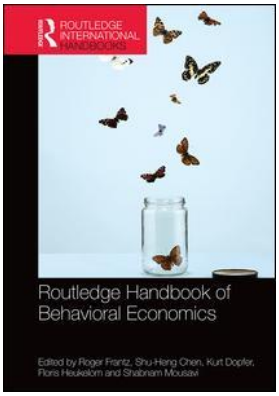

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Schumpeter, Kirzner, Knight, Simon, and Others

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SCHUMPETER, KIRZNER, KNIGHT, SIMON, AND OTHERS

Behavioral economics and entrepreneurship

Thomas Grebel and Michael Stützer

Introduction

The common ground of behavioral economics and entrepreneurship research lies in answering two related questions: What drives economic behavior? And what makes entrepreneurial behavior different from other people's behavior? Although both behavioral economics and entrepreneurship research start out with different foci, they encounter the same challenges. Both put the homo oeconomicus as an optimizing representative agent into perspective. Whereas the homo oeconomicus manages to maximize subjective utility, human mankind evidently has a hard time in doing so. In general, a lack of information, uncertainty, and bounded capabilities thwart such kinds of behavior. In this chapter we will lay out the behavioral and psychological foundations of entrepreneurship theory, and refer to a selection of behavioral approaches in the entrepreneurship literature.

Behavioral foundations in entrepreneurship theory

What makes an entrepreneur and what drives entrepreneurial behavior, if it is not the dispassionate maximizing behavior of the economic man? In literature, there are many different views of the role of the entrepreneur in economy: the entrepreneur as industrial leader, manager, organizer, decision maker, supplier of financial capital, and so on (Hébert and Link, 1982; Barreto, 1989; Grebel, 2004). Most concepts highlight the functional role of the entrepreneur.[1] Some of them explicitly abandon the maximization hypothesis and envision a behavioral framework of the entrepreneur.

Schumpeter's conduct model

One of the most prominent concepts of the entrepreneur, which delivers behavioral foundations to entrepreneurship, arose from the seminal work by Joseph A. Schumpeter. His discontent with the static picture of neoclassical economics on economy made him develop a theory of economic change (Schumpeter, 1911), which put the entrepreneur in the center of an ever-changing economy. The entrepreneur, according to Schumpeter, destroys an equilibrium by innovating and thus induces economic change. This not only put the entrepreneur in the center of an

endogenous theory of economic change, it also led to a quite heroic picture of the entrepreneur, very different to that of a pure maximizer. "It is more by will than by intellect that the leaders fulfill their function, more by 'authority,' 'personal weight,' and so forth than by original ideas" (Schumpeter, 1939: 88). Schumpeter incorporated passion, confidence and psychological aspects into the entrepreneur's profile, which Fritz Machlup named the "conduct model of the dynamic entrepreneur".[2] With his conduct model, Schumpeter paved the way to many behavioral approaches, some of them to be addressed later on.

Kirzner's arbitrageur

The concept by Kirzner describes the entrepreneur as someone who is alert to new opportunities, discovers arbitrage options, and functions as an equilibrator. In contrast to Schumpeter's concept where the entrepreneur is a disruptive element in economy, Kirzner's (1999) entrepreneur is not; in contrast, "the entrepreneurial discovery process is one whose tendency is systematically equilibrative" (Kirzner, 1999: 6). Before equilibrium is reached, a lack of knowledge and deficient capabilities have to be overcome. Both sides, suppliers and demanders, are prone to such deficiencies and thus furnish the market process. In this process the entrepreneur plays a special role as he is the one buying "in one market in order to resell, possibly at a considerably later date, in a second market" (Kirzner, 1999: 172). In so doing, the entrepreneur equilibrates the market while compensating for imperfect knowledge and creating new knowledge.

Knightian uncertainty

In Schumpeter's concept of the entrepreneur, uncertainty was irrelevant (Endres and Woods, 2010). Although Kirzner also neglected the role of uncertainty in his theory (Kirzner, 1999), his entrepreneur was a learning agent prone to error. Knight (1921) filled this gap and saw the main characteristic of an entrepreneur as a bearer of uncertainty. If there were perfect knowledge, optimization would be the dominant behavioral rule leading to a unique outcome (i.e., equilibrium). However, the higher the degree of uncertainty, the less likely it will be for unique behavioral rules to occur. Then, economic behavior inevitably becomes heterogeneous.[3] Economic actors have different kinds of knowledge, make different judgments, and differ in their capacity and/or willingness to make forecasts about the future.[4] Only a small group of people with superior managerial ability in terms of foresight and the capacity of ruling others, only those with confidence in their judgment and disposition to "back it up" in action perform entrepreneurial behavior (Knight, 1921: 269). The majority of the population simply furnishes the entrepreneurs with their productive services, whereas the entrepreneurs promise a fixed compensation while they bear the consequences of uncertainty (Knight, 1921: 271).

