins 1994, 1995</p> <p><b>Literature review</b>            Low and MacMillan 1988            Wortman 1986, 1987</p> <p><b>Consensus based on search</b>            Aldrich 1991            Aldrich and Baker 1997            Brush 1992            Churchill and Lewis 1986            Covellio and Jones 2004            Covellio and McAuley 1999            Grant and Perren 2002            Grégoire et al. 2002            Jack (2010)            Romano and Ratnatunga 1995</p>
<b>Sample size</b>	<p><b>Large (over 500)</b>            Aldrich and Baker 1997 (1637)            Mullen, Budeva and Doney, 2009 (665)</p>	<p><b>Small (less than 100)</b>            Brush 1992            Covellio and Jones 2004            Covellio and McAuley 1999            de Bruin, Brush and Welter 2007            Grant and Perren 2002            Jack (2010)            Low and MacMillan 1988            McElwee and Atherton 2005            Paulin, Coffey and Spaulding 1982            Romano and Ratnatunga 1995            Watkins 1994, 1995            Wortman 1986, 1987</p> <p><b>Medium (100-500)</b>            Aldrich 1991 (328)            Brush et al. 2008 (389)            Chandler and Lyon 2001 (416)            Churchill and Lewis 1986</p>

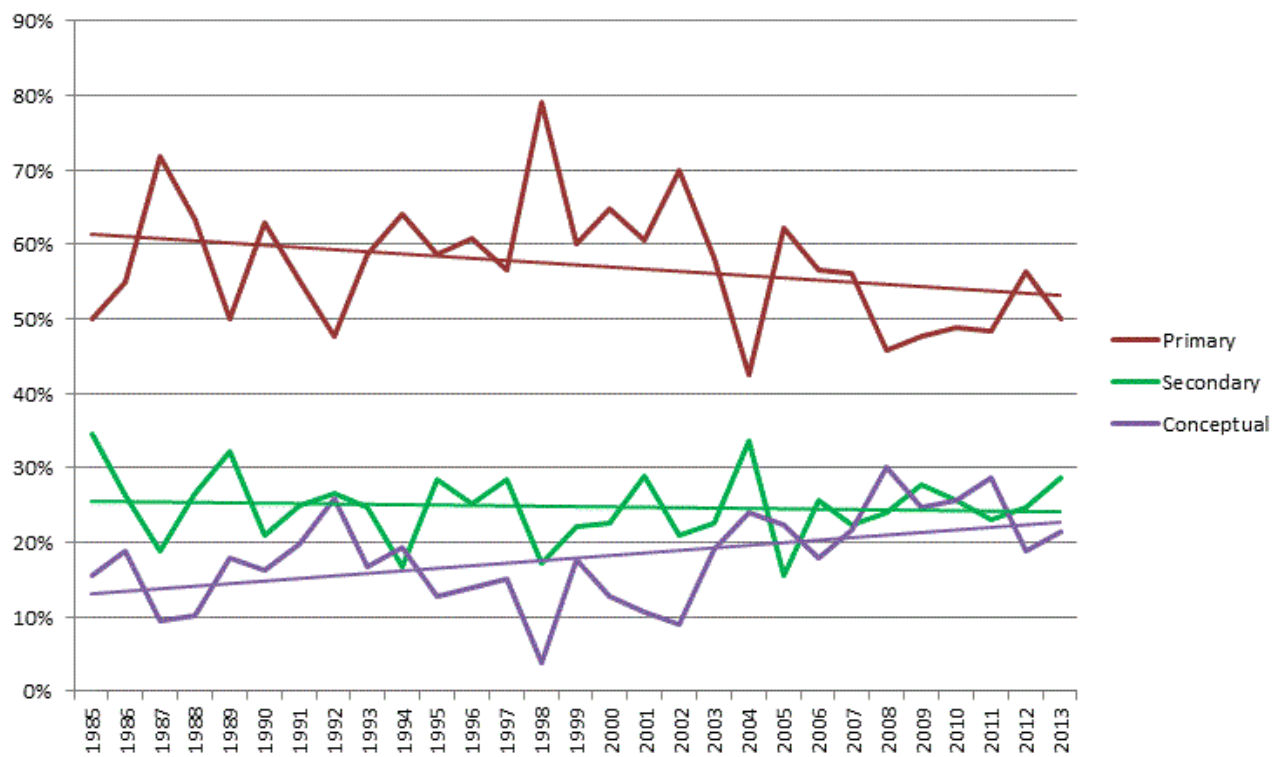
		(448) Davidsson and Wiklund 2001 (127) Déry and Toulouse 1996 (237) Grégoire et al. 2002 (104) Kyrö and Kansikas 2005 (337) Landström and Huse 1996 (106) Ritchie and Lam 2006 (180)
<b>Time frame</b>	<b>Long term (more than 10 years)</b> Aldrich and Baker 1997 Brush 1992 Chandler and Lyon 2001 Covellio and Jones 2004 Davidsson and Wiklund 2001 Grégoire et al. 2002 Jack (2010) Low and MacMillan 1988 Paulin, Coffey and Spaulding 1982 Watkins 1994, 1995	<b>Short term (less than 10 years)</b> Aldrich 1991 Brush et al. 2008 Churchill and Lewis 1986 Covellio and McAuley 1999 de Bruin, Brush and Welter 2007 Déry and Toulouse 1996 Grant and Perren 2002 Kyrö and Kansikas 2005 Landström and Huse 1996 McElwee and Atherton 2005 Mullen, Budeva and Doney, 2009 Ritchie and Lam 2006 Romano and Ratnatunga 1995 Wortman 1986, 1987
<b>Output type</b>	<b>Journal articles</b> Brush et al. 2008 Covellio and Jones 2004 Covellio and McAuley 1999 Chandler and Lyon 2001 Davidsson and Wiklund 2001 de Bruin, Brush and Welter 2007 Déry and Toulouse 1996 Grant and Perren 2002 Grégoire et al. 2002 Jack (2010) Kyrö and Kansikas 2005 Landström and Huse 1996 McElwee and Atherton 2005 Mullen, Budeva and Doney, 2009 Romano and Ratnatunga 1995	<b>Conference papers</b> Ritchie and Lam 2006 Watkins 1994, 1995  <b>Both</b> Aldrich 1991 Aldrich and Baker 1997 Brush 1992 Churchill and Lewis 1986 Low and MacMillan 1988 Paulin, Coffey and Spaulding, 1982 Wortman 1986, 1987
<b>Target journals</b>	<b>Entrepreneurship journals</b> Brush et al. 2008 Davidsson and Wiklund 2001 de Bruin, Brush and Welter 2007	<b>Mainstream management journals</b> Grégoire et al. 2002  <b>Both</b>

