ERRATUM

Erratum to: National culture, effectuation, and new venture performance: global evidence from student entrepreneurs

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The original version of this article contained a mistake. The corrected versions of the paragraphs are given below.

The paragraphs under Introduction section should read as follows:

Research has shown that levels of entrepreneurial activity vary substantially across countries (Kelley et al. 2012). Among the factors explaining these differences is the role of national culture (Minkov and Hofstede 2012). Culture may influence entrepreneurship through two main mechanisms: social legitimation and psychological traits (Davidsson 1995). The first approach assumes that

a supportive national culture will lead to higher legitimacy of an entrepreneurial career leading more people to start ventures (Etzioni 1987); the second approach focuses on the role of culture in reinforcing personal, opportunity, and sociocultural perceptions compatible with entrepreneurship (Fernandez et al. 2009).

Yet, in considering the impact of culture on entrepreneurs and their ventures, there is little understanding of how culture might influence the entrepreneur's reasoning and decision-making approaches (Corbett 2005; Mitchell et al. 2002). Of particular interest in this realm has been the cognitive logic employed by an entrepreneur when navigating the stages of the entrepreneurial process (Dutta and Thornhill 2014). In her groundbreaking work, Sarasvathy (2001) distinguished two cognitive logics which represent different heuristic approaches to the creation of new ventures—effectuation and causation. Subsequently, numerous scholars have contributed conceptual arguments, qualitative studies, and longitudinal works to an emerging stream of research (e.g., Arend et al. 2015; Eijdenberg et al. 2015; Politis et al. 2012; Smolka et al. 2016). With the introduction of validated scales for measuring these cognitive logics (Chandler et al. 2011), scholars have been able to empirically explore a range of questions surrounding effectuation and the entrepreneurial process (e.g., Mthanti and Urban 2014; Smolka et al. 2016). While a few studies have investigated the performance implications of an entrepreneur's reliance on causal versus effectual **logic**, such studies reveal a positive relationship between both logics of action—causation

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and effectuation—and firm performance (Eijdenberg et al. 2015; Smolka et al. 2016).

Effectuation theory has been criticized because it arose from research on expert entrepreneurs, and built upon their experience. As such, its implications for less experienced entrepreneurs are less clear (Perry et al. 2012). The pivotal role of experience in cognitive processes has received considerable attention (e.g., Gabriellsson and Politis 2011; Sarasvathy 2001). Consequently, the cognitive processes of non-experienced entrepreneurs represent a promising path for research on effectuation. Does culture impact the tendency to **rely** on effectual versus causal reasoning? In the current study, we investigate the extent to which effectuation and causation mediate the impact of national culture on entrepreneurial outcomes. Specifically, we adopt the social legitimation approach to explore how country specific cultural characteristics can shape venture cognitive logics. With social legitimation, the actions of social institutions serve to select and prioritize certain cultural practices, which are reflected characteristics of behaviors displayed by society's members in particular cultural settings (Fischer et al. 2009). Therefore, people tend to behave based on what they believe is socially appropriate behavior (Schwartz 1994; Liñán et al. 2013).

The paragraphs under 2.1.2 Causation and new venture performance section should read as follows:

The positive implications of a planned approach to decision-making for firm performance have been investigated in many studies within strategic management and entrepreneurship (Osiyevskyy et al. 2013). At the same time, the specific relationship between causation and performance has received much less attention. A number of scholars examine causation in concert with effectuation in trying to explain venture performance (Smolka et al. 2016), and performance of R&D projects (Brettel et al. 2012). Others focus on the role of causal reasoning in shaping the relationship between founding team diversity and idea generation and innovation (Kristinsson et al. 2016), and in entrepreneurial exit strategies (DeTienne et al. 2015). Due to the lack of research about the link between the causation construct and venture performance, we review literature

on rational decision-making, as causal logic relies upon a planned decision-making strategy.

