

RESEARCH NOTE: ENTREPRENEURIAL MINDSET AND EDUCATION

With this note, our intention is to provide a preliminary framework for thinking about entrepreneurial mindset, with a focus on future empirical research. We take a first step by framing relevant questions which could eventually guide data collection efforts central to research about this phenomenon.

While interest in understanding entrepreneurial mindset has increased, its study has been hindered by factors such as data limitation and scarcity of well-developed theories. This has led to lack of consistent definitions, which makes it especially difficult to frame research agendas.

More generally, similar challenges are faced by researchers in entrepreneurship. A multiplicity of definitions are used for entrepreneurial activity with varying emphasis on different aspects such as innovativeness, self-employment, or business creation. The challenge presented by defining “entrepreneurial” becomes more daunting when combined with “mindset,” which takes it to the realm of intention and cognition, leading necessarily to an interdisciplinary approach, including fields such as economics, psychology and sociology.

The rest of this note will lay out a number of relevant questions for understanding entrepreneurial mindset and will make suggestions for future research. Data and methodology are not a focus here, but are covered to a limited extent when necessary.

1.1 DEFINITION OF ENTREPRENEURSHIP

Question: What is the most relevant definition of entrepreneurship for guiding the study of entrepreneurial mindset?

Suggestion: Two definitions may be considered. First, we may restrict the definition of entrepreneurship to launching and running new businesses. This facilitates the identification of entrepreneurial activity in current and future data sources. Second, we may adopt a more general definition, such as the one in Shane and Venkataraman (2000) as the process by which “opportunities to create future goods and services are discovered, evaluated, and exploited.” This definition enables a more comprehensive evaluation of the effect of an entrepreneurial program. For example, the effectiveness of an educational program aimed at developing an entrepreneurial mindset might be underestimated if we assess its impact based on those who end up as entrepreneurs. Some program benefits could come from applying an entrepreneurial mindset outside the realm of new and young businesses, for instance when solving problems in the public or corporate sectors.

1.2 WHAT IS AN ENTREPRENEURIAL MINDSET?

Question: What is a convenient definition of entrepreneurial mindset to be used in an empirical framework?

Suggestion: In the absence of a well-established theoretical or empirical framework, we could rephrase the question as: “What is the role of personality and cognition (terms used by psychologists), and cognitive and non-cognitive skills (terms used by economists) in entrepreneurial emergence and success?” This question breaks down the term “mindset” into pieces which are more clearly defined in the literature. For example, consider the personality trait of “openness to experience”: The existing literature in personality psychology could guide the formation of a research hypothesis about openness to experience and inform us about its limitations. The question also highlights the need for interdisciplinary expertise to streamline translating jargon from one field to another. We will come back to the issue of interdisciplinary research in Section 1.7, below.

It may also be helpful to consider the sparse literature on entrepreneurial mindset. For a definition, see Haynie et al (2010), who propose a model of entrepreneurial mindset that combines social psychology and metacognition. Definitions outside academic literature include one from the [Financial Times Lexicon](#), which tends to be tautological, stating that entrepreneurial mindset is a mindset which makes a person entrepreneurial, limiting its empirical use. See also [Understanding the Entrepreneurial Mind](#), edited by Carsrud and Brännback (2009).

1.3 PERSONAL CHARACTERISTICS

Question: What are the behavioral determinants and motivations behind entrepreneurial activity? How does their combination lead to entrepreneurial outcomes?

Suggestions: The Kauffman Foundation’s State of the Field article on entrepreneurs’ [“Behavioral Determinants & Motivation”](#) provides an excellent review of research on personality characteristics, entrepreneurial intentions and cognitions, mostly borrowing from psychology literature. It discusses important questions for future research and offers recommendations for examining combinations of multiple determinants and using a larger set of methodological tools. It also covers issues about accounting for the different stages of entrepreneurship and the role of sample selection which could limit the generalizability of empirical studies.

Research in economics could provide a methodological guideline for addressing both the dynamic nature of entrepreneurship and selection issues. Recent work incorporates non-cognitive skills and personality traits into models of rational choice. Building on the work by James Heckman and his co-authors, starting from Heckman and Rubinstein (2001), economists have studied how non-cognitive skills and personality traits relate to marriage, education, health and labor market outcomes. Methodological developments could be especially helpful for future research. For example, Cunha, Heckman and Schennach (2010) formulate and estimate multi-

stage production functions for children's cognitive and non-cognitive skills. Their approach is dynamic, combines multiple traits, and could incorporate elements from other economic models to take into account of selection.

