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Replication in entrepreneurship

1. The replication imperative

Modern science is under a magnifying glass. Probably, this started with the mind-boggling Diederik Stapel scandal, which triggered a debate about what is wrong with modern publication and research practices, as they have evolved ever since the 1990s or so (van Witteloostuijn, 2016). For Nobel Prize winner Daniel Kahneman, in a letter reported and commented in *Nature*,[1] the emerging replicability crisis was a reason for a powerful plea to change deeply ingrained practices: to 're-rail' a derailed scientific practice that rarely, or does not ever, replicate. In the current climate where fake news and opinion fights are common, science's very legitimacy is at stake. In response, large replication initiatives were initiated in disciplines such as Economics (Anderson and Kichkha, 2017; Berry et al., 2017; Hamermesh, 2007; Höffler, 2017) and Psychology (McShane et al., 2019; Nosek et al., 2015; Open Science Collaboration, 2012). To date, although forceful pleas in favor of replication have been published in disciplines such as Behavioral Sciences (Hantula, 2019), Public Administration (Walker et al., 2019) and Strategic Management (Ethiraj et al., 2016; Mezias and Regnier, 2007; Singh et al., 2003), the disciplines of Business and Management, broadly speaking, are lagging behind (Block and Kuckertz, 2018). Here, the field of Entrepreneurship is not an exception (Davidsson, 2015; Delmar, 2015; Honig and Samuelsson, 2015). With this Virtual Special Issue, we hope to pave the way to the much-needed change in our field.

The key is: we fail to replicate. Here, 'we' is the scientific community at large, and the Social Sciences in particular, including Entrepreneurship. The reason for this is very human: as scholars, we like the idea of contributing to knowledge by providing novelty, rather than by replicating work done by colleagues (Gertler et al., 2018). However, rather than installing incentives to counter this natural tendency to not replicate, the worldwide system of academia has adopted a series of practices that further disincentivize replication. This current editorial is not the place to offer an analysis of the current state of affairs. Plenty of scholars from a wide variety of disciplines have done this, and very extensively and convincingly so. Suffice to say that journals' publication policies ("we seek to publish groundbreaking theoretical novelty") and universities' promotion criteria ("a minimum of x publications in high-impact journals is required") are not very helpful to encourage any investment in replication.

Overall, we really need to replicate, and we need to do so systematically. One finding is no finding. Our journals are stocked with 'unique' contributions. But straightforward statistical theory is very clear about this: any finding is very uncertain, being biased by an abundance of noise. Even if we could accept the notion of statistical significance in combination with null hypothesis testing (but see, e.g., Starbuck, 2016; van Witteloostuijn, 2020), the size of the found effect is highly uncertain, and very likely to be seriously upward biased, given journals' pro-positives publication biases and scholars' questionable research practices (Andrews and Kasy, 2019; Brodeur et al., 2016; Meyer et al., 2017). Together, this toxic tandem implies that our journals are full of false positives. Only by replicating can we correct this dismal state of affairs. And only by replicating can we accumulate knowledge by, step-by-step, reducing uncertainty regarding the statistical significance and effect size of our findings, as well as their boundary conditions.

We can illustrate this with an example relevant for Entrepreneurship scholarship. For decades now, we have struggled to increase our small firm growth models' R^2 to more than 15 %, without much – if any – success (e.g., Coad, 2009; van Witteloostuijn and Kolkman, 2018). Such models can hardly be said to be a reliable source of information for firm strategies or government policies. In these underperforming models, we have accumulated estimates of an impressive series of potentially important small firm growth drivers, but what can we say about the 'true' significance and effect size of, e.g., SME size (or any other standard demographic variable)

[1] See Yong, E. (2012), Nobel laureate challenges psychologists to clean up their act, *Nature*: https://doi.org/10.1038/nature.2012.11535. Kahneman's letter is included in the supplementary information section.

[2] *Journal of Business Venturing Insights*, "Large-scale Replication Initiative in Entrepreneurship - Call for papers", May 2018.

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or entrepreneurial self-efficacy (or any other well-established Entrepreneurship construct)? Not much, as the scholarly Entrepreneurship community does not systematically replicate to establish stylized empirical size facts (which are often conditional, given a plethora of contingencies). And without sufficient replication, specifically in populations with greater heterogeneity (e.g., across countries and industries), the potentially powerful instrument of meta-analysis is seriously weakened.