There is ample evidence that firm performance can be positively affected by the use of such common tools as strategic planning, marketing research and rigorous analyses, and well-formulated goals (all associated with causal reasoning) (Brinckmann et al. 2010; Capon et al. 1994; Nadkarni and Narayanan 2007). Business planning promotes firm development by ensuring resources are used more efficiently and decision speed is increased (Delmar and Shane 2003), while also contributing to enhanced legitimacy of the venture (Delmar and Shane 2004). Planning contributes to venture success by setting predetermined goals and plans, specific objectives, and expected returns, and employing rigorous analyses (Smolka et al. 2016). Planning as a process and the writing of a business plan were found to lead to better performance of new ventures, with the relative benefits dependent on contextual factors (Brinckmann et al. 2010). Moreover, marketing planning has been associated with growth rates of firms (Osiyevskyy et al. 2013).

The paragraphs under 2.2 National culture and entrepreneurship section should read as follows:

The relationship between cultural peculiarities and entrepreneurship has been well-documented in the literature (e.g., Hayton et al. 2002; Mueller and Thomas 2001; Tiessen 1997). A significant body of research has focused on the influence of dominant cultural values on various aspects of entrepreneurship (e.g., De Clercq et al. 2013; Hechavarria 2015; Hechavarria and Reynolds 2009; Pinillos and Reyes 2011; Uhlaner and Thurik 2007). In particular, evidence suggests that post-materialist values, such as esteem, quality of life, and self-realization, as opposed to materialist ones of economic and physical security, lower the rates of entrepreneurial activity at the national (Uhlaner and Thurik 2007) and individual levels (Morales and Holtschlag 2013). It has also been established that differences across the cultural dimensions of uncertainty avoidance, individualism/collectivism, power distance, and masculinity/femininity are associated with differences in national rates of entrepreneurship (Hunt and Levie 2003; Pinillos and Reyes 2011), as well as with

entrepreneurial perceptions and intentions (Engle et al. 2011; Mueller and Thomas 2001; Shinnar et al. 2012; Shneor et al. 2013; Stuetzer et al. 2016), and boundary conditions for entrepreneurship development (Baughn and Neupert 2003). Cultural values may also impact the form or type of entrepreneurial activity. For instance, dominance of self-expression or post-materialist values may encourage opportunity-driven (as opposed to necessity-driven) entrepreneurial development (Hechavarria and Reynolds 2009).

Another stream of research concerns cultural practices that do not necessarily coincide with values (Fischer 2006) and their impact on entrepreneurship (Autio et al. 2013; Stephan and Uhlaner 2010; Thai and Turkina 2014). For instance, Thai and Turkina (2014), in their analysis of the impact of cultural practices on formal and informal entrepreneurship, found the former is encouraged by a performance-based culture focused on goal achievement, competition, and individual progress, while a socially supportive culture predicts the latter. Practices associated with institutional collectivism and uncertainty avoidance were found to decrease entrepreneurial entry rates; at the same time, performance orientation practices serve as a significant driver of self-employment (Autio et al. 2013).

In the current study, we build on the work of Peterson and Castro (2006) and subsequent reanalysis by Stephan and Uhlaner (2010), where second-order factors for the GLOBE cultural dimensions are established. When replicating the analysis of Stephan and Uhlaner (2010) using seven out of nine original dimensions, our analysis provides a similar two-factor solution: performance-based cultures (PBC) and socially supportive cultures (SSC) (see Table 1). Each is based on reanalysis of the GLOBE dimensions (House et al. 2004). The PBC factor has high positive loadings on future orientation, performance orientation, and uncertainty avoidance, **and** high negative loadings on in-group collectivism and power distance. The SSC factor is characterized by **a** high positive loading on humane orientation and high negative loading on assertiveness.

