



**COLORADO SCHOOL OF MINES**  
EARTH • ENERGY • ENVIRONMENT

DIVISION OF ECONOMICS AND BUSINESS  
WORKING PAPER SERIES

---

## **Dueling Banjos: Harmony and Discord between ADHD and Entrepreneurship**

Daniel A. Lerner  
Richard A. Hunt  
Ingrid Verheul

---

Working Paper 2017-07

<http://econbus-papers.mines.edu/working-papers/wp201707.pdf>

Colorado School of Mines  
Division of Economics and Business  
1500 Illinois Street  
Golden, CO 80401

October 2017

Colorado School of Mines  
Division of Economics and Business  
Working Paper No. **2017-07**  
October 2017

Title:

Dueling Banjos: Harmony and Discord between ADHD and Entrepreneurship\*

Author(s):

Daniel A. Lerner  
Deusto Business School  
Universidad Deusto  
Bilbao, Spain  
daniel.lerner@colorado.edu

Richard A. Hunt  
Division of Economics and Business  
Colorado School of Mines

Ingrid Verheul  
Department of Strategic Management and Entrepreneurship  
Rotterdam School of Management  
Erasmus University

### **ABSTRACT**

The past half century has witnessed a steady and diverse flow of scholarly research to understand the role individual differences play in determining entrepreneurial pursuits and new venture outcomes. Quite recently, the search for micro-level drivers has led scholars to investigate the role of diagnosable conditions such as Attention Deficit/Hyperactivity Disorder (ADHD). The potential influence of ADHD looms large in the field of entrepreneurship as a spate of recent studies reveals the extent to which the condition is associated with creativity, entrepreneurial orientation and new venture initiation. While offering significant progress in de-stigmatizing aberrant conditions, extant scholarship has left unanswered questions regarding when and how ADHD exerts positive or negative influence on entrepreneurial action, execution risk, management acumen, operational excellence and new venture outcomes. Accepting that ADHD should be neither stigmatized nor romanticized in the context of entrepreneurship, we develop a framework offering a more integrated and veridical assessment of ADHD across the complete lifecycle of business venturing. Research propositions and opportunities for future lines of inquiry are elaborated.

**Keywords:** ADHD, Entrepreneurial action, Less-reasoned logics, Entrepreneurship, Impulsivity, Opportunity pursuit, Opportunity development, New Ventures, Firm survival

---

\*Lerner is corresponding author. Lerner and Hunt make equal contribution in authorship.

## **Dueling Banjos: Harmony and Discord between ADHD and Entrepreneurship**

### **ABSTRACT**

The past half century has witnessed a steady and diverse flow of scholarly research to understand the role individual differences play in determining entrepreneurial pursuits and new venture outcomes. Quite recently, the search for micro-level drivers has led scholars to investigate the role of diagnosable conditions such as Attention Deficit/Hyperactivity Disorder (ADHD). The potential influence of ADHD looms large in the field of entrepreneurship as a spate of recent studies reveals the extent to which the condition is associated with creativity, entrepreneurial orientation and new venture initiation. While offering significant progress in de-stigmatizing aberrant conditions, extant scholarship has left unanswered questions regarding when and how ADHD exerts positive or negative influence on entrepreneurial action, execution risk, management acumen, operational excellence and new venture outcomes. Accepting that ADHD should be neither stigmatized nor romanticized in the context of entrepreneurship, we develop a framework offering a more integrated and veridical assessment of ADHD across the complete lifecycle of business venturing. Research propositions and opportunities for future lines of inquiry are elaborated.

**KEY WORDS:** ADHD, Entrepreneurial action, Less-reasoned logics, Entrepreneurship, Impulsivity, Opportunity pursuit, Opportunity development, New Ventures, Firm survival

\*\*\*

*“Discovery consists of looking at the same thing as everyone else and thinking something different.”  
- Szent-Gyorgyi (1985)*

*“To understand what it’s like to have ADHD, imagine trying to solve complex math problems while someone throws firecrackers at your feet.”- Honos-Webb (2008)*

### **Introduction**

Is Attention Deficit/Hyperactivity Disorder (ADHD) an asset or liability in the pursuit of entrepreneurial opportunities? As is often the case when examining individual agency and action in entrepreneurship, three conflicting, but nonetheless correct responses could legitimately answer the question: (a) Yes. (b) No. (c) It depends.

