

Boundary conditions in early-stage venturing research: A systematic review

[Abstract]:

In this paper we problematize existing markers of entrepreneurial action as being subject to boundary conditions and we seek to make such boundary conditions explicit through the systematic scrutiny and review of empirical literature on early venturing. The value of doing so, we contend, is that by making explicit what the boundary conditions are we will be better able to develop an awareness of what may be potentially left out. More broadly, we hope to spur conversations about how we sample entrepreneurial actions in empirical studies and what this means in relation to the domain of entrepreneurship in a context that is increasingly calling for more inclusivity and contextualisation – indeed, under the theme of creating a better world together, togetherness issues from an implicit desire to be inclusive in how we treat others as well as ensuring that our research is able to capture and represent its subject matter in as comprehensive a manner as possible. We inductively develop four categories of boundary conditions for participants' identification and recruitment in early-stage entrepreneurial research that are based on whether entrepreneurial action is being recognized and the epistemic positioning of that recognition.

Our findings reveal that there is a predominance of attributing action *entrepreneurial* status in a way that is:

- implied from context, whereby the latter is considered entrepreneurial; or
- implied from the expressed intentionality of the individual, or
- retrospectively inferred based on the characteristics of consequent endeavours.

1.1 Introduction

It is believed that current approaches to sampling early-stage entrepreneurial activity are comprehensive because they capture all the potential forms entrepreneurship can take. As entrepreneurship scholars, we have come to believe that we know what entrepreneurial action looks like when we see it, given the established indicators. Such established markers of entrepreneurial action include, for example: registering as a business, renting premises, writing a business plan. However, calls for inclusivity in entrepreneurship, as well as recent trends highlighting its socially situated nature question the comprehensiveness of current approaches. Put differently, action may be taking place and lead to value creation, but it may not come to the attention of entrepreneurship researchers following current markers.

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In this paper we problematize existing markers of entrepreneurial action as being subject to boundary conditions and we seek to make such boundary conditions explicit through the systematic scrutiny and review of empirical literature on early venturing. The value of doing so, we contend, is that by making explicit what the boundary conditions are we will be better able to develop an awareness of what may be potentially left out. More broadly, we hope to spur conversations about how we sample entrepreneurial actions in empirical studies and what this means in relation to the domain of entrepreneurship in a context that is increasingly calling for more inclusivity and contextualisation – indeed, under the theme of creating a better world together, togetherness issues from an implicit desire to be inclusive in how we treat others as well as ensuring that our research is able to capture and represent its subject matter in as comprehensive a manner as possible.

We proceed as follows. We scrutinised empirical literature looking for evidence of how participants came to the attention of the studies and how early entrepreneurial action was operationalised. In order to avoid perpetuating current approaches, we go beyond the operationalized definition of “nascent entrepreneurship” and the associated keyword searches of the literature. Instead, we manually scan a contemporary 10 year period (2008-2019*) of empirical papers in three leading entrepreneurship journals: *Entrepreneurship Theory and Practice*, *Journal of Business Venturing* and *Strategic Entrepreneurship Journal*. The latter are the focus of our review because they are intended to showcase the state of the art in the field of entrepreneurship. We select empirical papers in and out of the systematic review using Seuring and Müller’s (2008) established four step selection process. In the papers selected-in, we identify the criteria used for operationalizing early entrepreneurial action, we also categorise the sources of research participants. Based on these data points, we inductively develop four categories of boundary conditions for participants’ identification and recruitment

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- implied from context, whereby the latter is considered entrepreneurial; or
- implied from the expressed intentionality of the individual, or
- retrospectively inferred based on the characteristics of consequent endeavours.

Whilst this literature has made a valid and significant contribution to our understanding of early-stage entrepreneurship, it amplifies the asymmetry between conceptual understanding of entrepreneurial action and its empirical appraisal. It means that there likely remains a portion of early-stage venturing that current enquiry does not capture, namely those who act without having expressed prescient intentionality and those who take action within contexts not widely recognized as entrepreneurial.

We therefore challenge the assumption that observability (e.g. through action deemed entrepreneurial) has become king in sampling entrepreneurial action and we propose boundary conditions that support the framing of sampling choices and the data yielded from them.

1.2 Entrepreneurship in its earliest forms

How do we know we are seeing early-stage entrepreneurial action when we see it? There is a lot of action that takes place every day, but how do we know it is entrepreneurial and thus worthy of inclusion in our empirical studies of early stage venturing?

Recruiting participants for research in the earliest stages of venturing is notoriously challenging (Hopp & Stephan, 2012). Robust sampling can be threatened by ‘survivor bias’, ‘intention bias’ or the seduction of visibility in an environment where people may be protective of their ideas or difficult to access.

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Scholars have responded to this dilemma through a number of approaches.

The “nascent entrepreneurship” approach has been modelled around the causal relationship between entrepreneurial intention and action. That is, once an individual has declared an intention to start a venture, scholars anticipate entrepreneurial action to be likely to follow and the individual is worthy of being sampled as a nascent entrepreneur. Indeed, extant understandings of the early entrepreneurial process are founded upon intention models (Bird, 1988; Krueger, 1993) and declaring an intention to start a new venture confers the label of latent nascent entrepreneurship (Brixy, Sternberg and Stüber, 2012; Grilo and Irigoyen 2006; Grilo and Thurik 2005).

Warren (2004, p. 26) summarises the primacy of intentionality in sampling early venturing in the following statement: “studies that include the earliest pre-firm stages are rare, except when the focus of research is on intentions rather than resulting behaviours...” Intention and intendedly rational logics of action continue to be principal identifiers of early stage venturing (Dimov et al., 2020).

Lerner et al. (2018) have proposed that the entrepreneur and their actions align with intentionality over time in an emergent and non-linear fashion, thus calling into question the sequence and causal link between intention and action.

More recently, developments in the literature consider the potential for early entrepreneurial action to take place without prescient intention (Kautonen et al., 2015). Equally, there has been a recognition that intention may not always be followed by action. The risk, therefore, is that by sampling early-stage entrepreneurship based on the intentionality paradigm alone, we may be left with little to observe if the entrepreneurial process never quite takes off.

This has challenged the comprehensiveness of intentionality-driven sampling. Rather, entrepreneurial action is being framed as sitting on a spectrum with intendedly rational and rule-directed behaviour at one end and non-deliberative and impulse-driven behaviour at the

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other (Lerner et al., 2018). This has implications for markers of entrepreneurial action. That is, if intention has not been declared a-priori, how do we know that the action we observe is entrepreneurial well before it results in a venture?

In order to mitigate the challenges of the intention-driven sampling, some scholars have advocated for *action-oriented* approaches. These approaches privilege observable and tangible *entrepreneurial* action. Earlier works in this space have proposed a sequence of activities that entrepreneurs undertake, such as renting premises, contacting customers or obtaining patents (e.g. Carter, Gartner, and Reynolds, 1996; Davidsson and Honig, 2003). Others have come to regard the set of activities constituting the entrepreneurial process as rather unstructured (McMullen and Dimov, 2013; Sarasvathy, 2001), as well as being continuously flowing, mutating (Hjorth, Holt and Steyaert, 2015) and idiosyncratic in nature (Davidsson and Scott, 2010). As such, despite the adoption of a focus on entrepreneurial action, its operationalization remains elusive and potentially problematic.