	<p>Déry and Toulouse 1996  Grant and Perren 2002  Landström and Huse 1996  McElwee and Atherton 2005  Mullen, Budeva and Doney, 2009  Romano and Ratnatunga 1995</p>	<p>Aldrich 1991  Aldrich and Baker 1997  Brush 1992  Chandler and Lyon 2001  Churchill and Lewis 1986  Covellio and Jones 2004  Covellio and McAuley 1999  Jack (2010)  Kyrö and Kansikas 2005  Low and MacMillan 1988  Paulin, Coffey and Spaulding 1982  Wortman 1986, 1987</p>
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**Table 1. Research design elements in other methodological studies of entrepreneurship**

<b>Top US Entrepreneurship journals</b>	
<b>Journal</b>	<b>Current Impact Factor</b>
Journal of Business Venturing	2.976
Entrepreneurship Theory and Practice	2.242
Journal of Small Business Management	1.333
<b>Top European Entrepreneurship Journals</b>	
International Small Business Journal	1.469
Entrepreneurship and Regional Development	1.333

**Table 2. Journals sampled and their 2012 impact factors**

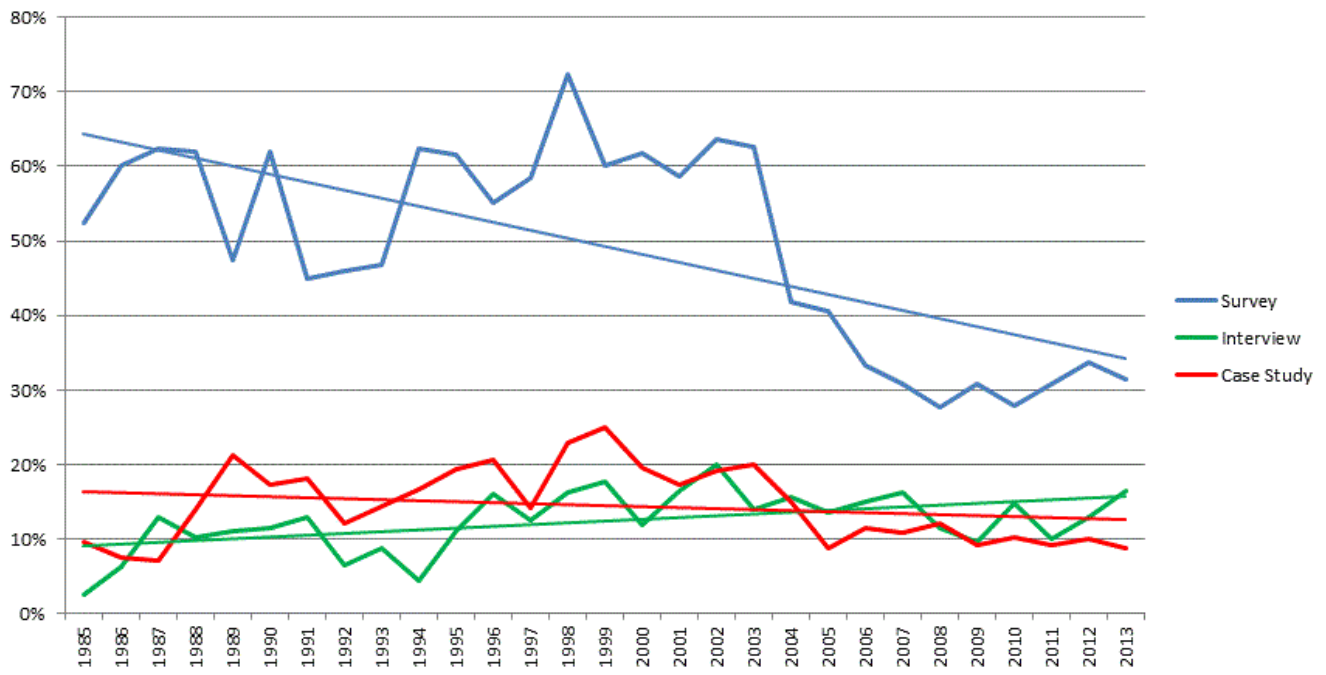


**Figure 1. All articles broken by Primary, Secondary and Conceptual**

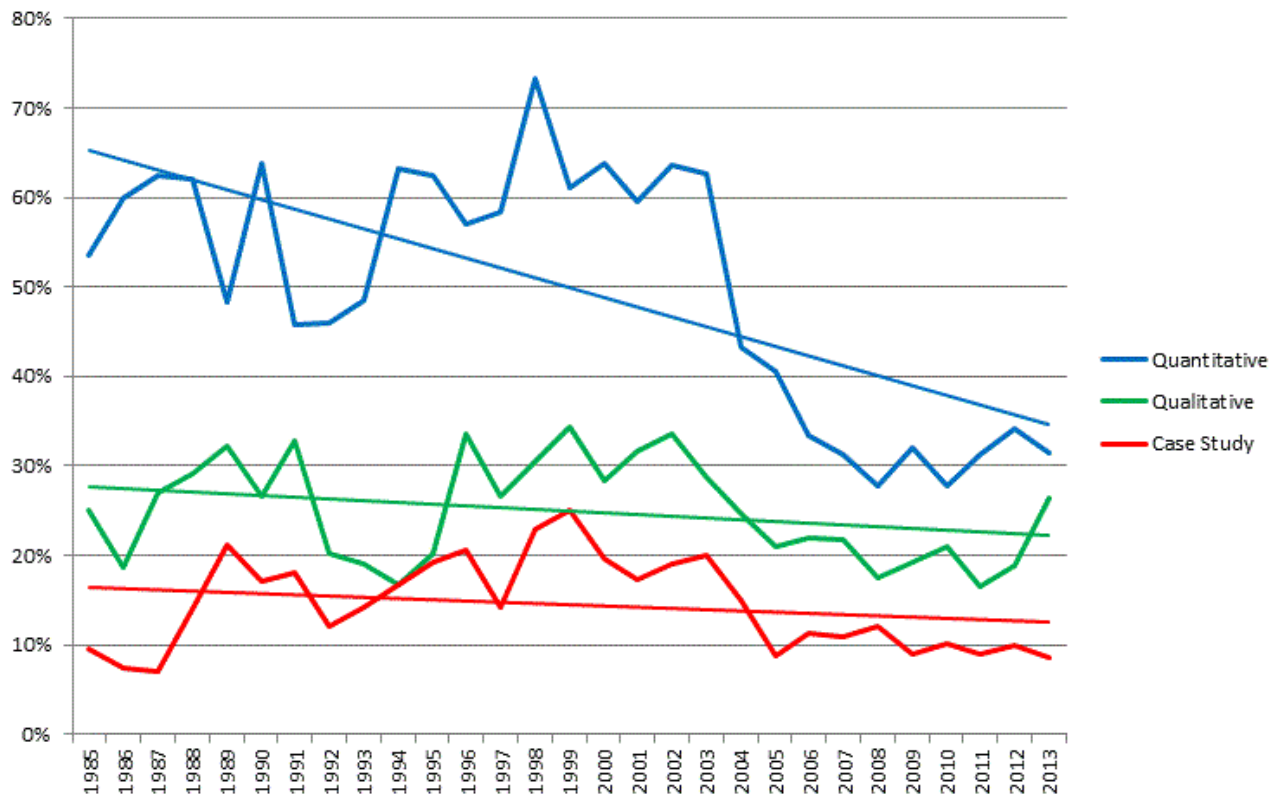
<b>Primary Method</b>	<b>Number</b>	<b>% of Primary Methods</b>
Surveys	1720	54.28%
Case Studies	519	16.38%
Interviews	472	14.89%
Other qualitative	236	7.45%
Document Analysis	102	3.22%
Observation	70	2.21%
Focus Groups	24	0.76%
Other quantitative	23	0.73%
Diary Studies	3	0.09%