The paragraph under 2.3 National culture and venture cognitive logic and under SSC and venture cognitive logic section should read as follows:

Effectual logic suggests that entrepreneurs leverage partnerships and pre-commitments. Building alliances both with customers and partners not only helps effectuators gather new and different types of resources as they are needed but also promotes exploitation of emerging opportunities and creation of new markets through experimentation (Dew et al. 2009; Lam and Harker 2015). Effectuating entrepreneurs use co-creation as a tool for controlling unexpected changes during new venture creation (Read and Sarasvathy 2012; Sarasvathy et al. 2008). Effectual logic facilitates rapid adaptation to environmental changes when they happen. Flexibility and adaptability have been found to contribute to the performance of early-stage firms (Baker et al. 2001). Hence, effectual logic helps to cope with unforeseen events by enabling the entrepreneur to adapt to or capitalize upon them, creating potential advantages for firms in SSCs. Effectual logic is consistent with elements of SSC, where the emphasis is on seniority and experience, cooperative spirit, harmony, family, and indirect relationships, and where who one is means more than what one does. Another argument for the presumed relationship between SSC and effectuation can be found within developmental psychology (Schmitt-Rodermund 2004) and organizational behavior (e.g., Baer and Frese 2003; Hunter et al. 2007) where the evidence suggests that a socially supportive organizational and family context facilitates experimentation, which is one of the most prominent dimensions of effectuation (Sarasvathy 2001). Consequently, an association can be expected between SSC and the entrepreneur relying on effectual logic. Moreover, consistent with previous arguments, where socially supportive cultures foster higher levels of entrepreneurial performance, the use of effectuation among entrepreneurs during **the** venture creation process may be a key factor explaining the cultural influence.

The paragraph under Discussion and 5.1 Key findings section should read as follows:

The main empirical analysis indicated effectuation partially mediates the relationship between SSC and venture performance. This led us to investigate effectual sub-dimensions as mediators of the SSC-performance relationship to see which principles **then** serve as full or partial mediators. Two of

three principles—experimentation and flexibility—were found to fully mediate **the** SSC-performance relationship. Explaining the indirect influence of SSC on performance through experimentation and flexibility, we conclude that these two principles of effectual decision-making embrace the essence of socially supportive cultures. Experimentation allows entrepreneurs to create or co-create future products, services, and business models, combining their resources and those of others in novel ways, and following a trial-and-error path in developing their ventures. Flexibility helps the entrepreneur adapt to changing environments and turn unexpected contingencies into new opportunities. Experimentation and flexibility play important roles in transforming **a** high humane orientation and low assertiveness cultural values into benefits for new ventures. Specifically, the experimentation and flexibility parts of effectual decision-making become key principles providing **an** indirect effect between SSC and new venture performance.

The paragraph under 5.2 Contribution section should read as follows:

The findings contribute new insights regarding effectuation and new venture performance, particularly when approached from a cross-cultural perspective. First, we contribute to the effectuation literature by empirically investigating the relationship between effectuation and causation and established constructs, namely new venture performance and cultural dimensions. Additionally, for its empirical setting, the current study assesses university students who have started ventures. Thus, we explore a young, educated population with vigorous minds, who are novices as opposed to expert entrepreneurs, in order to understand their preferences toward effectual versus causal logic during venture creation. Next, we highlight the important role of entrepreneurial decision-making logic in venture success, by showing the positive effects of both effectuation and causation and new venture performance. Moreover, evidence is provided that these two venture cognitive logics appear as mediators in the link between types of national culture and performance of new firms. The particular approach to decision-making depends not only on personal attributes of entrepreneurs, **financial** affordability, and

social connections but also on such informal institutional factors as cultural characteristics and values of the country context. Finally, the research contributes to the ongoing discussion regarding the nature of the effectuation-causation continuum, arguing that causation and effectuation are far from being orthogonal constructs, and they are constantly intertwined and can unfold simultaneously.