In light of recent work, which highlights the importance of broadening inclusivity in entrepreneurial activity, we worry that such an extension will not be easily integrated into existing sampling strategies unless we have a clear understanding of the boundaries around such strategies. Therefore, we believe the time is right to pause and take an inventory of our existing sampling strategies, analyse and make explicit the boundary conditions for inclusion of other forms of entrepreneurial activity that have fallen through the methodological gaps in present approaches.

In this paper we consider research in the context of the early entrepreneurial process by systematically reviewing empirical papers published in leading entrepreneurship journals. Our focus is on the operationalization of entrepreneurial action in the context of early venturing and on what the sampling approaches reveal about the epistemological assumptions made. Our unit of observation in this endeavour is *the early entrepreneurial process* and we respond to the

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question: How do we sample early-stage entrepreneurial action? What do our sampling procedures reveal about the boundary conditions and associated epistemological assumptions currently in use to identify and capture early entrepreneurial action?

In doing this, we make an assumption that whilst some action is intended to lead to business venturing, not all action eventually leading to business venturing can be recognized as entrepreneurial at the time it takes place.

For the purpose of this review, we define entrepreneurial action based on the aforementioned assumption and the oxford dictionary definition of “action” (noun) as follows:

Entrepreneurial action is the fact or process of doing something leading to value creation, that may or may not be intended or understood as “entrepreneurial” at the time it takes place.

This definition and the assumptions it is based on align with recent calls for entrepreneurial action to become more inclusive and recognize its situated nature.

1.3 Research Design

The objective of our systematic literature review is to appraise the criteria that scholars have used to sample early-stage entrepreneurial action over a contemporary period. Our unit of observation, therefore is the early stage venturing process.

Our approach is designed using Seuring and Müller (2008)’s process, which is based on Mayring’s (2003) ‘qualitative content analysis’, consisting of four steps: (1) Material gathering, (2) Descriptive analysis, (3) Category selection, and (4) Material evaluation. We provide detail of our approach to each step below, but the four steps consist of the following: Material Gathering (1) – We define our criteria for inclusion and exclusion.

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Descriptive Analysis (2) – We present trends and ‘meta’ level characteristics within the corpus (such as number of publications per year, per journal).

Category Selection (3) – We select two discrete analytic categories, namely, operationalization of early-stage entrepreneurial action and source of participants.

Material Evaluation (4) – We proceed with the analysis of the categories and attend to our research question: *what are the assumptions and boundary conditions in relation to these categories?*

1.3.1 Material Gathering (Step 1)

In a study such as this, it would be convention to conduct a targeted digital search based on key words within the subject area. However, after initial consideration, it became evident that the relevant keywords associated with early-stage entrepreneurial action would be limited to identification and/or willingness to pursue an opportunity (MacMullen and Shepherd, 2006) or with intentionality (e.g. Reynolds, 2009; Daviddson, 2006). By designing a key word search based on existing terms such as *gestational activities*, *nascent entrepreneurship*, or *entrepreneurial opportunity* the very definitions and operationalizations we seek to scrutinize could have already biased our sample. Also, we aimed to include papers that collect data on the early entrepreneurial process but that do not necessarily focus on it conceptually. Those papers may be missed in a keyword search.

For step one of our review, material gathering, we employ a manual scan of all empirical papers published on any subject matter over the ten-year window in our selected journals. We conduct our literature search on three leading journals that focus specifically on entrepreneurship (based on the Association of Business Schools journal quality ranking): Entrepreneurship Theory and Practice (ETP), Journal of Business Venturing (JBV) and Strategic Entrepreneurship Journal (SEJ). We focus on those three field-specific journals because those are widely considered to represent a reliable indicator of the state of the entrepreneurship field (for a similar approach

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in the field of international business, please see Chidlow et al., 2014). We aim to cover all recent developments in the literature with our manual scan. We opt for a window of time which captures developments stemming from recent calls for more open approaches (e.g. Kautonen et al., 2015) as well as the more established approaches to capturing the start of the entrepreneurial process (i.e. PSED, Reynolds, 2009)

We are interested in the operationalization for participant recruitment in empirical papers. Hence, we consider both qualitative and quantitative papers, so long as their data covers the early entrepreneurial process, either concurrently or retrospectively.

We disregard conceptual papers, all non-empirical papers (commentaries and editorials), and literature reviews because they do not collect first-hand data.

We scan the databases EBSCO and PRIMO to identify all empirical papers published from 2008 to 2018 in the chosen journals (ETP, JBV and SEJ). This search yields a total of $n=901$ papers (ETP=326, JBV=417 and SEJ=158).

Next, we turn our attention to polishing our initial corpus of papers through the setting of exclusion criteria (e.g. Coviello and Jones, 2004). Our criteria exclude papers in which neither the sampling nor the data cover the beginning of the entrepreneurial process. Therefore, we exclude: studies focusing on the established phase of the firm, on firm growth, on firm performance, or firm survival whereby the earlier stages of the venturing process are not captured either concurrently or retrospectively.

We also exclude studies where the entrepreneur, rather than entrepreneurial process, is the unit of observation. Such excluded papers include: studies of entrepreneurial cognition, emotion, and antecedents to entrepreneurial intentions. We exclude studies where the unit of observation is not, either explicitly or implicitly, the entrepreneurial process. For instance, national macro

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level studies and institutional level studies are excluded because of their unit of observation not aligning with the focus of this review. Following this process, our corpus consists of $n=73$ papers.

In the final stage of polishing our corpus, we decide to further exclude papers where the entrepreneurial action is abstracted from the real-world context. For example, in experiments neither the process nor the person aligns with the situated nature of the early venturing that we focus on.

Our final polished sample comprises of $n=42$ papers (ETP=16, JBV=18, SEJ=8). All papers report data on the early entrepreneurial process, although the latter may or may not be the target focus of the paper. A discrete list of references for the final corpus can be found at Appendix 1 – Final Corpus References.

1.4 Descriptive Analysis (Step 2)

The final corpus gives a picture of attention paid to the early stages of venturing within the field's top publications in recent years. JBV has published the most research concerning this area (18 articles) and ETP has given similar attention (16 articles). SEJ has published considerably fewer articles, less than 1 article per year on average (8 articles in total). The first 5 years of the period has 12 articles in total across all the journals, with 30 articles in the latter half of the period, thus showing that the average amount of attention being paid to early stage venturing in any given year has increased over the period. The peak year is 2013 (9 articles in total), where ETP published 7 articles, which is the most by any of the journals in any single year. The table below gives an overview of articles published by journal per year.

Year	Total	ETP	JBV	SEJ
2008	1			1
2009	3	1	1	1
2010	2	1	1	
2011	2	1	1	

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2012	5	2	3	
2013	9	7	1	1
2014	2	1	1	
2015	6	1	3	2
2016	5		4	1
2017	5	2	2	1
2018	2		1	1
In press: 1	42	16	18	8

1.5 Category Selection (Step 3)

We scrutinise each paper in the final corpus with a view to identifying both (1) the operationalization for the early venturing stage and (2) the sources of participants. We do this because sources and operationalizations are the building blocks of sampling and each will have embedded assumptions around the nature of entrepreneurial action, which we are looking to disentangle and make explicit.