While some scholars have heralded the “gifts” of ADHD – transformational creativity springing from the presence of impulsiveness, distractibility, high energy and need for stimulation that characterize the condition (e.g. Healey & Rucklidge 2005; Honos-Webb 2008; White & Shah 2006; 2011) – others have observed randomness, lack of focused commitment,

and spurious actions leading to expensive failures (e.g. Fiore, Schooler, Linville & Hasher, 2001; Metin et al. 2013; Thompson-Schill, Ramscar, & Chrysikou, 2009). As a common condition, clinically affecting 11% of children and 5% of adults (Schwarz & Cohen 2013), ADHD is prevalent enough to constitute a critical subject for society-wide discussion and education (CDC, 2005). In the specific context of entrepreneurship research, ADHD poses questions and challenges that extend well beyond its impact as a clinical condition (Antshel, 2017).

ADHD is characterized by chronic impulsivity, hyperactivity and inattentiveness (APA 2000; 2013).<sup>1</sup> The malady affects a myriad of individual behaviors, even in professional settings, having material workplace consequences (e.g., Halbesleben et al., 2013; Kessler et al., 2009). These effects manifest themselves throughout the entirety of an individual's career, due to the breadth and nature of ADHD symptoms (e.g., Adler et al., 2017; Kessler et al., 2010). In this sense, the panoramic scope of ADHD distinguishes it from other common mental health conditions, such as eating disorders, which exert a less pervasive influence across an individual's work-place behavior and interactions. The open-ended, long-lived nature of ADHD also differentiates it from other disorders such as depression, which is typically not permanent, or conditions such as Parkinson's disease, which typically emerge late in one's career. The all-encompassing and persistent impact of ADHD make it an inescapable workplace concern and management challenge.

As such, it is no surprise that ADHD is among the small set of prominent conditions that has generated interest among management and entrepreneurship scholars (e.g. Bozionelos & Bozionelos, 2013; Verheul et al., 2015; 2016; Wiklund 2016a). Fundamentally characterized by disinhibition (Barkley 1997; Nigg 2000), ADHD has the unusual capacity to both resolve and

---

<sup>1</sup> See Antshel (2017) and Lerner (2016) for a detailed discussion of ADHD criteria/diagnosis for business scholars.

exacerbate the obstacles to entrepreneurial action (Archer, 2014; Lerner, 2016; Wiklund et al., 2016a). Since entrepreneurship involves decision-making and action in the context of a priori irreducible uncertainty (Knight 1921; McGrath 1997), inhibition or disinhibition towards those obstacles is central to the entrepreneur-opportunity nexus (McMullen & Shepherd 2006). This, in turn, suggests an intriguing relevance of ADHD's potential role in the pursuit of entrepreneurial opportunities and the determination of entrepreneurial outcomes.

Research findings reveal that self-employment rates are higher among individuals with ADHD, compared to those without the condition (Mannuzza et al., 1993; Verheul et al., 2016). Similarly, taking a genetic perspective, Nicolaou and colleagues (2011) find a significant association between a set of candidate genes (consisting of 4 genes associated with ADHD) and the tendency to be an entrepreneur. This suggests that there are dimensions to ADHD that heighten the attractiveness of entrepreneurial pursuits for individuals exhibiting ADHD, a perspective that is supported by other studies finding ADHD to be associated with a stronger entrepreneurial orientation (Thurik, Khedhaouria, Torrès, & Verheul, 2016) and nascent venturing (Lerner, Verheul, & Thurik, 2017). The question is: what do these findings mean in the context of opportunity pursuit? Are individuals with ADHD, and the new ventures they create, better off or worse off as a consequence of ADHD? As noted at the outset, extant literature suggests three different "correct" answers to these questions. However, our investigation reveals that these answers are not equally correct.