Knight (1921) classified three types of uncertainty: when (1) the probability distribution and future outcomes are known so that expected values can be calculated, when (2) probability distribution exists but is unknown ex ante so that actors can perform repeated trials to find out, and (3) when the future is unknown, which Knight calls "true uncertainty."

Simon: bounded rationality

On the grounds of uncertainty, one pervasive question remains to be answered: How do entrepreneurs make decisions? Normative decision theory supplies many techniques for optimization. If the probability distribution and all future outcomes are known, or at least can be inquired by repeated trials, then the expected outcome of entrepreneurial decisions can be calculated.

Under true uncertainty this is impossible. Without having information about probabilities and future outcomes to conceive of economic behavior as optimal behavior is futile.

In contrast to Friedman's (1979) rational expectation hypothesis, which suggests that decisions are right on average, so that optimization would be feasible, Simon (1955) claims that "businessmen" do not behave rationally on a global basis. He rejects this methodological approach (Simon, 1963) and coined an alternative concept called "bounded rationality". Decision makers either do not have or are incapable of retrieving all relevant information. Their cognitive capacity to process all information is limited, and therefore they cannot help "satisficing", that is, making suboptimal but simpler decisions (Schwartz, 2002).

With the bounded rationality approach Simon set the foundation for behavioral economics (Schwartz, 2002). His work has been conducive for many related theories such as the behavioral theory of the firm elaborated by Cyert et al. (1963). The fact that psychology has become more intertwined with economics is to a large extent due to Simon, who was inspired by psychology and incorporated many psychological aspects into economic theory. The extent to which psychology has influenced entrepreneurship theory will be presented in the next section.

Psychological foundations in entrepreneurial theory

As mentioned above, a further main approach to entrepreneurship comes from the discipline of psychology. Contrary to economics, the psychology of entrepreneurship is not so much concerned about who the entrepreneur is but rather how and why entrepreneurs act the way they do (Frese et al., 2000; Hisrich et al., 2007). The question of how entrepreneurs act is often related to specific entrepreneurial tasks such as risk-taking. We discuss aspects of the avoidance and taking of risks in the next section. The question of why entrepreneurs act concerns the motivation of entrepreneurial behavior. The personality approach in psychology offers some insights into what drives human behavior with respect to entrepreneurship.

Prospect theory

Entrepreneurial behavior is often accompanied by risk-taking. There is simply a high chance that a new venture fails—estimates vary between 30 percent and 50 percent failure rate in the first years after starting up. This calls for theories explaining the nature and extent of risk-taking of entrepreneurs. One of these theories is expected utility theory which predicts that if certain rationality axioms are satisfied (Morgenstern and von Neumann, 1953) people decide between risky alternatives based on the expected utility (Friedman and Savage, 1948). An interesting feature that makes expected utility theory useful for entrepreneurship is that people can be risk-averse, which means that they either shy away from a lottery with an expected value of zero or risk-loving which means accepting even a lottery with a negative expected value.

Although, expected utility theory is impressively elegant and mathematically rigorous, over time, scholars have discovered paradox situations where people's decisions deviate from the predictions of expected utility theory. An alternative model which describes human decision making more accurately was developed by Kahneman and Tversky (1979), which is called *prospect theory*. Key to prospect theory is that it depends on the reference point against which alternative outcomes are evaluated. Quite often the reference point is the status quo—for example the absolute level of wealth or income before starting a firm.[5] The reference point might also be the worst case scenario of losing all investments in the start-up. Based on the reference point, potential outcomes of the lottery are assigned to a value via a subjective value function. Typically, negative deviations from the reference point (=losses) hurt more than positive deviations (=gains).

They instead bring joy. Another feature of prospect theory is the subjective weighting of the probabilities attached to the lottery outcomes. Individuals differ in their subjective evaluation of small objective probabilities. For example, firm founders often overrate the small probability of founding a multi-million dollar company compared to the objective probability that the start-up firm goes bankrupt (Forlani and Mullins, 2000).