1.5.1 Operationalization

Starting with the *operationalizations*, some papers offer a clear statement of the parameters used to select participants in the early stages of their venturing process. In other papers, no explicit operational definition is offered, in those cases we inferred it from the broader description of the sample. We capture the operationalization used in or extrapolated from each paper, staying as close as possible to the wording used in the paper. We next collapse these longer operationalizations into aggregate groupings that capture the operationalization but do so in a harmonised fashion. The aggregate categories are summarised below in Table 1 Summary of Aggregate Groups of Operationalization. The table of the disaggregated groupings can be found in

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Appendix 1 – Final Corpus References

- Brinckmann, J., & Kim, S. M. (2015). Why we plan: The impact of nascent entrepreneurs' cognitive characteristics and human capital on business planning. *Strategic Entrepreneurship Journal*, 9(2), 153-166.
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- Chandler, G. N., DeTienne, D. R., McKelvie, A., & Mumford, T. V. (2011). Causation and effectuation processes: A validation study. *Journal of Business Venturing*, 26(3), 375-390.
- Dahlqvist, J., & Wiklund, J. (2012). Measuring the market newness of new ventures. *Journal of Business Venturing*, 27(2), 185-196.
- De Carolis, D. M., Litzky, B. E., & Eddleston, K. A. (2009). Why networks enhance the progress of new venture creation: The influence of social capital and cognition. *Entrepreneurship Theory and Practice*, 33(2), 527-545.
- De Clercq, D., Lim, D. S., & Oh, C. H. (2013). Individual-level resources and new business activity: The contingent role of institutional context. *Entrepreneurship Theory and Practice*, 37(2), 303-330.
- Edelman, L., & Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: Bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice*, 34(5), 833-856.
- Edelman, L. F., Manolova, T., Shirokova, G., & Tsukanova, T. (2016). The impact of family support on young entrepreneurs' start-up activities. *Journal of Business Venturing*, 31(4), 428-448.
- Farmer, S. M., Yao, X., & Kung-Mcintyre, K. (2011). The behavioral impact of entrepreneur identity aspiration and prior entrepreneurial experience. *Entrepreneurship Theory and Practice*, 35(2), 245-273.
- Fisher, G. (2012). Effectuation, causation, and bricolage: A behavioral comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory and Practice*, 36(5), 1019-1051.
- Gartner, W. B., Shaver, K. G., & Liao, J. (2008). Opportunities as attributions: Categorizing strategic issues from an attributional perspective. *Strategic Entrepreneurship Journal*, 2(4), 301-315.
- Gielnik, M. M., Barabas, S., Frese, M., Namatovu-Dawa, R., Scholz, F. A., Metzger, J. R., & Walter, T. (2014). A temporal analysis of how entrepreneurial goal intentions, positive fantasies, and action planning affect starting a new venture and when the effects wear off. *Journal of Business Venturing*, 29(6), 755-772.
- Greene, F. J., & Hopp, C. (2017). Are formal planners more likely to achieve new venture viability? A counterfactual model and analysis. *Strategic Entrepreneurship Journal*, 11(1), 36-60.
- Hsu, D. K., Wiklund, J., & Cotton, R. D. (2017). Success, failure, and entrepreneurial reentry: An experimental assessment of the veracity of self-efficacy and prospect theory. *Entrepreneurship Theory and Practice*, 41(1), 19-47.
- Jiang, Y., & Tornikoski, E. T. (2019). Perceived uncertainty and behavioral logic: Temporality and unanticipated consequences in the new venture creation process. *Journal of Business Venturing*, 34(1), 23-40.

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- Katre, A., & Salipante, P. (2012). Start-up social ventures: Blending fine-grained behaviors from two institutions for entrepreneurial success. *Entrepreneurship Theory and Practice*, 36(5), 967-994.
- Kautonen, T., Van Gelderen, M., & Fink, M. (2015). Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice*, 39(3), 655-674.
- Keating, A., Geiger, S., & McLoughlin, D. (2014). Riding the practice waves: Social resourcing practices during new venture development. *Entrepreneurship Theory and Practice*, 38(5), 1-29.
- Kim, P. H., Longest, K. C., & Lippmann, S. (2015). The tortoise versus the hare: Progress and business viability differences between conventional and leisure-based founders. *Journal of Business Venturing*, 30(2), 185-204.
- Kollmann, T., Stöckmann, C., & Kensbock, J. M. (2017). Fear of failure as a mediator of the relationship between obstacles and nascent entrepreneurial activity—An experimental approach. *Journal of Business Venturing*, 32(3), 280-301.
- Kotha, R., & George, G. (2012). Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. *Journal of Business Venturing*, 27(5), 525-543.
- Marvel, M. R. (2013). Human capital and search-based discovery: A study of high-tech entrepreneurship. *Entrepreneurship Theory and Practice*, 37(2), 403-419.
- Newbert, S. L., & Tornikoski, E. T. (2013). Resource acquisition in the emergence phase: Considering the effects of embeddedness and resource dependence. *Entrepreneurship Theory and Practice*, 37(2), 249-280.
- Newbert, S. L., Tornikoski, E. T., & Quigley, N. R. (2013). Exploring the evolution of supporter networks in the creation of new organizations. *Journal of Business Venturing*, 28(2), 281-298.
- Renko, M. (2013). Early challenges of nascent social entrepreneurs. *Entrepreneurship Theory and Practice*, 37(5), 1045-1069.
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- Rotger, G. P., Gørtz, M., & Storey, D. J. (2012). Assessing the effectiveness of guided preparation for new venture creation and performance: Theory and practice. *Journal of Business Venturing*, 27(4), 506-521.
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- Sieger, P., Gruber, M., Fauchart, E., & Zellweger, T. (2016). Measuring the social identity of entrepreneurs: Scale development and international validation. *Journal of Business Venturing*, 31(5), 542-572.
- Smith, A. W., Moghaddam, K., & Lanivich, S. E. (2019). A set-theoretic investigation into the origins of creation and discovery opportunities. *Strategic Entrepreneurship Journal*, 13(1), 75-92.
- Stenholm, P., & Renko, M. (2016). Passionate bricoleurs and new venture survival. *Journal of Business Venturing*, 31(5), 595-611.
- Sullivan, D. M., & Ford, C. M. (2014). How entrepreneurs use networks to address changing resource requirements during early venture development. *Entrepreneurship Theory and Practice*, 38(3), 551-574.

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- Townsend, D. M., Busenitz, L. W., & Arthurs, J. D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of Business Venturing*, 25(2), 192-202.
- Uy, M. A., Foo, M. D., & Ilies, R. (2015). Perceived progress variability and entrepreneurial effort intensity: The moderating role of venture goal commitment. *Journal of Business Venturing*, 30(3), 375-389.
- Uy, M. A., Sun, S., & Foo, M. D. (2017). Affect spin, entrepreneurs' well-being, and venture goal progress: The moderating role of goal orientation. *Journal of Business Venturing*, 32(4), 443-460.
- Uygur, U., & Kim, S. M. (2016). Evolution of entrepreneurial judgment with venture-specific experience. *Strategic Entrepreneurship Journal*, 10(2), 169-193.
- Van Gelderen, M., Kautonen, T., & Fink, M. (2015). From entrepreneurial intentions to actions: Self-control and action-related doubt, fear, and aversion. *Journal of Business Venturing*, 30(5), 655-673.
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- Zhang, Y., Yang, J., Tang, J., Au, K., & Xue, H. (2013). Prior Experience and Social Class as Moderators of the Planning-Performance Relationship in China's Emerging Economy. *Strategic Entrepreneurship Journal*, 7(3), 214-229.

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Appendix .