Ultimately, the extent to which ADHD favorably or unfavorably influences entrepreneurial pursuits and outcomes depends upon a host of double-edged factors that require a formalization of definitions, boundary conditions and contextual caveats heretofore lacking in the entrepreneurship literature. The purpose of this investigation is to build upon extant literature to

expand and enhance recent findings on the ADHD–entrepreneurship link by looking not just through the lens of the business *researcher* but also the business *clinician*. In this sense, we offer a perspective on entrepreneurship and ADHD that is grounded in both research-based rigor and practice-based veridicality. We derive rigor by taking into consideration the wide literature on entrepreneurship, informed by diverse perspectives including economics (e.g. Parker, 1996), sociology (e.g. Shapero & Sokol, 1982), management (e.g. Davidsson & Honig, 2003) and psychology (Baron, 2004; Hansemark, 2003; Koellinger, Minniti, & Schade, 2007). These literatures inform our perspective and provide context to recent research directly linking ADHD and entrepreneurship through empirical studies focused on intentions, nascent action, and employment status. Veridicality is captured by recognizing that the nature of ADHD’s *in situ* influence is not binary – purely bad or purely good – especially in the context of entrepreneurship. Rather, there are pros and cons to ADHD’s influence and associated outcomes. Consistent with early work by entrepreneurship scholars (e.g. Lerner, 2016; Wiklund et al., 2016a), we broaden and deepen the notion that ADHD’s influence is mixed, and that some of its most potent drawbacks are often a direct consequence of its most potent strengths.

There are, however, formidable obstacles to the development of an integrated perspective on ADHD’s implications for business practice. Given the extended timeframe (Reynolds & Miller, 1992) and diverse activities constituting the entrepreneurial process (McMullen & Dimov, 2013), a credible *in situ* analysis necessitates longitudinal and ethnographic studies, potentially extending a decade or more. Absent such a rarified data set, we have endeavored in this study to achieve rigor and veridicality through an unusual pairing of complementary researcher foci and

practitioner backgrounds among the authorship team.<sup>2</sup> By intentionally including active researchers who possess decades of frontline business-experience and an in-depth understanding of ADHD, two critical benefits were accrued. First, the study uniquely considers the complex, and continually shifting relationship between ADHD and entrepreneurship across the entire lifecycle of business venturing. Extant research overwhelmingly has focused on initiating activities, with scant attention to implementation and execution. Practitioners know well that many successful beginnings run aground when confronted with the challenges of executing on the mundane minutia of day-to-day venturing (Ronstadt, 1988) – aspects that have an enormous impact on entrepreneurial outcomes. Yet, these aspects have largely passed unexplored in research efforts to date.

Second, the scholar-practitioner composition of our investigative team answers the call for more research that draws strength from these complementary perspectives. In 2007, the *Academy of Management Journal* published a 50<sup>th</sup> Anniversary issue solely devoted to the subject of practitioner relevance – in which issue editor Sara Rynes lamented, “The gap between science and practice is so persistent and pervasive that some have despaired of it ever being narrowed” (2007: 987). Veridicality is undoubtedly in the eye of the beholder, but finding a pathway to increase the “relevance, usefulness, and interest to practitioners” (Rynes, 2007: 1046) can be tangibly enhanced by bridging scholarship and practice. This is particularly true within entrepreneurship’s individual differences literature and in attempts to grapple with ADHD’s influence, where researchers and practitioners share the desire to apprehend a factual, and actionable understanding that neither stigmatizes nor romanticizes the focal condition.

---

<sup>2</sup> Note that this is akin to many ADHD studies appear in leading psychology and medical journals – produced by research oriented PhDs as well as those involved with clinical practice. Here, the matter involves *business clinicians*.

Cognizant of these complications, and the opportunities they create for a contribution, our line of inquiry explores and advances a new perspective by examining the dualistic nature and double-edged implications of ADHD in business venturing. Building on initial research efforts relating ADHD to the pursuit of entrepreneurial opportunities, we develop an integrated framework for the scholarly consideration of ADHD in the context of business venturing. In presenting the implications and opportunities for related future research, we simultaneously destigmatize (Verheul et al., 2016; Wiklund et al., 2016a) and de-romanticize (Lerner, 2016) conventional notions of whether ADHD functions as an entrepreneurial asset or liability.

### **The Complex Interlinkage between ADHD and Entrepreneurship**

One of the greatest challenges in formulating a robust framework for the examination of ADHD's potential influence on business venturing stems from the difficulty in simultaneously accounting for the rich and varied nature of both ADHD and business venturing. Recently, entrepreneurship scholars have made a credible effort to import advancements in the study of ADHD to entrepreneurial phenomena (e.g., Verheul et al., 2015; 2016; Wiklund et al., 2016a/b; 2017). While this research stream has made important inroads towards unpacking promising facets of ADHD's multi-layered relevance to business venturing, the work to-date is still early stage (Antshel, 2017). In particular, studies of ADHD in the realm of entrepreneurship have yet to develop and test frameworks that fully account for the *in-situ* realities of new business venturing. While recent research may be theoretically sound and even empirically rigorous, the emerging body of knowledge is of unknown and potentially questionable veridicality. This is an impediment to developing a clear understanding of the ways ADHD may actually illuminate selected facets of the business venturing process.