Big Five

The personality approach is one of the most established approaches to entrepreneurship. Even prominent economists such as Schumpeter (1934) and Sombart (1909) have speculated that the entrepreneur differs in personality from other people. Psychology research differentiates between several levels of personality: personality traits and characteristic adaptations. We start with the Big Five dispositional traits which refer to individual differences in behavior, thought, and feeling that account for general consistencies across situations and over time (McAdams and Pals, 2006: 212). The Big Five personality traits have a strong genetic base, remain relatively stable over lifetime and they are cross-culturally validated (Costa Jr and McCrae, 2006). According to this personality model, individual personality can be described by five broad dimensions: openness, extraversion, conscientiousness, neuroticism, and agreeableness. Each of these broad dimensions consists again of a cluster of more specific factors which are usually assessed by self-reports or observations. It should be kept in mind that the Big Five personality traits do not dictate individual behavior. In contrast, they are best understood as dispositional—making certain actions of people more likely or less likely. With respect to entrepreneurship, all Big Five traits seem to be related to entrepreneurial behavior (Zhao and Seibert, 2006, for a comprehensive description). In a nutshell, openness—the individual tendency to seek new experiences and explore novel ideas—is important for entrepreneurial behavior because it fosters idea generation and creativity. Extraversion—the individual tendency to engage with the outside world—fosters entrepreneurship, as a substantial part of the entrepreneurial task is to engage with customers, suppliers, financiers, and employees in order to run the business. Conscientiousness—the individual degree of self-control, persistence and motivation—is critical for entrepreneurial behavior because entrepreneurs work in a self-directed environment. Neuroticism (=the opposite of emotional stability) —the individual inability to cope with stress and the tendency to experience negative emotions—is detrimental for entrepreneurship as starting a business is a risky endeavor spiked with substantial challenges. Agreeableness—the individual tendency to trust, to compromise with others and to strive for social harmony—might be negative for entrepreneurship as entrepreneurial behavior is often associated with doing things differently than before and to challenge incumbent firms.

Entrepreneurial personality profile

The concept of the entrepreneurial personality profile builds on the Big Five personality traits. The intra-individual configuration of such personality traits (Block, 1971; Magnusson and Torestad, 1993) influences human action in general and entrepreneurial behavior in particular. Consequently, instead of looking at a single trait, it is the specific constellation of the Big Five traits which are in the center of psychology-based entrepreneurship research.

Following the above described relationships of the traits to entrepreneurship, an entrepreneurial personality profile consists of a high level of openness, extraversion, conscientiousness, and a rather low level of neuroticism and agreeableness (Schmitt-Rodermund 2004). Individuals scoring high on this profile should be more inclined to entrepreneurial behavior.

Empirical evidence for this relationship has been growing over the last decade (Obschonka et al., 2010, 2011).

The vast majority of research on traits and entrepreneurship is at the individual level—relating individual differences in entrepreneurial behavior to individual differences in traits. An interesting twist to trait research is the very recent development to look at regional personality differences where regional personality is simply measured by the mean of the individual traits/profile across a regional populace (Talhelm et al., 2014). Specific traits such as openness and the entrepreneurial personality profile are not randomly distributed across regions and countries but clustered in space (Obschonka et al., 2013; Rentfrow et al., 2008). The spatial clustering of certain entrepreneurial traits can become persistent as they get expressed by, for example, the creation of formal and informal institutions such as entrepreneurship friendly bankruptcy laws, the willingness to provide venture capital, and the general social approval of entrepreneurship as a career option which in turn again fuels entrepreneurial activity (Audretsch, 2007; Rentfrow et al., 2008). Given these characteristics, the regional personality structure features elements of several cultures.