Operationalization Category	Total number of papers in category
No operational definition of early-stage entrepreneurial action	16
Based on the definition used in GEM or PSED	6
Based on an academic definition of nascent entrepreneurship	4
Respondents' membership of an incubator	2
Respondents engaged in recognized 'startup activities'	12
Respondents' reported intention	2

Table 1 Summary of Aggregate Groups of Operationalization

Four of the papers made explicit use of a recognized academic definition. Among the papers that belonged to the category 'Based on an academic definition of nascent entrepreneurship', two papers used Davidsson and Honig's (2003, p.313) definition: "*An individual was considered a nascent entrepreneur if he or she initiated at least one gestation activity for a current, independent start-up by the time of the interview. Gestation activities were determined as any of 20 different behaviours that were considered demonstrative of actively beginning the business creation process.*" The other two papers in the category used Lundstrom and Stevenson's (2005) definition: "*Nascent entrepreneurs conceptually defined as individuals who "are considering or trying to start new firms"*" and Aldrich's (2000, p.77) definition: "*Nascent entrepreneurs defined as individuals who initiate "serious activities that are intended to culminate in a viable business start up."*" Of these definitions, both Aldrich (2000) and Lundstrom and Stevenson (2005) both constitute their definitions on entrepreneurial intention, meaning that, like the discussions above relating to the GEM/PSED aggregate category, the intention alone lends an action its entrepreneurial status. Differently, Davidsson and Honig (2003) objectively define a set of 20 activities that are determined to manifestly embody entrepreneurial action.

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Ten papers made explicit reference to ‘start-up activities’, which were not necessarily explicitly described, but required respondents to characterize their activity as being recognisably part of the early venturing process. Similarly, two other papers defined the production of a business plan as representing early venturing. Papers in the category ‘Respondents engaged in recognized ‘startup activities’ showed the action the participants were displaying to be understood to belong to a group of actions considered to represent early-stage entrepreneurial action, such as those listed by Gartner, Starr, and Bhat (1999). For example, a student population that has been asked to write a business plan is ascribed *nascent entrepreneur* status by the authors due to ‘writing a business plan’ being a recognized early-stage activity (Kollmann et al., 2017). Thus, according to the definition, they regard the students as nascent entrepreneurs due to their production of a business plan. In these papers entrepreneurial action has been abstracted from the context. In the cases of student samples the students’ requirement to write a business plan for university coursework has been abstracted from context and entrepreneurial status has been ascribed. It issues from this that action can be identified and defined as entrepreneurial beyond the context in which it is found and beyond prescient intention on the part of the participant. Further, it follows that the researcher can make this epistemological call.

Belonging to an incubator was seen as determining a respondent to be within the early venturing stage in two papers. These papers focused on the stated intentions of respondents as determining them to be early-stage entrepreneurs. The two papers, which were both led by the same author and had one other author in common (Uy, Foo & Ilies, 2015; Uy, Sun & Foo, 2017), formed the aggregate category ‘Respondents’ membership of an incubator’. In these papers, the participants are identified as early-stage entrepreneurs by virtue of their belonging to a recognized entrepreneurial context, in this case being part of an incubator. It is inferred

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that action taken by individuals within this context is inherently entrepreneurial, although no specific detail on the action is given in the papers.

Five of the articles operationalized based on data from national level entrepreneurship surveys, the Panel Study of Entrepreneurial Dynamics (PSED) and the Global Entrepreneurship Monitor (GEM), both these instruments use a clear operational definition and therefore that definition was effectively built-in to the papers that used the data from these surveys. For example, if the source of participants is the Panel Study of Entrepreneurial Dynamics (PSED) then the operational definition of entrepreneurship is embedded within the source, since the PSED survey is operationalized itself on the basis of a specific understanding of early-stage entrepreneurship. Some of these papers referred back to the original source of the definition, as in cases such as the PSED they would such sources as Reynolds (2009). In other cases, the paper in our corpus would not necessarily explicitly offer an operational definition, it would typically refer to the prevailing acceptance of the validity of the PSED as a source of data that captures the early stages of entrepreneurship. Since that validity is accepted and robustly underpinned, we were able to infer and determine the operationalization of the early stages on that basis.

The studies associated with the category 'Based on the definition used in GEM or PSED' all followed the specific language used in the screening questions within these surveys. They use action-based wording (e.g. "undertaken tangible action", "trying to" "actively involved in", "time and resources dedicated to", "gestational activities"), which is associated with the intended purpose of the action (e.g. "starting a new venture", "start a firm", "start a business"). In these studies, data on the early venturing stages is gathered concurrently. What seems to confer action its entrepreneurial nature is the intended outcome of the action – that is, starting

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a new business (Brinckmann and Kim, 2015; Hsu, Wiklund and Cotton, 2017; Kollmann, Stöckmann and Kensbock, 2017; Stenholm and Renko, 2016; Sullivan and Ford, 2014). There are two notable features of these studies, one is that there is no distinction made between people who are on an intendedly rational path to taking future action and those who have already taken action towards starting a business. Second, is that any action is permitted so long as the respondent self-identifies as having taken or is planning to take such action with a path-dependent consequence of starting of a business. This means that action (planned or otherwise) is conferred entrepreneurial status by virtue of the respondent's intentions in relation to it, and how the respondent conceives of the relationship between their intentions, actions and future business plans is not declared. In particular, this lends future unknown actions entrepreneurial status by virtue of entrepreneurial intentions, even if there is no way of resolving how the self-identifying entrepreneur discriminates entrepreneurial from non-entrepreneurial action.

17 out of 42 articles did not operationalise any sort of definition of the early venturing stage, however, this was partly because, although they were capturing data that related to the early stages, the majority of the papers in the category that gave no definition of early-stage entrepreneurial action observed their research subjects retrospectively and classed action as "entrepreneurial" because it led to the creation of a firm, usually young or mature by the time of sample selection (DeTienne, McKelvie and Mumford, 2011; Fisher, 2012; Jiang and Tornikoski, 2019; Katre and Salipante, 2012; Keating, Geiger and McLoughlin, 2013; Marel, 2013; Scarbrough, Swan, Amaeshi and Briggs, 2013; Smith, Moghaddam and Lanivich, 2018; Williams, Martinez-Perez and Kedir, 2017; Chandler). This is understandable since the resultant successful venture retrospectively ascribes prior action with entrepreneurial status. However, from the point of view of capturing and scrutinising the nature of the early stages of the entrepreneurial process, it has been argued that path-dependency will influence cognition

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when action is retrospectively inferred. This can create a self-selection bias where only action that ultimately led to the final outcome is listed and every action that may have led to blind alleys is filtered out (McMullen and Dimov, 2013; Van de Ven, 2004). If we consider the Aldrich (2001) event-driven explanations model, event 1 will result in outcomes X, Y and Z. In turn, outcome Y will result in outcomes Y1 and Y2. Working back, a respondent is more likely only to refer to the dependent path that these ultimate outcomes had and ignore the other non-dependent outcomes. Thus, the retrospective nature of some of the data from the corpus gives a specific view of early-stage entrepreneurial action, but it is arguably a non-holistic view of it.