### **Popular Media and Scholarly Impetus**

Popular media accounts of the relationship between ADHD and entrepreneurship are plentiful and generally positive (e.g. Archer, 2014; Hartman, 1997; Tice, 2010). The favorable orientation is consistent with popularized conceptions of celebrity-entrepreneurs; a media slant that has tended to mythologize the “Midas Touch” of colorful, creative figures, such as Richard Branson, Bill Gates, Larry Ellison, each of whom also happen to have a well-publicized case of ADHD. To no small degree, the high-profile nature of these and other celebrity stories sparked much of the recent interest in exploring whether or not ADHD might be the “secret sauce” of entrepreneurial success (e.g., Branson, 2002; Orfalea & Marsh, 2005; Wynbrandt, 2004; *The Economist*, 2012). Lost in this excitement, however, is the need to maintain a sense of scientific skepticism and practical veridicality. With hundreds of millions of individuals having ADHD, by chance alone some number of exceptional cases would inevitably arise.

The focus on celebrity entrepreneurs with ADHD in the popular press ignores a number of critical dimensions. In particular, the rush to positive judgement neglects the role of social context in successful opportunity development (Dimov, 2007), including the need to seek out, internalize, shape, and act in line with the perspectives of stakeholders. Existing research suggests that both stakeholder awareness and actions intended to service stakeholder needs are likely to be particularly challenging for entrepreneurs with ADHD (Barkley et al., 2008; Lerner, 2016). Thus, ADHD’s relationship to the basic building blocks of owning and operating a new venture is more complicated than the mythologized vignettes have allowed. The processes supporting the daily execution of a focused business model are complex, multi-faceted, often unglamorous and sometimes utterly mundane (Ronstadt, 1988). Nonetheless, they are central to a venture’s ability monetize and exploit opportunities (Gnyawali & Fogel, 1994; Hunt & Kiefer,

2017), as well as its ability or inability to harness and manage the effects of an entrepreneur-founder with ADHD.

## **The Role of ADHD across the Entrepreneurial Lifespan**

### **Entrepreneurial Intentions**

Recent efforts to investigate more systematically the relationship between ADHD and entrepreneurship have focused on the earliest aspects of the entrepreneurial process, starting with entrepreneurial intentions. Building on the person-environment literature (Cable & Edwards, 2004; Kristof-Brown et al., 2005), and using a sample of over 13,000 university students, Verheul and colleagues (2015) found evidence of a positive link between *ADHD-type behavior* (i.e., how often individuals experience symptoms) and stated entrepreneurial career intentions. Subsequent work by Lerner, Verheul and Thurik (2017), takes this a step further, examining *if* the apparent ADHD-entrepreneurial intentions link is borne out when considering clinical ADHD. Their findings demonstrate that indeed those having ADHD do in fact exhibit significantly higher entrepreneurial intentions.

At least in regards to individuals with ADHD, entrepreneurial intentions may be related to a relative lack of critical, evaluative reflection (*cf.* Lerner, Hunt, & Dimov 2017) – rather than reasoned assessments (e.g. of feasibility and desirability). In particular, individuals with ADHD may espouse entrepreneurial intent based on negligible consideration of what business formation and monetization of opportunity actually entails. While less-deliberative action (Lerner, Hunt, & Dimov, 2017) may set in motion an exciting, creative vision, leveraging novel products, marketing and sales – it may also fail to consider the influence of the more mundane, detail-oriented, day-to-day tasks such as cost accounting, customer care, and managing scaling efforts.

Thus, the entrepreneurial intentions of individuals with ADHD may be fueled by a relative lack of balancing reflection.

### **Entrepreneurial Action and Outcomes**

With respect to opportunity pursuit and entrepreneurial action, attentiveness to complex trade-offs and *in situ* realities also suggest the existence of important nuances. On the one hand, individuals with ADHD may be among the least likely to follow-through on stated goals (e.g. Barkley et al., 2008); while on the other hand, these individuals often demonstrate an action-orientation that may facilitate initiating entrepreneurial behavior, since action (rather than consideration) is prepotent. Thus, ADHD has the potential to be a purposeful force in overcoming the chasm of *ex ante* uncertainty that often bedevils opportunity initiation (Lerner, 2016; Wiklund, Patzelt, & Dimov, 2016). Towards this end, research by Verheul and colleagues (2016) found a positive link between *ADHD-type behavior* and the probability of self-employment, which is itself suggestive of ADHD's facilitating effects towards new venturing.