Characteristic adaptations: self-efficacy and passion

Beside the dispositional Big Five traits, psychology research has identified numerous other personality characteristics related to entrepreneurship that fall into the category of characteristic adaptations (Frese and Gielnik, 2014). Because of space limitations, we focus on the following adaptations: self-efficacy, locus of control and entrepreneurial passion. These show very high correlations with entrepreneurial behavior and success. In general, characteristic adaptations differ from the above described personality traits in three important ways. First, the characteristic adaptations are more closely related to the entrepreneurial task than the more general personality traits. This close relation manifests itself in high correlations with entrepreneurship indicators. Second, characteristic adaptations do not remain as constant over time as the personality traits but are more likely to change over the lifetime. Characteristic adaptations are thus best understood as "specific motivational, social-cognitive, and developmental variables that are contextualized in time, situations, and social roles" (McAdams and Pals, 2006: 212). Third, the characteristic adaptations arise from the dispositional traits (McAdams and Pals, 2006).[6] Thus, characteristic adaptations can be regarded as "lower-order" dimensions of human personality.

Self-efficacy is defined as a person's beliefs in their own capabilities to master a task (Bandura, 1977). While this general self-efficacy affects the complete range of human behavior, the more domain-specific construct of entrepreneurial self-efficacy—the person's belief in their own capabilities to master the task of starting a business—is expected to be related to entrepreneurial behavior and success. This characteristic adaptation comprises sub-components such as identifying a business opportunity and marshalling the necessary financial and human resources to start-up (McGee et al., 2009). Self-efficacy is crucial for entrepreneurial behavior as self-efficacy affects whether a person engages in a task, how much effort is invested to succeed, and whether the individual shows perseverance in face of obstacles.

Passion is defined "as consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities" (Cardon et al., 2009: 517). In contrast to the dispositional traits, entrepreneurial passion is directly linked to the self-identity of the entrepreneur (Cardon et al., 2009). Passion is thought to influence entrepreneurial behavior in a number of ways. Most importantly, passion will make people work long hours during the start-up process in times of high uncertainty (Baum and Locke, 2004). Passion is also important to make other stakeholders (potential customers, financiers and employees) believe in the emerging venture, arguably leading to higher contributions of these stakeholders and keep them committed.

Behavioral approaches in entrepreneurship research

Entrepreneurship research is still a young research discipline. This comes at the cost that there is no full-fledged theoretical body such as consumption theory or production theory in microeconomics. We can only discuss some of the most prominent behavioral approaches embedded in entrepreneurship research. First, we introduce each behavioral approach; and second, we show links to the above discussed behavioral and psychological foundations.

Sarasvathy: causation and effectuation

The degree of uncertainty is crucial in any decision making process. Particularly for entrepreneurs, whose daily business is to deal with true uncertainty (Knight, 1921). Sarasvathy (2001) focuses on the question how entrepreneurs deal with an unpredictable future. She coined the concept of *causation* and *effectuation*. Both terms describe alternative processes of decision making. Causation denotes the process where an entrepreneur tries to accomplish a predefined effect or goal by choosing among different means to accomplish this effect or goal. On the contrary, causation describes a process in which the entrepreneur has to deal with a set of given means and chooses which goals can be achieved with these means. More precisely:

> Entrepreneurs following an effectuation approach might begin the new venture process with general aspirations to create a new venture, but as they make decisions and observe the results of those decisions, they utilize this new information to change course. Because the future is unpredictable, entrepreneurs using an effectuation approach may try different approaches in the marketplace before settling on a business model.
>
> *(Chandler et al., 2011: 377)*

Both causation and effectuation processes are relevant for all human decision making processes, whereas entrepreneurs tend to be more inclined to apply effectuation processes. Effectuation processes can be described by four core principles: 1) affordable loss, 2) strategic alliances, 3) exploitation of contingencies, and 4) controlling an unpredictable future. Regarding the first principle, effectuation predicts that entrepreneurs consider how much of the available resources they want to put at risk in the entrepreneurial activity rather than trying to maximize expected returns from the activity (this would resemble causation). The affordable loss dimension can be linked to prospect theory. The reference point is the actual wealth from which the entrepreneur starts. The value function is quite flat in the gain region but rather steep in the loss region, as the entrepreneur does not try to maximize expected returns but will not risk more money than he or she can afford to lose. In addition, the second principle—strategic alliances—can be linked to psychological approaches in entrepreneurship research. Forming strategic alliances is a way to gain commitment and secure resources from partners for the venture. Passionate entrepreneurs might have an advantage forming such strategic alliances, as their passion can be contagious and make others believe in the venture.