There was, however, one paper (Kautonen, van Gelderen and Fink, 2015) in which no operationalization was defined where respondents were not selected-out based on self-reports of entrepreneurial activities or intentions. That is, participants are operationally defined as adults who may or may not have expressed an intention to pursue a business start-up. The reason this paper stands apart is that the participants in the sample were not selected-out if they did not declare an intention to start a business. Therefore, lack of intention was not considered grounds to discount them as candidate entrepreneurs and they were still returned to and asked if they had taken any action towards starting a business in a follow-up survey. Thus, entrepreneurial action is considered in isolation from intention: it is not assumed that if there is no intention then participants should be discounted.

The final aggregate category among the operationalization of entrepreneurial action was 'Respondents' reported intention'. In this group of papers, the early-stage entrepreneurial process is identified through the declared intentionality of the participants to start a business, which may or may not be accompanied by action (Edelman, Manolova, Shirokova and Tsukanova, 2016; Gielnik, Barabas, Frese, Namatovu-Dawa, Scholz, Metzger and Walter, 2014; Greene and Hopp, 2017; Van Gelderen, Kautonen and Fink, 2015). In these papers,

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prescient intentionality sets the scene for identifying any action that may or may not follow as entrepreneurial. This has close ties to the ‘GEM/PSED’ category above, where being on an intendedly rational path to setting up a business furnishes any subsequent action with entrepreneurial status.

1.5.2 Sources of Participants

We next study the corpus with a view to identifying the sources of study participants. Similar to the process followed for the operationalization, we capture the source of participants, staying as close as possible to the wording used in the paper. We then group sources together based on the aggregated categories they represent in terms of data sources, which is summarised below in Table 2. The table of the disaggregated groupings can be found in Appendix .

Source of Participants Category	Category Abbreviation	Total number of papers in category
University Students or Alumni	UNIV	6
Surveys of Entrepreneurial Activity: Global Entrepreneurship Monitor (GEM), Panel Study of Entrepreneurial Dynamics (GEM/PSED) & Chinese Panel Study of Entrepreneurial Dynamics (CPSED)	GEM/PSED/CPSED	16
Local Community	COMMUN	1
Ecosystem	ECOS	10
Public Domain	PUB	1
Adult Population	ADULT POP	2
Registered Businesses	REG	6

Table 2 Summary of Sources of Participants Categories

Our first theme we term Student Samples (UNIV), whereby a study recruited students directly from a university class or the participants’ connection to the study was established through their association with a university, for example alumni. Often the students recruited are

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engaged in an entrepreneurship class or entrepreneurship degree programme. For example, Hsu et al. (2017) used students enrolled in an “introduction to entrepreneurship” class who were required to produce a business plan as part of their coursework.

From the university category (UNIV), we note the way in which established definitions (e.g. Reynolds, 2009) of entrepreneurial activities are used to make assumptions about the nature of action as entrepreneurial in student populations. An illustration of this is that, because writing a business plan is considered an early-stage entrepreneurial activity, students who wrote a business plan are therefore engaging in entrepreneurial action and are classed as nascent entrepreneurs (e.g. Hsu et al., 2017).

Our second theme comprises all papers that use the Global Entrepreneurship Monitor (GEM), the Panel Study of Entrepreneurial Dynamics (PSED), and the Chinese Panel Study of Entrepreneurial Dynamics (CPSED). These general population surveys are widely used as sources of data on the early entrepreneurial process. These surveys are conducted via the telephone and seek to establish the extent to which entrepreneurial activity is taking place in a given region. What samples from these surveys have in common are the screening questions, which, despite the different wording, all appraise whether the individual has initiated a business or is undertaking gestational activities to lead to the sale of products or services. Of note is that well over a third of the research published in this area from our corpus emanates from general population studies, like the PSED.

For the papers that sourced participants via ‘Surveys of Entrepreneurial Activity (GEM/PSED/CPSED)’, all imply intentionality at the time an action takes place. These screening questions align intention with action by screening participants for whether they have

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an intention to or have taken action *towards* starting a business. Thus, they identify entrepreneurial action taken by individuals who are consciously and purposefully acting towards business venturing. In order for individuals to answer positively to these questions, they have to recognize their actions as intendedly leading to sales.

The next aggregate categories we derive we term Local Community (COMM) and Ecosystem (ECOS). The Local Community category is when research has engaged with a form of community access to data. There was only one paper in this category (Gielnik et al., 2014), which used local churches as a means to engage in entrepreneurial action in rural Africa. In a similar way, the Ecosystem (ECOS) category groups together study participants sourced through business development support agencies, incubators, accelerators, and entrepreneurial peer support networks. By virtue of being in the entrepreneurial ecosystem (ECOS), study participants selected will already have either self-identified or have been identified as striving towards a business venture and their actions will be conferred entrepreneurial nature.

Our fourth aggregate category we label Public Domain (PUB). In this category data sources are businesses that have been identified based on the fact they are widely known and given coverage in the public domain (for example, they are recognized business success stories). In the cases of businesses visible within the public domain (PUB), an account of the early stages has been given retrospectively by a member of the business ('the entrepreneur') at a later stage in the business's development – possibly many years later, potentially following significant growth and success (e.g. Apple Inc.). One of the principal issues with such an approach to establishing the dynamics of the early stages is that it could potentially be the first time the respondent has given this any specific thought. The research therefore, may be asking a respondent to interpret and reflect in the present on thoughts, actions or intentions that never

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really existed in the first place, yet they are being generated and given meaning retrospectively by the natural process of trying to create an ordered narrative that gives sense to something.

Our fifth aggregate category is termed Adult Population (ADULT POP). This category contains a means of sampling that addresses a population in its broadest sense. This category relates most closely to the research of Kautonen, which uses random sampling of entire national populations (Austria and Finland) in the same way as GEM and PSED do. This category saw similar screening questions to GEM and PSED, however, even when respondents answered “no” to the gestational activities questions, they were still surveyed the following year and thus the early stages of the process were not tied to intentionality – i.e. they do not assume that a reported lack of intentionality means that it is therefore unlikely that entrepreneurial action will take place in the future.

Our sixth category is termed Registered Businesses (REG). In some papers the source is officially registered businesses on a public database, which can often be filtered based on the category the businesses self-select as belonging to (e.g. life sciences, technology, manufacturing). Participants sourced in this category may be at very different stages in their business development and range from pre-sales to post-sales, even scale-up. In this sense this source category is different from the Public Domain source category, in which all businesses are well-established, and the early venturing stage is appraised retrospectively.

Among the papers that used ‘Registered Businesses (REG)’, intentionality has been formalized and is assumed. These papers were also often using retrospective data. This has implications for the nature of action that is being observed. In some cases, the registered businesses come to the attention of the researchers through a third party that has collected data based on

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company registration (e.g. WBES – World Bank Enterprise Survey), but in all other cases, the researchers are identifying research candidates by discriminating based on business registration and thus ascribing their activity ‘entrepreneurial status’ because of a later-emerging formal venture.

It is evident that some sources of participants have a substantive connection to recognizably entrepreneurial contexts or activities, such as the PSED [PSED/GEM/CPSED] or the entrepreneurial ecosystem [ECOS]. In these cases, it could be argued that the entrepreneurial nature of any action is embedded within the sample choices made. For example, choosing to research data from the Panel Study of Entrepreneurial Dynamics adds implicit robustness to research with an interest in the early stages of the entrepreneurial process, thus the sample itself acts as an instrument of operationalization. This could be argued for the majority of sources from this category: UNIV, GEM/PSED/CPSED, REG, ECOS. These source categories represent over 70% of the papers in the corpus. If the UNIV category is added, it represents over 90% of the corpus. One interpretation of this is that current research takes a predominantly conservative approach to sampling, looking to ensure a sense of internal validity by sourcing participants in contexts that are salient to entrepreneurship. However, some of the further discussions below suggest that the apparent validity is stronger in its appearance than its substance in relation to entrepreneurial action.