But there are things we, as a scholarly community, can do to stimulate replication. For instance, journals could introduce a Replication Editor and a Replication Corner, preferably with articles in each and every issue (Dau et al., 2021). And universities can make performing a replication study an obligatory ingredient in their PhD programs, published in a dedicated replication series or as the first chapter of PhD theses. Indeed, our journals are aware of the issue. Many established journals launched incidental initiatives to promote replication (see, e.g., the Special Issue of the *Strategic Management Journal* of 2016; cf. Ethiraj et al., 2016). However, none of these incidental initiatives has translated into a fundamental change in policy, with the exception of new reporting guidelines (see, e.g., Meyer et al., 2017, and Beugelsdijk et al., 2020, in the *Journal of International Business Studies*).

As we know from the radical innovation literature, fundamental change often comes from newcomers rather than incumbents (Stringer, 2000; Baumol, 2002). Indeed, more and more new outlets, often in the spirit open science (but charging article processing fees), are launched with the explicit aim to change current practices, and to experiment with novel ways to conduct, review, publish, and debate research. Examples in the Social Sciences, broadly, are the *Frontiers* platforms, *PLoSONE*, and *Social Sciences and Humanities Open*. In Business and Management, a prominent example is the *Academy of Management Discoveries*. As a spinoff of the *Journal of Business Venturing*, a key outlet in Entrepreneurship, the *Journal of Business Venturing Insights* (*JBVI*) shares the aim of these and other examples to change ingrained publication (and hence reporting and research) practices. The current Virtual Special Issue (VSI) is a representation of our commitment at *JBVI* to this.

2. This Virtual Special Issue

In sum, the lack of replication, or the replicability crisis, is a challenge across a growing number of disciplines (e.g., Aguinis et al., 2017; Świątkowski and Dompnier, 2017). For some, this is even a reason to refer to a “credibility crisis” in science in general (Gall et al., 2017). This Virtual Special Issue (VSI) of the *Journal of Business Venturing Insights* is the result of an ambitious call for papers[2] published online in May 2018, which explicitly solicited replication studies in entrepreneurship. The deep interest shown by many entrepreneurship scholars generated an impressive number of submissions. After the regular refereeing process of the journal with a twist (i.e., a two-step reviewing process, with a proposal first and a full article next), conducted by the guest editors with the infallible support of the editor-in-chief,[3] a total of eight of these submissions ended up in the VSI.

With this VSI, we have a twofold aim. First, we seek to give an immediate impetus to the production of a growing stock of high-quality replication studies. Second, we hope to stimulate further replication work by confirming that *JBVI* is a welcoming outlet for this type of publication. Put simply, our overarching aim is to offer a first step to the launch an ambitious replication movement in the Entrepreneurship field, establishing replication as a normal practice in the context of our collective effort to advance the accumulated stock of knowledge. Put succinctly, what we want to see is a large-scale movement within the Entrepreneurship community involving (a) replicating multiple studies, in (b) different countries across the world by (c) a large number of teams. After all, in the end, replication should be a communal effort of the scholarly community as a whole.

The replication movement project could appear (too) demanding and overambitious, given extant and deeply ingrained hurdles due to current publication and HR practices, and hence given lack of an established replication tradition. From that perspectives, the key is to establish thorough guidelines as to how to position, conduct, and report replication work. Indeed, as part of the refereeing process for our VSI, we encouraged interested authors to make their replication type and strategy explicit (see Walker et al., 2019), and to pre-register their studies on the platform of the Open Science Framework (OSF), or similar, before beginning data collection. This is now considered a best practice across multiple fields, including Entrepreneurship (Anderson et al., 2019) and Psychology (Nosek and Lindsay, 2018). Multiple guidelines (Ledgerwood, 2018; Nosek et al., 2018, 2019) as well as templates exist (van’t Veer and Giner-Sorolla, 2016), from which the Entrepreneurship field can benefit.

Of course, the replication process is not without potential complications intrinsic to this type of research activity. The exchanges among recent researchers in *JBVI* are proof of this (e.g., Davidsson, 2015; Delmar, 2015; Honig and Samuelsson, 2015). Therefore, our approach to replication, as practiced within the context of this VSI at *JBVI* in particular, is to enhance the scientific rigor regarding the design and implementation of replication work within the field of Entrepreneurship. It was our expectation that some studies and some effects will replicate, and some will not. For an excellent example of how to navigate, eloquently, such issues in the world of replication, we refer to Finkel (2016). Indeed, our impression is that for those who contributed to this VSI the journey from the submission of the proposal to the publication of the full study was an insightful and productive experience – for sure this is the case for us as the guest editors. We really hope that our VSI will instigate a much needed move toward replication in Entrepreneurship, with this VSI’s contributions providing an excellent set of examples that offer a launching platform for many future replication studies.