The most relevant study for our purposes is perhaps Hamilton et al (2014) who study the role of personality traits in both becoming self-employed and success as a self-employed individual. They highlight the returns different personality traits yield in different occupations and find a difference between traits contributing to becoming self-employed and traits that make self-employment profitable.

Two papers by James Heckman and his coauthors provide general guidelines on how to embed personality in a causal economic framework. Almlund, Duckworth, Heckman and Kautz (2011) explore the power of personality traits both as predictors and as causes of academic and economic success, health, and criminal activity, and provide an extensive review of the related literature. Borghans, Duckworth, Heckman and Weel (2008) provide a methodological guide, having developed a simple analytical framework for interpreting the evidence in personality psychology, and suggest promising avenues for future research. They stress the distinctive contribution of causal inference in psychology, which is enabled by applying econometric techniques.

1.4 ENVIRONMENT AND CONTEXTUAL FACTORS

Question: How do macroeconomic and cultural factors influence entrepreneurial motivation and activity, and perceptions toward entrepreneurship? What is the role of networks and peer effects? What about political factors, institutions, market structures and the availability of resources? How do these factors interact with personal characteristics?

Suggestions: Aldrich and Ruef (2006) emphasizes macro level environmental factors. The question is related to the distinction between necessity and opportunity entrepreneurship (McMullen, Bagby and Palich 2008; Wong, Ho and Autio 2005). See Elfving, Brännback, and Carsrud (2009) for the effect of social norms on entrepreneurial intentions. GERN's Ecosystem Mapping Project could contribute to understanding better the role of networks. See Shane, Locke and Collins (2003) for how to control for variation in opportunities that different entrepreneurs pursue.

1.5 ENTREPRENEURSHIP EDUCATION

Question: What is the role of education, specifically entrepreneurial education, in developing an entrepreneurial mindset? How should entrepreneurial education programs and interventions be designed and evaluated? What is the role of public policy?

Suggestions: It is helpful to look at the following sources: (1) [Entrepreneurship Education and Training: What Works?](#) from the Kauffman Foundation's Growthology and (2) [Entrepreneurship Education at School in Europe](#) from the European Commission.

Research on educational intervention is also instructive in highlighting the importance of early childhood development and non-cognitive skills (See for example Heckman, Moon, Pinto, Savelyev & Yavitz 2010a; 2010b and Heckman, Pinto & Savelyev 2013 on the Perry Preschool Program for disadvantaged children). Thus, research on entrepreneurship education should consider age and non-cognitive skills as potentially important determinants. A question we may be able to explore using the available data, e.g. Perry Preschool Program data, is the effect of educational interventions on later entrepreneurial activity.

It may also be helpful to look at educational programs that target skills important for entrepreneurial activity. For example, see anecdotal evidence on the relationship between Montessori education and entrepreneurial success in [Montessori Builds Innovators](#). On a related note, randomized trials of Montessori education examine the impact of Montessori education on social and academic outcomes. (See, [Evaluating Montessori Education](#), an article published in the Science Magazine by Lillard and Else-Quest (2006)).

1.6 STAGES OF ENTREPRENEURSHIP

Question: How are different stages of entrepreneurial activity affected by different personality factors?

Suggestions: Accounting for self-selection at different stages is important for external validity. Hamilton et al (2014) find that what makes a person become self-employed is different from the factors that make them successful. People who become serial entrepreneurs might also have different characteristics from those experimenting with entrepreneurship for the first time.

1.7 INTERDISCIPLINARY NATURE: OPPORTUNITIES AND CHALLENGES

Question: What does each field bring to the table and how can we bridge the differences between approaches?

Suggestion: The multidisciplinary nature of entrepreneurship mindset research requires cooperation among people from a variety of backgrounds to ensure the most current research findings are used, as emphasized in the Kauffman Foundation's "[Behavioral Determinants & Motivation](#)." The challenge is to develop a framework that incorporates different fields, and find a common ground on the definitions, vocabulary, and theories.

Literature on human capital and econometric techniques are some of the things that economics brings to the table. While economics has powerful tools for understanding decision making based on resources and skills (which often change as a result of decisions), most economic models treat preferences as given. Psychology may also have a role in guiding how to think about preferences, and the use of psychometric tools are valuable for analyzing personality factors.

1.8 ENTREPRENEURIAL MINDSET EVERYWHERE

Question: How do components of an entrepreneurial mindset influence the performance in other sectors of the economy?

Suggestion: Empirical work on entrepreneurial mindset, activity and success may require a broader definition of entrepreneurship beyond merely focusing on new and young businesses. Examples are corporate entrepreneurship, policy entrepreneurship and government entrepreneurship. For government entrepreneurship, see [“Government Entrepreneur” is Not an Oxymoron](#). For corporate entrepreneurship, see Koratko (2010).

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