1.6 Material Evaluation (Step 4)

Our considerations of the two categories lead us to discuss two features of our research question (*What do our sampling procedures reveal about the boundary conditions and associated epistemological assumptions currently in use to identify and capture early entrepreneurial action?*), those features are:

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- ⌚ The recognition of entrepreneurial action, i.e. is it recognized as such?
- ⌚ The epistemic positioning of entrepreneurial action, i.e. who is determining it?

As far as recognizing entrepreneurial action is concerned, we need to consider whether or not the source of research participants has any substantive relationship to recognized entrepreneurial activities. We argue that the choice of source of participants in some studies may lend the study an appearance of recognizable entrepreneurial character without necessarily adding any substantively. For example, sourcing participants from student samples where the students are studying entrepreneurship gives the appearance of entrepreneurial activity in the context of the research sample. Equally, choosing research participants from an incubator is ostensibly a recognizable entrepreneurial context, but assumptions about the conventions of incubator setups and practices may lend a study undeserving substance or may misrepresent the nature of activity being studied simply because of the way in which the context is framed. This is not to say that the studies contained within our corpus were lacking substance or misrepresented their samples, rather we are making explicit that the threshold for validating activity as entrepreneurial is in some cases considered to be satisfied solely by the source of participants.

The source of participants may also recognize entrepreneurial action de facto because the study uses data whereby participants self-identify as entrepreneurs, as in studies such as GEM and PSED. In these studies, the responses to screening questions render the status of the reported actions as implicitly entrepreneurial because the respondent has declared an intention or has taken action towards starting a business. Thus the participant is recognizing their (potentially future-) action as entrepreneurial on the basis of their intentions to start a business.

Conversely, the source of participants is in some cases inconsequential to whether the activity being studied is considered to be entrepreneurial. This is because a definition of entrepreneurial

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action is being used that defines it as endogenous and thus manifestly entrepreneurial irrespective of who conducts it or in which context it is conducted.

There are also cases where the context itself infers entrepreneurial action, such as those studies from the ecosystem [ECOS] category that sourced participants from incubators, but did not operationalize entrepreneurial action as a concept. In such cases entrepreneurial action is not recognized explicitly but the action being studied is considered to be entrepreneurial because incubators are accepted to be 'entrepreneurial' environments.

Therefore, it has been established that entrepreneurial action can be recognized in and of itself based on a recognized list of behaviours and it can be recognized on this basis despite the source of participants, as in the case of student samples. We have also established that the early-stage entrepreneurial process can be recognized explicitly because of the source of participants, as in the [PSED/GEM/CPSSED] category and implicitly based on the context of study.

It has also emerged from that the epistemic positioning of entrepreneurial action varies. In studies such as those that employ the GEM/PSED method, the respondents are declaring an intention to start a business or are responding affirmatively to questions that ask if they are already taking action towards starting a business. In these cases it is the respondents' epistemological interpretation of 'action towards starting a business' that qualifies them as being included for study. Similarly, in retrospective accounts of an entrepreneur's early journey it is the entrepreneur who is selecting the actions they took to explain their experiences. Even if their recollection were to correspond perfectly to an objective account of their experiences, it remains that the epistemological constitution of their entrepreneurial action comes from them, the research participant.

Conversely, in studies where entrepreneurial action is being identified by an academic definition, for example, its epistemic positioning sits with the researcher, since they are

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interpreting the behaviour against a set of defined activities. When the study is justified on the basis of the participants' membership of a chosen context, such as belonging to an incubator, it is also the researcher who is inferring that the chosen context will produce reliable data to study early-stage entrepreneurial action.

Following the above discussions, we settle on four prevailing sets of early-stage entrepreneurial action. The papers associated with the categories, 'Based on the definition used in GEM or PSED' and 'Respondents' reported intention', can be aggregated together further to represent operationalization on the basis of an *intendedly-rational path to starting a business*. This language incorporates intention without associated action and therefore accommodates early forms of the entrepreneurial process by recognizing that intention can set a path to action. In this category, it is the research subjects who are recognizing their entrepreneurial action and it is the research subjects who are determining the nature of the action as entrepreneurial, potentially based on their intentions. This category represents 11 out of the 42 papers in our corpus.

Another distinct category that emerges from the above discussions identifies entrepreneurial action on the basis of *manifestly entrepreneurial activities (14 out of 42 papers)*, this accommodates papers where activity may be abstracted from context by the study (such as studies of students), but where an academic definition, such as that of Davidsson and Honig (2003), is used that prescribes a list of actions that can be determined as endogenously *entrepreneurial*. In such cases the early-stage entrepreneurial action is recognized since it is the activity or activities in and of themselves that are operationalizing the study. Thus, the epistemic positioning of entrepreneurial action is with the researcher, who is matching empirical activities to a specific definition

The next emergent category is where entrepreneurial action can be identified on the basis of *Specific entrepreneurial contexts*, such as action taking place within start-up incubators. As

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discussed above, such contexts in our corpus (i.e. incubators) were used to operationalize research in a way that took for granted the entrepreneurial nature of the activities that took place within them. There are two papers from our corpus in this category and specific entrepreneurial action for the purpose of operationalizing early-stage entrepreneurial research is unrecognized in such studies. The epistemic positioning of entrepreneurial action lies with the researcher, who is making the epistemological connection between the context and the actions that take place therein.

Finally, many studies in our corpus were retrospective and, notwithstanding the contributions of these papers, it is widely accepted within the discourse that the early stages of the entrepreneurial process are challenging to capture via retrospective studies. As mentioned above, the path-dependency of contemporary outcomes mean that choices made by entrepreneurs, equivocal options that they may encounter, and the attendant prevalence of intentional action cannot be accurately accounted for. This means that retrospective studies will offer insight into the early stages of venturing, but may not do so in a comprehensive and holistic way. We call our final emergent category *retrospectively inferred*. There are 15 papers from our corpus in this category and in this category the participant is recognizing the early-stage entrepreneurial action because they have to identify the action from recall and it will fit into a broader historical narrative. The action is also being identified from the epistemic position of the participant, since it is they who must recall it as such. is also each of these categories carries assumptions about the recognition of entrepreneurial action and its epistemic positioning. The emergent boundary categories are presented below in Table 3

	Recognition		Epistemic Positioning	
	Recognized	Unrecognized	Researcher	Participant
<i>Intendedly-rational path to starting a business (11 papers)</i>	x			x

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<i>Specific entrepreneurial contexts (2 papers)</i>		x	x	
<i>Manifestly entrepreneurial activities (14 papers)</i>	x		x	
<i>Retrospectively inferred (15 papers)</i>	x			x

Table 3 Emergent Boundary Categories

1.7 Discussion and Conclusion

Our systematic analysis has led us to determine the characteristics of the leading empirical research into the early stages of the entrepreneurial process and has resulted in determining the explicit boundary conditions for such research. These boundary conditions are set around whether or not entrepreneurial action is being recognized and the epistemic positioning of that recognition.