**Table 3. Methods used in Entrepreneurship as a percentage of primary methods**

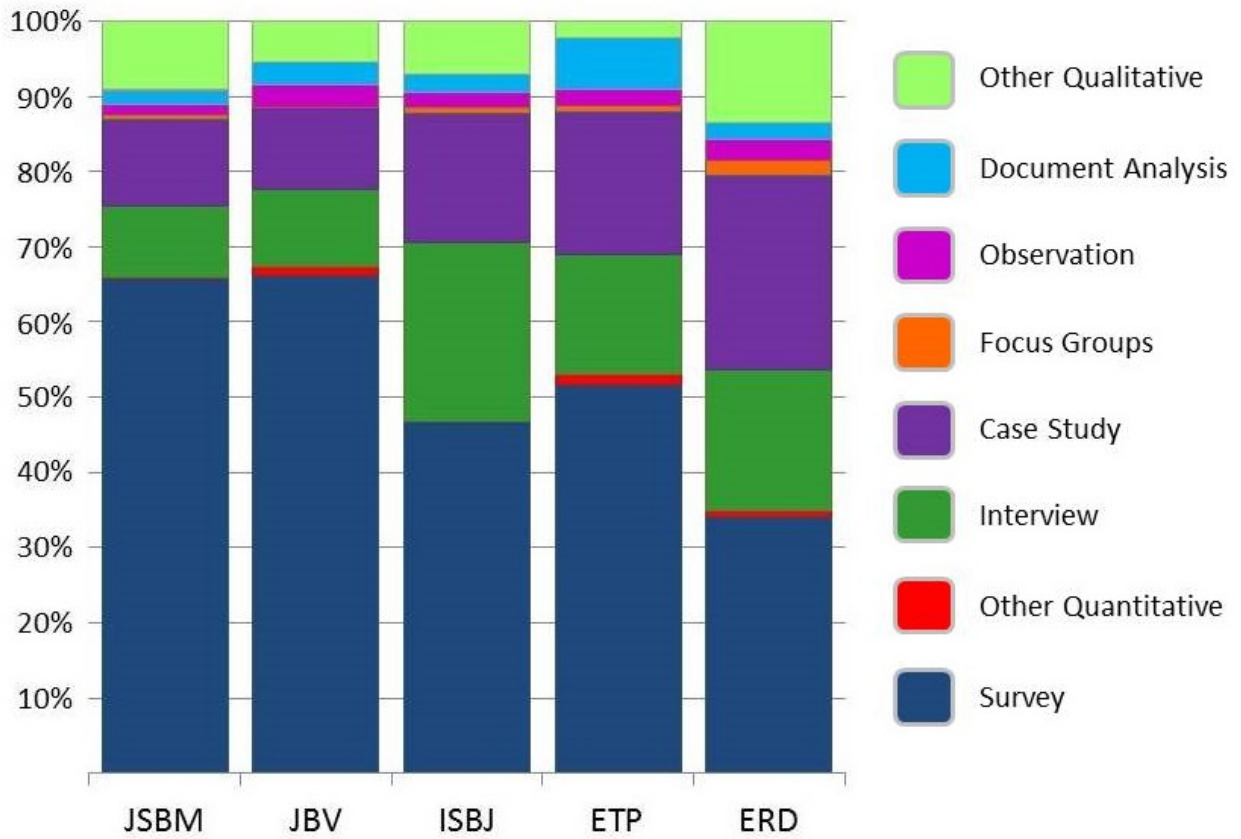




**Figure 2. The three main primary methods over time**



**Figure 3. Breakdown of quantitative and qualitative primary methods over time**



**Figure 4. Aggregate methods (%) broken down by journal 1985-2013**