The same reasoning can be applied to one of the Big Five traits: extraversion. Unfortunately, there are no empirical studies available linking Big Five traits or passion to effectuation principles which is because of still remaining issues in measuring effectuation (Chandler et al., 2011, Read et al., 2009). The fourth principle—controlling an unpredictable future—builds directly on the Knightian uncertainty. In situations of true uncertainty where outcomes and probabilities are unknown, optimization strategies cannot be applied. Effectuation now predicts that the entrepreneur should focus on his or her own knowledge as well as capabilities and conduct short-term

experiments (e.g., testing the market with different versions of a product). The knowledge gained through these experiments can then guide future action. In this way, the entrepreneurs keep control in uncertain environments while still making progress through learning from successful and unsuccessful experiments. Support for this kind of reasoning comes from Chandler et al. (2011) who show that experimentation is more likely in uncertain situations. From a theoretical stance, for example, Bhave (1994) gives insights into the venture creation process.

Bricolage

Bricolage is a behavioral approach explaining how entrepreneurs deal with resource scarcity and constraints. While a disproportionate share of research has focused on the small share of growth-oriented entrepreneurship in high-tech or ICT sectors—start-ups such as Google or Facebook that can "tap" (capital) markets, the vast majority of entrepreneurial endeavors are started with very limited resources. Nevertheless, these resource-constrained firms often flourish against the odds, raising the question of "how they can create something from nothing" (Baker et al., 2005: 1). According to Baker et al. (2005: 333), the entrepreneurs engage in bricolage behavior which is defined as "making do by applying resources at hand to new problems and opportunities". This definition emphasizes three elements: 1) making do, which refers to active engagement and action instead of analyzing and long search processes for optimal solutions; 2) using resources at hand, which means that entrepreneurs reuse resources that they have immediate access to or can acquire at low costs through markets or from the personal network; and 3) applying the resources to new purposes, which means entrepreneurs reuse those resources for problems they were never intended to be applied to. The solutions created by bricolage behavior can be brilliant and unforeseen, as depicted by many studies (Baker et al., 2003; Garud and Karnøe, 2003). However, there are limits to bricolage. Although it creates workable solutions which might be "good enough" in the short run, it might prove rather inferior to solutions gained through systematic problem solving. Relying too much on bricolage can end in a sea of patchwork solutions, which might not be appealing to customers, impedes long-term growth and innovativeness (Baker et al., 2005; Senyard et al., 2014). Bricolage behavior can be linked to two of the above described theories. Most importantly, there is a Schumpeterian (1934) element in bricolage behavior. Bricoleurs—individuals engaged in bricolage behavior—recombine available resources in innovative ways to create new solutions to existing problems. By doing so, they become agents of change because they create new products, new methods of production, new sources of supply, or new ways to organize business. In this way, bricolage can be regarded as a mechanism of how entrepreneurs bring Schumpeterian change within an environment of scarce resources. From a theoretical point of view (there are no empirical papers on sources of bricolage behavior) we can envision linkages between the psychological theories and bricolage. For example, the Big Five trait of openness should foster bricolage behavior because openness is about exploring novel ideas. Extraversion can also lead to more bricolage behavior because extraverted entrepreneurs might find easy access to resources via their social networks. Conversely, entrepreneurs scoring high in agreeableness might engage in less bricolage behavior because they are easily satisfied with the status quo.

Entrepreneurial opportunities

In contrast to the *Oxford English Dictionary*, which defines an opportunity as "a time, juncture, or condition of things favorable to an end or purpose, or admitting of something being done or effected," entrepreneurship theory usually conceives the term opportunity as a reference to