We know that some entrepreneurial intention is converted to entrepreneurial action. We also know that some entrepreneurial intention is not converted to entrepreneurial action. We do not know, but we are becoming more aware of, whether entrepreneurial action can exist without intention (Lerner, 2016; Lerner et al., 2018; Wiklund et al., 2017). On the basis of the same threshold between intention and action it is logical to suggest that early-stage entrepreneurship could be identified on the basis of action that is yet to find an entrepreneurial intention as opposed to solely intention that is yet to translate to action. We also know from the present research that among the categories that represent a majority from our corpus, the recognition and epistemic positioning of entrepreneurial action lies with the research participant (*Intendedly-rational path to starting a business* – 11 papers, *Retrospectively inferred* -15 papers), where it is at their discretion that action is considered to belong to the entrepreneurial process.

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We call into question the observability and more nuanced nature of entrepreneurial action. There is an assumption that because action is explicitly observable and tangible, when it is considered against, for example, opportunity, action seems like a salient item for entrepreneurship research to scrutinize. However, our consideration of the corpus of literature here demonstrates that entrepreneurial action is potentially as elusive as opportunity and therefore, we need to be precise and mindful of its characteristics and the characteristics which we ascribe to it (intentionally or otherwise) throughout the research process. On the basis of the boundary conditions set out above, sitting across four distinct categories, future studies potentially have licence to expand their scope to be more comprehensive in the manner they engage research participants. For example, electing to study artists in a purely creative environment by applying the boundary conditions of ‘recognized entrepreneurial action’ with the epistemic positioning of the researcher as in the *Manifestly entrepreneurial activities* category, a study would be expanding on the types of sources we have seen represented in our corpus but would still be operating within acceptable and established boundary conditions for early-stage entrepreneurial research.

While our study has aimed to establish boundary conditions and account for recent research, we do not intend to discredit or question the robustness or validity of any of this research, we see this study as more analogous to the story of the work of the World War Two statistician, Abraham Wald, who was asked to solve the problem of how to better protect allied fighter planes by improving their armour. Wald was asked to study the distribution of bullet holes on the planes that were returning from combat and determine where to concentrate their armour. Wald’s insight was that armour should be placed in the areas where there were no bullet holes since the planes that had returned were able to do so despite the damage they had sustained. The planes that had not returned were presumed to have bullet holes where the armour was needed, and the reverse was therefore true for the planes that had successfully returned. This

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was a counterintuitive, yet vital observation. In the case of this research, we have tried to establish what we are potentially not seeing on the basis of what we do currently observe. On this evidence, we have scope in studies concerned with the early stages of entrepreneurship to expand our horizons without compromising on quality. Now that there is some more explicit boundary conditions on offer, future studies can potentially be more daring with what they choose to study within them.

2 List References

Full list of references available by correspondence with the candidates

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3 Appendix 1 – Final Corpus References

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4 Appendix 2

Number of articles	Identification of Operationalization	Operationalization Category	Total number of papers in category
17	No operational definition of early stage entrepreneurial action	No operational definition of early stage entrepreneurial action	17
4	PSED Definition (Reynolds, 2009)	Based on the definition used in GEM or PSED	5
1	GEM Definition (Levie and Autio, 2008, p.248) "Nascent entrepreneurs are individuals who are in the process of trying to start a firm and have done something tangible during the 12 months preceding the interview to this end. The individual concerned would plan to become an active owner-manager of the startup, which must not have paid salaries to anyone for more than 3 months."		
2	Initiated at least one gestation activity for a current, independent start-up by the time of the interview. Gestation activities were determined as any of 20 different behaviours that were considered demonstrative of actively beginning the business creation process (Davidsson & Honig, 2003, p.313)	Based on an academic definition of nascent entrepreneurship	4
1	Nascent entrepreneurs conceptually defined as individuals who "are considering or trying to start new firms" (Lundstrom and Stevenson, 2005)		
1	Nascent entrepreneurs defined as individuals who initiate "serious activities that are intended to culminate in a viable business start up" (Aldrich, 2000:77)		
2	Membership of an incubator	Respondents' membership of an incubator	2
1	Individuals with a business plan and with no other current sources of income	Respondents engaged in recognized 'startup activities'	12
1	Screened based on (1) whether the individuals have engaged in business planning activities (the variable Business planning); and (2) whether these business planning activities produce either unwritten or written results (the variable Business plan formality).		

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2	(1) they expect to have at least some ownership in the new firm; (2) they had to be actively trying to start the new firm in the past 12 months		
1	Ventures to which time and resources have been dedicated but have not started to generate an income		
1	Screened through: "I am, alone or with others, currently trying to start a new business, including any form of self-employment or selling any goods or services to others."		
1	If they, alone or with others, were starting a new venture or starting a new venture for their employer; if they had done anything to help start a new venture in the past 12 months (organize a team, work on a business plan, and etc.).		
1	Students actively engaged in the process of founding their own business for the first time = identified with the question: "Are you currently trying to start your own business/to become self-employed?"		
1	Currently trying to start a new business or having been involved in start-up activities in the previous year.		
1	Participant answered 'yes' to the following: (1) Are you, alone or with others, now trying to start a new business?; and answered 'no' to (2) Are you, alone or with others, now starting a new business or new venture for your employer?		
1	Had performed some start-up activity in past 12 months, expect to own all or part of the new firm and not had a period of profitability in the past 12 months		
1	Expected to have some ownership in a new business, had been involved in activities to launch a new venture during the previous 12 months and the effort was still in the start-up or gestation phase and was not yet an infant firm.		
1	Selecting students who are "intentional founders"	Respondents' reported intention	2
1	Intending to start a new venture, at least one previous start-up activity, expected to own part of the venture and did not have an existing operational business		

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5 Appendix 3

Number of articles	Source of Participants	Source of Participants Category	Total number of papers in category
1	Swiss students aged between 18 and 34 participating in "The "Global University Entrepreneurial Spirit Students' Survey" (GUESSS) project.	University Students or Alumni (UNIV)	6
1	University students enrolled in an introduction to entrepreneurship class who have completed a business plan as part of their coursework (considered nascent entrepreneurs). Authors' undergraduate programmes		
1	Business students from Turkish University Men and women, average age 22 with 6 months' work experience. Age range is 18-24, which represents "generation E" (i.e. the generation of individuals aspiring to starting a business)		
1	Business students enrolled in a marketing course, average age 21, University Business School		
1	The "Global University Entrepreneurial Spirit Students' Survey" (GUESSS) project, from 34 countries.		
1	Alumni of US University. Individuals who recently started a new business; individuals currently in the process of starting a new business, and individuals who were planning to start a new business in the near future.		
1	Panel Study of Entrepreneurial Dynamics (PSED) "Longitudinal study of nascent entrepreneurs started in 1998. Respondents answering ""yes"" to the following questions: "Are you alone, or with others, now trying to start a business?" and "Are you alone, or with others, now trying to start a new venture for your employer?"	Surveys of Entrepreneurial Activity: Global Entrepreneurship Monitor (GEM), Panel Study of Entrepreneurial Dynamics (GEM/PSED) & Chinese Panel Study of Entrepreneurial Dynamics (CPSED)	15
1	Panel Study of Entrepreneurial Dynamics i Individuals that were in the process of undertaking efforts to start a new organization that had not yet achieved operational status		
1	Panel Study of Entrepreneurial Dynamics ii Screening criteria: the respondent had to exhibit the following characteristics: (1) they anticipated having some ownership in a new firm; (2) they had to be actively trying to start a new firm in the past 12 months; but (3) there was no positive monthly cash flow covering all expenses and salaries for 6 of past 12 months.		