3. Contents of this Virtual Special Issue (as of July 31, 2021)

The articles listed below are in order of their acceptance, from the oldest to the most recent one. For each, we mention the replicated study, with the complete reference being provided in this Introduction’s literature list, and the type of replication (in line

[3] Accepted articles are aggregated on the *JBVI* website: https://www.sciencedirect.com/journal/journal-of-business-venturing-insights/special-issue/10LH57P6TVX.

with Walker et al., 2019; for an extension, see Dau et al., 2021). Additionally, we indicate whether the replication confirms or leads to meaningfully questioning the results obtained in the replicated article, and/or whether the proposed extension gives a renewed perspective on the original results.

In "Is leadership language 'rewarded' in crowdfunding? Replicating social entrepreneurship research in a rewards-based context", Short and Anglin (2019) replicate the studies of Allison et al. (2013), Anglin et al. (2014), and Moss et al. (2015). Their replication, labeled as an empirical generalization (Tsang and Kwan, 1999), unveils little overlap across different study contexts with reference to several popular measures of language. Their findings lead to being cautious as to generalizations, implying a warning that we should care more for the impact of context.

Ciuchta and Finch (2019) have a contribution entitled "The mediating role of self-efficacy on entrepreneurial intentions: Exploring boundary conditions" in which they propose a "quasi replication" (Bettis et al., 2016: 2195) and extension of Zhao et al. (2005). Their results motivate a serious consideration, with all the attention that this deserves, of the significant heterogeneity in the relationships that are tested according to different subgroups constituting the population.

Cowling et al. (2019), in their "Two decades of European self-employment: Is the answer to who becomes self-employed different over time and countries?", replicate Cowling (2000) with recent data for an expanded number of European countries. In so doing, they provide evidence that empirical results addressing the question of who becomes self-employed is not definitive, but rather that time period and country context do matter substantially.

In "Revisiting Covin and Slevin (1989): Replication and extension of the relationship between entrepreneurial orientation and firm performance", Lee et al. (2019) tackle a classic question in Entrepreneurship. Their findings, obtained from direct replication, and generalization and extension, and making use of objective entrepreneurial orientation measures adapted from Miller and Le Breton-Miller (2011), provide new evidence regarding the positive impact of entrepreneurial orientation on firm performance under environmental hostility.

The article "The higher returns to formal education for entrepreneurs versus employees in Australia", written by Hessels et al. (2019), replicates Van Praag et al. (2013) using data from a different country (Australia instead of the United States) and a different time period (2005–2017 instead of 1979–2000). They conclude that the returns to education are higher for entrepreneurs (especially entrepreneurs without employees) than for employees, but, unlike Van Praag et al. (2013), they do not find evidence for the original result that personal control in one's job explains higher returns for entrepreneurs.

In "Exploring the relation between family involvement and firms' financial performance: A replication and extension meta-analysis", Christopher Hansen and Block, (2020) report the results of an atypical replication study since their work concerns a meta-analysis, the one published by O'Boyle et al. (2012), that they replicate, generalize, and extend. If, on average, an economically small positive impact of family involvement on firm performance is revealed, they find stronger effects as regards to listed and large firms, and in terms of accounting rather than market-based performance measures. Moreover, country culture can play a role as well.

The contribution by Jessri et al. (2020), entitled "Employees' decision to participate in corporate venturing: A conjoint experiment of financial and non-financial motivations", is an empirical generalization type of replication and extension of Monsen et al. (2010). Their findings confirm the results from the original study, and provide new evidence concerning the variables influencing employees' willingness to participate in corporate ventures by additionally testing the effect of attitude towards independence and entrepreneurial self-efficacy.

Finally, van Hugten et al. (2021), in their "What makes entrepreneurs happy? Psychological flexibility and entrepreneurs' satisfaction", report the results of a conceptual replication (Walker et al., 2019) and extension of Carree and Verheul (2012), analyzing a Belgian rather than a Dutch sample. Regarding the extension, they introduce psychological flexibility as a new predictor of entrepreneur's satisfaction, and provide evidence of its explanatory power on top and above Carree and Verheul's (2012) set of variables.

4. The future

This being an ongoing VSI, we may add one or two further studies to the above list of eight later in the year. However, much more importantly, we hope that this set of contributions in our VSI inspires other Entrepreneurship scholars to initiate replication studies, as this is a critical, and necessary, building block of scientific advancement. Here, the set of VSI contributions provide a good introduction into both the variety of replication design, as well as rigorous replication practices. *JBVI* welcomes more replication work that will contribute to solidifying knowledge in Entrepreneurship.

Declaration of competing interest

The authors declare no conflict of interest.

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