situations conducive to profit making. While there are several definitions of "entrepreneurial opportunity", the definition favored by Shane (2000: 220) has gained popularity in the last years. According to this "entrepreneurial opportunities are those situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at a greater price than their cost of production". This definition is accompanied by a framework which does not solely focus on opportunities but also includes the individuals pursuing these opportunities. The so-called nexus of opportunity and the enterprising individual are at the heart of entrepreneurship research. Shane and Venkataraman's approach has triggered much discussion—most importantly about the nature of entrepreneurial opportunities and their role in the entrepreneurial process (Alvarez and Barney, 2007; Alvarez et al., 2010; Davidsson, 2005; McMullen et al., 2007; Sarasvathy et al., 2010; Singh, 2001). The central issue focuses on the question of whether entrepreneurial opportunities can be discovered by individuals or are created by individuals. Shane (2000) as well as Eckhardt and Shane (2003) are proponents of the discovery view, which maintains that opportunities can be detected by alert individuals. The discovery view builds on the notion that profitable opportunities are "out there" waiting to be picked by an enterprising individual who recognizes the existing deficiency in allocation. The decision making context is, therefore, risky because some information about the already existing opportunity is available (Alvarez and Barney, 2007). Here, the Kirznerian (1973) entrepreneur assumes the role of arbitrageur. Of course, this does not mean that the entrepreneur is blessed with perfect knowledge and foresight. Knowledge remains dispersed among individuals (Hayek, 1945) and there are individual differences in the cognitive processes related to discovery. Consequently, research has looked at sources of knowledge necessary for discovery. A robust finding is that both prior knowledge from past experience (Shane, 2000) and an advantageous position in networks (Burt, 1992) are important determinants for connecting the dots to identify entrepreneurial opportunities (Baron, 2006). Beyond the differences in objective individual characteristics, believing in these differences also seems to be important for opportunity discovery. For example, Krueger and Dickson (1994) found that self-efficacy is positively associated with the discovery of opportunities. In addition, passion has been related to opportunity perception and exploitation (Klaukien et al., 2013). The discovery view is opposed by the creation view whose proponents argue that the entrepreneurial process is more complex than simply picking up opportunities like a $10 bill. Conversely, opportunities are not ready-made available artifacts but have to be created by action (Alvarez and Barney, 2007). As individuals work on, reframe, and evaluate ideas, they create an opportunity (O'Connor and Rice, 2001). Central to creation theory is the notion that the opportunity does not exist independently from the entrepreneur since they come into existence because the entrepreneur devotes his vision, knowledge, and effort into it. Opportunities are thus inseparably linked to the entrepreneur (Dimov, 2007; Klein, 2008). As Knightian uncertainty suggests, "opportunities do not exist until they are created" (Alvarez and Barney, 2007: 16).

When optimal decisions cannot be made, entrepreneurs must resort to some kind of heuristic. Whether entrepreneurs manage to choose the best heuristic seems to depend on the entrepreneurial personality profile. As, for example, empirical evidence from Stuetzer et al. (2013) shows, entrepreneurs that score high on the entrepreneurial personality profile are better equipped to make more progress in the process of creating an opportunity through starting up than entrepreneurs with a lower score in their entrepreneurial personality profile.

Conclusion

The history of entrepreneurship research shows that uncertainty and personality traits play an important role in entrepreneurial behavior. All traditional concepts, such as by Schumpeter,

Kirzner, or Knight, make reference to these aspects to a greater or a lesser extent. Behavioral economics, however, has made the focus on these aspects more explicit. As the examples in this chapter suggest, we may expect a lot of further insights in entrepreneurship theory from behavioral economics.

Notes

1 Compare Endres and Woods (2010).
2 See Endres and Woods (2010: 585).
3 Compare Grebel (2004: 32).
4 Other authors also emphasize the role of personal effort, such as Leibenstein (1978). See Frantz (2007) to get an overview.
5 Grebel et al. (2003), for example, substantiate this idea in their model on the decision-making process of start-up firms.
6 With respect to entrepreneurial intentions, Goethner et al. (2012) provide a good example for the interplay between psychological factors such as attitudes, perceived behavioural control and norms on the one hand and economic factors such as experience gained elsewhere on the other.