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1	Panel Study of Entrepreneurial Dynamics (PSED) Sample of USA nascent entrepreneurs with non yet up and running firms		
1	Panel Study of Entrepreneurial Dynamics (PSED) Random sample from those who qualified as nascent entrepreneurs from the PSED		
1	Panel Study of Entrepreneurial Dynamics i Nascent entrepreneurs identified through the PSED sample = [1] been trying to start their own business (either for themselves or for their employer), [2] expected to be owners or part owners of the new firm [3] been active in trying to start the new firm within the previous twelve months [4] been still in the start-up or emergence phase and must not have been a new firm, and [5] be creating an organization that would not be majority owned by another business		
1	Panel Study of Entrepreneurial Dynamics (PSED) Longitudinal data collection on nascent entrepreneurs over a five year period		
1	Panel Study of Entrepreneurial Dynamics ii Single owner nascent entrepreneurs from PSED ii.		
1	Panel Study of Entrepreneurial Dynamics (PSED)		
1	Panel Study of Entrepreneurial Dynamics (PSED) Nascent entrepreneurs followed for 36 months. Questions asked about the origins and development of the idea and the obstacles encountered in developing it.		
1	Panel Study of Entrepreneurial Dynamics ii Individuals intending to start a new venture, at least one previous start-up activity, expected to own part of the venture and did not have an existing operational business		
1	Panel Study of Entrepreneurial Dynamics ii "Nascent entrepreneurs who had performed some start-up activity in past 12 months, expect to own all or part of the new firm and not had a period of profitability in the past 12 months "		
1	Panel Study of Entrepreneurial Dynamics II (1) they expect to have at least some ownership in the new firm; (2) they had to be actively trying to start the new firm in the past 12 months		
1	Chinese Panel Study of Entrepreneurial Dynamics (CPSED, modelled on the PSED from USA) Nascent entrepreneurs=expected to have some ownership in a new business, had been involved in activities to launch a new venture during the previous 12 months and the effort		

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	was still in the start-up or gestation phase and was not yet an infant firm.		
1	Global Entrepreneurship Monitor (GEM) "Data about individuals' resources and likelihood to start a new business From paper (p.312): ""We measure the likelihood of new business activity as a binary variable, which equals 1 if the respondent, at the time of the data collection, was either "involved in concrete activities to start up a new business" or "owning and managing a business that was less than 42 months"—thus capturing both nascent and new entrepreneurs engaged in new business activity (Levie & Autio, 2008; Reynolds et al., 2005).""		
1	Identified via local churches in Uganda Individuals age range 18-64 who answered positively to the question of whether they intended to start a business. Intentionality determined inclusion in sample.	Local Community (COMMUN)	1
1	"Contacts provided by local business schools, through public sector organizations that have access to their members, and through snowballing with individuals who had a wide spectrum of contacts across industries" Individuals who had engaged in at least one gestational or nascent entrepreneurial behavior (based on Davidsson & Honig's [2003] definition) AND non-entrepreneurs (no gestational activity undertaken). Countries: US, China and Taiwan.	Ecosystem (ECOS)	10
1	"Members of one of the two leading North American social-enterprise practitioner networks, Social Venture Network and Social Enterprise Alliance" 23 of both nonprofit and for-profit organizations founded in North America Retrospective accounts of the earliest days of the ventures (using 'lived worlds' approach) Respondents' ventures were aged between 1 and 7 years at the time of the interview.		
1	"university-affiliated technology incubators listed by the National Business Incubation Association online database (USA)" Incubators provided access to founders of new technology ventures(defined as five years old or younger)		

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1	Targeted professional bodies and snowball sampling Technology venturers, experienced entrepreneurs being asked questions about early stage venturing retrospectively		
1	Business-to-business online panel from Professional market research institute German entrepreneurs from the service industry (main experiment)		
1	The North Jutland Entrepreneurial Network (NiN)(Guides and assists individuals engaged in the creation of a new venture as their primary occupation) Individuals who registered a new venture between one year before, and one year after participating to the NiN programme. Those who didn't register a business or registered outwith the year parameter were excluded.		
1	Government start-up grant Finnish entrepreneurs who started a business between 2005 and 2010 who have received a start-up grant. The latter requires that business operations start at the start of the grant. A variety of industries is included.		
1	Business incubators in Manila, Philippines Entrepreneurs involved in start-ups who have been in an incubator for approximately eight months.		
1	University-linked business incubators in Manila, Philippines Young, resource constrained entrepreneurs who have been in an incubator approximately nine months and who have legally registered their business		
1	"The Kauffmann Foundation (well-regarded, nonprofit organization dedicated to the promotion and understanding of entrepreneurship)" Entrepreneurs' start-up stories collected by the Kauffmann Foundation. Sample ventures were, on average, 7.9 years old, had 20 employees, and produced \$7 million in annual revenues at the time of data collection.		
	"Firms featuring in the book Founders at Work (Abrahamson, 2007). Where the firms were recruited for the book is not specified" "6 consumer Internet ventures launched between 2000 and 2003. Interviews provide details on the founding process of the businesses concerned, but they were sampled once the businesses were established (hence they were identified through the content of a published book).	Public Domain (PUB)	1

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	<p>We think this was secondary data - i.e. they got the transcript of the interviews conducted for the book - we think J Abrahamson is Jessica Abrahamson, who later became Jessica Livingston</p> <p>From Fisher (2012, p.1047) - this is a subsection of the questions used by the researchers to scrutinise the interview transcripts: ""Questions Used in Developing Each Case Study 1. What was the pre-founding context? Discuss the context with respect to the entrepreneur, the technology, and the market. 2. From where did the opportunity emerge? Describe the opportunity emergence process. 3. How did the entrepreneur create the first iteration of the product or service? 4. From where did the resources come for the initial development and exploitation of the opportunity? 5. How did the entrepreneur finance the growth of the venture? 6. How did the entrepreneur/team develop and implement a strategy to first take the product or service to market?"</p>		
1	<p>Population Register Center of Finland, addresses from Digital phone book in Austria Respondents selected randomly in a representative range of regions in Austria and Finland. Respondents were not selected out based on self-reports of entrepreneurial activities or intentions. All representative population targeted.</p>	Adult Population (ADULT POP)	2
1	<p>Finnish Population Register Center Sample of general adult population who had declared an intention to start a business but not taken action during wave one of the study</p>		
1	<p>Irish life-science registered start-up Real time data collection for four years plus retrospective accounts covering 3 years</p>	Registered Businesses (REG)	6
1	<p>Records on the State of Florida Department of Corporations website Individuals in the early stages of venture development 1 year prior to research being conducted</p>		
1	<p>Identified via WBES (World Bank Enterprise Survey), contacted via country's statistical office or another government agency such as the tax or business licensing authorities Random sample of nonagricultural formal private sector businesses with five or more employees registreed at the time of data collection. Retrospective appraisal of operational time spent unregistered.</p>		

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1	Dun & Bradstreet directory (containing information about companies) Founders of 2-5 year old firms in electrical measurement instruments and surgical, medical instruments, plastic products, prepackaged software		
1	Swedish business registrations New ventures registered as legal entities in Sweden.		
1	Sources of participants not specified but the authors refer to registered companies Founding team members of four start-ups from the Chinese cities of Beijing and Shanghai, in the information technology and mobile health sector		