The paragraph under 5.3 Practical implications section should read as follows:

The results have practical implications for entrepreneurs, educators, and policy makers. For young entrepreneurs, this research suggests the importance of understanding the nature and import of different logics of venture creation, but also the influence of cultural context on how they approach venture creation. Self-awareness of one's decision-making style, the ability to simultaneously incorporate both causal and effectual reasoning and apply them to differing facets of the entrepreneurial process, and an appreciation for contextual factors favoring the impact of each type of cognitive reasoning are likely to enhance the likelihood of entrepreneurial success. For instance, where elements of a socially supportive culture are especially prominent, effectual logic with its focus on partnerships can be more congruent with societal values **and** may **result in** better performance. For educators and policy makers willing to support development of young firms and start-ups, the study provides insights **regarding** the importance of national culture characteristics for new firm development and success. With educators, it is critical to discern the extent to which the curricular and co-curricular elements that constitute contemporary entrepreneurship programs affect student assumptions regarding the predictability of the future, their relative control over outcomes, the role of planning and adherence to the plan, the pre-existence or emergence of opportunities, and the appropriate approaches to the acquisition and use of resources. Educational programs, influenced by cultural considerations, must produce ambidextrous students able to switch between causal and effectual reasoning as they interpret events, opportunities unfold, and the venture takes form. They can also aid student understanding regarding cultural influences on successful entrepreneurship, how particular elements of culture are consistent with or

undermine a given cognitive style, and the relative importance of a given cognitive style in the presence of a particular cultural milieu. Finally, policy makers interested in fostering higher levels of successful entrepreneurial activity should appreciate that they develop public policy within a cultural context, and that context has implications for how entrepreneurs approach decision-making. Moreover, their policy efforts contribute to that context. Hence, with regulatory, tax, and programmatic spending efforts (e.g., government-backed loans, resource voucher programs, tax abatement, etc.), they can influence the extent to which the culture is more performance-based or socially supportive, and hence, performance implications of causal versus effectual logic. The question becomes the extent to which a given policy prescription serves to encourage uncertainty avoidance, individual performance, assertiveness, collaboration, and related dimensions of culture, and hence how it might impact the way the entrepreneur approaches decision-making.

The paragraph under 5.4 Limitations and further research directions section should read as follows:

The limitations of the study should be kept in mind when interpreting the results. First, this research was based on a sample of a single coherent group, university students, which a priori are not experienced and are expected to use more causal principles during venture creation. The use of the student sample itself can be perceived as a limitation, with some researchers arguing it reduces the generalizability of the findings (Copeland et al. 1973; Robinson et al. 1991). Future work using different samples of entrepreneurs will improve generalizability as well as add new value in our understanding of cultural context's role in entrepreneurial success. Secondly, both dependent and independent variables in the regression model are based on self-reported measures, introducing potential bias. It is encouraged that replications be undertaken using alternative dependent

variables, particularly objective measures of venture performance. Thirdly, the reliance on cross-sectional data indicates we have not captured temporal aspects of the venture cognitive logic-performance relationship. In the same vein, responses could reflect a temporality delusion given those subjects are being asked about variables that interact over time. Future studies might capture longitudinal aspects in the analysis of benefits from using effectual and causal reasoning. Fourthly, it has been argued that culture is not permanent (Mcgrath et al. 1992), even though it changes very slowly, over a long period of time (Liñán and Fernandez-Serrano 2014). For instance, recent evidence with migration in the European Union or institutional transformations in emerging markets (particularly in former socialist countries) might accelerate changes in the dimensions and characteristics of a given national culture. Thus, future research should take into account the possibility of changes in cultural patterns inherent in particular countries, or changes in proportions of different cultural dimensions which constitute higher-order cultural norms. Finally, our results could potentially be affected by a type of culture-based response bias, as in some cultures people may tend to answer particular questions in a certain manner. We are also cognizant of alternative explanations of the results of the study such as the influence of macro-economic conditions on culture patterns, and we have tried to control for them by including in the empirical model GDP, education level and innovation efficiency country-level variables.

In References section, Oyserman and Lee (2008) reference should read as follows:

Oyserman, D., & Lee, S. W. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin*, 134(2), 311–342.

The original article was corrected.