Bibliography

Alvarez, S. A. & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action, Strategic Entrepreneurship Journal 1(1–2), 11–26.
Alvarez, S. A., Barney, J. B. & Young, S. L. (2010). Debates in entrepreneurship: Opportunity formation and implications for the field of entrepreneurship, Handbook of entrepreneurship research, Springer, pp. 23–45.
Audretsch, D. B. (2007). The entrepreneurial society, OUP Catalogue.
Baker, T., Gedajlovic, E. & Lubatkin, M. (2005). A framework for comparing entrepreneurship processes across nations, Journal of International Business Studies 36(5), 492–504.
Baker, T., Miner, A. S. & Eesley, D. T. (2003). Improvising firms: bricolage, account giving and improvisational competencies in the founding process. Research Policy, 32(2), 255–76.
Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, American Psychological Association, 84, 191.
Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. The Academy of Management Perspectives, 20(1), 104–19.
Barreto, H. (1989) The entrepreneur in microeconomic theory. London and New York: Routledge.
Baum, J. R. & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. Journal of Applied Psychology, 89, 587–98.
Bhave, M. P. (1994). A process model of entrepreneurial venture creation. Journal of Business Venturing, 9(3), 223–42.
Block, J. (1971). Lives through times. Berkeley, CA: Bancroft Books.
Burt, R. (1992). Structural holes: The social structure of competition. Cambridge, MA: Harvard University Press.
Cardon, M. S., Wincent, J., Singh, J. & Drnovsek, M. (2009). The nature and experience of entrepreneurial passion. Academy of Management Review, 34(3), 511–32.
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), 375–90.
Costa Jr, P. T. & McCrae, R. R. (2006). Age changes in personality and their origins: Comment on Roberts, Walton, and Viechtbauer.
Cyert, R. M., et al. (1963). A behavioral theory of the firm. Englewood Cliffs, NJ: Prentice-Hall.
Davidsson, P. (2005). Researching entrepreneurship. Volume 5. New York: Springer Science & Business Media.
Dimov, D. (2007). From opportunity insight to opportunity intention: The importance of person–situation learning match. Entrepreneurship Theory and Practice, 31(4), 561–83.
Eckhardt, J. T. & Shane, S. A. (2003). Opportunities and entrepreneurship. Journal of Management, 29(3), 333–49.

Endres, A. M. & Woods, C. R. (2010). Schumpeter's conduct model of the dynamic entrepreneur: Scope and distinctiveness. Journal of Evolutionary Economics, 20(4), 583–607.
Forlani, D. & Mullins, J. W. (2000). Perceived risks and choices in entrepreneurs' new venture decisions. Journal of Business Venturing, 15(4), 305–22.
Frantz, R. (2007). Renaissance in behavioral economics: Essays in honour of Harvey Leibenstein, Abingdon: Routledge.
Frese, M. & Gielnik, M. M. (2014). The psychology of entrepreneurship. Annual Revue of Organizational Psychology and Organizational Behaviour, 1(1), 413–38.
Frese, M., van Geldern, M. & Ombach, M. (2000). How to plan as a small scale entrepreneur: Psychological process characteristics of action strategies and success.
Friedman, B. M. (1979). Optimal expectations and the extreme information assumptions of "rational expectations" macromodels. Journal of Monetary Economics, 5(1), 23–41.
Friedman, M. & Savage, L. J. (1948). The utility analysis of choices involving risk. Journal of Political Economy, 56(4), 279–304.
Garud, R. & Karnøe, P. (2003). Bricolage versus breakthrough: Distributed and embedded agency in technology entrepreneurship. Research Policy, 32(2), 277–300.
Goethner, M., Obschonka, M., Silbereisen, R. K. & Cantner, U. (2012). Scientists' transition to academic entrepreneurship: Economic and psychological determinants. Journal of Economic Psychology, 33(3), 628–41.
Grebel, T. (2004). Entrepreneurship: A new perspective. London and New York: Routledge.
Grebel, T., Pyka, A. & Hanusch, H. (2003). An evolutionary approach to the theory of entrepreneurship. Industry & Innovation, 10(4), 493–514.
Hayek, F. A. (1945). The use of knowledge in society. American Economic Review, 35(4), 519–30.
Hébert, R. F. & Link, A. N. (1982). The entrepreneur: Mainstream views and radical critiques. 2nd edn. New York: Praeger.
Hisrich, R., Langan-Fox, J. & Grant, S. (2007). Entrepreneurship research and practice: A call to action for psychology. American Psychologist, 62(6), 575.
Kahneman, D. & Tversky, A. (1979). Prospect theory. Econometrica, 47, 263–91.
Kirzner, I. (1973). Competition and entrepreneurship. Chicago: University of Chicago Press.
Kirzner, I. (1999). Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur. Review of Austrian Economics, 11, 5–17.
Klaukien, A., Shepherd, D. A. & Patzelt, H. (2013). Passion for work, nonwork-related excitement, and innovation managers' decision to exploit new product opportunities. Journal of Product Innovation Management, 30(3), 574–88.
Klein, P. G. (2008). Opportunity discovery, entrepreneurial action, and economic organization. Strategic Entrepreneurship Journal, 2(3), 175–90.
Knight, F. H. (1921). Risk, uncertainty and profit. New York: Houghton Mifflin.
Krueger, N. & Dickson, P. R. (1994). How believing in ourselves increases risk taking: Perceived self-efficacy and opportunity recognition. Decision Sciences, 25(3), 385–400.
Leibenstein, H. (1978). General X-efficiency theory and economic development. Oxford: Oxford University Press.
Magnusson, D. & Torestad, B. (1993). A holistic view of personality: A model revisited. Annual Review of Psychology, 44(1), 427–52.
McAdams, D. P. & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. American Psychologist, 61(3), 204.
McGee, J. E., Peterson, M., Mueller, S. L. & Sequeira, J. M. (2009). Entrepreneurial self-efficacy: Refining the measure. Entrepreneurship Theory and Practice, 33(4), 965–88.
McMullen, J. S., Plummer, L. A. & Acs, Z. J. (2007). What is an entrepreneurial opportunity? Small Business Economics, 28(4), 273–83.
Morgenstern, O. & von Neumann, J. (1953). Theory of games and economic behavior. Princeton., NJ: Princeton University Press.
Obschonka, M., Silbereisen, R. K. & Schmitt-Rodermund, E. (2010). Entrepreneurial intention as developmental outcome. Journal of Vocational Behavior, 77(1), 63–72.
Obschonka, M., Silbereisen, R. K. & Schmitt-Rodermund, E. (2011). Successful entrepreneurship as developmental outcome: A path model from a lifespan perspective of human development. European Psychologist, 16(3), 174.

Obschonka, M., Schmitt-Rodermund, E., Silbereisen, R. K., Gosling, S. D. & Potter, J. (2013). The regional distribution and correlates of an entrepreneurship-prone personality profile in the United States, Germany, and the United Kingdom: A socioecological perspective. Journal of Personality and Social Psychology, 105(1), 104.

O'Connor, G. C. & Rice, M. P. (2001). Opportunity recognition and breakthrough innovation in large established firms. California Management Review, 43(2), 95–116.

Read, S., Song, M. & Smit, W. (2009). A meta-analytic review of effectuation and venture performance. Journal of Business Venturing, 24(6), 573–87.

Rentfrow, P. J., Gosling, S. D. & Potter, J. (2008). A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics. Perspectives on Psychological Science, 3(5), 339–69.

Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. Academy of Management Review, 26(2), 243–63.

Sarasvathy, S. D., Dew, N., Velamuri, S. R. & Venkataraman, S. (2010). Three views of entrepreneurial opportunity. In Handbook of Entrepreneurship Research. New York: Springer, 77–96.

Schmitt-Rodermund, E. (2004). Pathways to successful entrepreneurship: Parenting, personality, early entrepreneural competence, and interests. Journal of Vocational Behavior, 65, 498–518.

Schumpeter, J. A. (1911). Theorie der wirtschaftlichen Entwicklung. Berlin: Duncker und Humblot.

Schumpeter, J. A. (1934). The theory of economic development. Cambridge, MA: Harvard University Press.

Schumpeter, J. A. (1939). Business cycles. New York: McGraw-Hill.

Schwartz, H. (2002). Herbert Simon and behavioral economics. The Journal of Socio-Economics, 31(3), 181–9.

Senyard, J., Baker, T., Steffens, P. & Davidsson, P. (2014). Bricolage as a path to innovativeness for resource-constrained new firms. Journal of Product Innovation Management, 31(2), 211–30.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. Organization Science, 11(4), 448–69.

Simon, H. A. (1955). A behavioral model of rational choice. The Quarterly Journal of Economics, 69(1), 99–118.

Simon, H. A. (1963). Problems of methodology: Discussion. American Economic Review, 53, 229–31.

Singh, R. P. (2001). A comment on developing the field of entrepreneurship through the study of opportunity recognition and exploitation. Academy of Management Review, 26(1), 10–12.

Sombart, W. (1909). Der kapitalistische unternehmer. Archiv für Sozialwissenschaft und Sozialpolitik, 29, 689–758.

Stuetzer, M., Obschonka, M. & Schmitt-Rodermund, E. (2013). Balanced skills among nascent entrepreneurs. Small Business Economics, 41(1), 93–114.

Talhelm, T., Zhang, X., Oishi, S., Shimin, C., Duan, D., Lan, X. & Kitayama, S. (2014). Large-scale psychological differences within China explained by rice versus wheat agriculture. Science, 344(6184), 603–8.

Zhao, H. & Seibert, S. E. (2006). The Big Five personality dimensions and entrepreneurial status: A meta-analytic review. Journal of Applied Psychology, 91(2), 259–71.