Nevertheless, it would be a mistake to interpret the recent findings as offering the final or even definitive word on when and how ADHD influences each of the diverse processes that constitute opportunity development (Ardichvili et al., 2003). There are simply too many moving parts to realistically posit a homogeneous association between ADHD and entrepreneurship. Given the diverse ways in which ADHD and entrepreneurship are manifested among various individuals, the differential effects of ADHD on entrepreneurial action must necessarily be parsed across the entire arc of activities and stages comprising opportunity development.

Of all the knowledge gaps associated with efforts to understand the relationship between ADHD and entrepreneurship, none is larger or more urgent than the matter of entrepreneurial outcomes (Antshel, 2017). A distinguishing feature of entrepreneurship is that the final

evaluation of novel technologies, organizational forms and business models occurs in the competitive marketplace for goods and services. Without attentiveness to entrepreneurial outcomes, an examination of intentionality and early-stage pursuit among ADHD founders truncates what is most relevant to the study of entrepreneurship. Seeing or acting differently in the world is only interesting to the extent that there may be heterogeneous outcomes as a consequence of those differences.

Key learnings about ADHD that can be drawn from psychology suggest that the entrepreneurial outcomes achieved by individuals with ADHD are likely to be as complex and varied as the condition itself (Adler et al., 2017; Kessler et al., 2010). It is also necessary to establish what is meant by the term “outcome.” For any study of new venture performance – regardless of whether or not it involves individuals with ADHD – an investigation that defines outcome as “market entry” stands to generate conclusions that differ from studies defining outcome as “revenue generation,” “profitability,” or “organizational lifespan” (e.g. Hunt & Lerner, 2012; Yang & Aldrich, 2012).

While such milestones are important to all studies of business venturing, they are even more critical when questioning the impact of ADHD due to the nature and impact of its symptoms. Disinhibition and impulsivity are potential assets in speedily achieving endpoints such as opportunity pursuit, organizational launch, and market presence (e.g. Lerner et al., 2017; Wiklund et al., 2016a/b), but they may also be liabilities in achieving endpoints that are attained through focus, persistence and the disciplined alignment of strategic resources (Sirmon et al., 2011). Since extant research on ADHD and entrepreneurship is largely cross-sectional, it is difficult to draw meaningful conclusions about how intentionality relates to action and, in turn, how action relates to entrepreneurial outcomes.

### **The Tension between Bold Action and Promising Outcomes**

Although new venturing commences with individual-level agency and intentionality, ultimately entrepreneurship is a journey requiring human action and social interaction (Dimov, 2007), with results that emerge through market-based sifting and sorting. This is what uniquely situates entrepreneurship as being related to, but separate from innovation, inventiveness, creativity, and visioning. Absent the measurability of an entrepreneurial action's impact, there is little that distinguishes entrepreneurship from most other human endeavors. Thus, a thorough investigation of ADHD and entrepreneurship must involve the entire entrepreneurial journey.

As the foregoing discussion makes clear, ADHD has varied effects on entrepreneurial action, depending on the stage in the entrepreneurial process. From the traditional clinical (i.e. pathological) perspective, even if individuals with ADHD espouse entrepreneurial intentions and prefer entrepreneurship over wage-employment (Verheul et al., 2015), facets of the condition involving problems with sustained attention and chronic distractibility often cause people with ADHD to lose focus and engage in task-irrelevant activities (Halbesleben et al., 2013). As such, entrepreneurial intentions may not be acted upon.

Although entrepreneurship is generally perceived to involve risky, complex and innovative activities (aspects that are typically attractive to individuals with ADHD), the reality of starting a business may be less exciting. Starting a firm involves many tasks that are formal, protracted, and administrative, requiring attention to seemingly mundane details. Individuals with ADHD not only tend to struggle with such activities, they also perceive them as less attractive (e.g., Barkley, 1997). Thus, when it comes to actually starting a venture, individuals with ADHD may procrastinate or be distracted by more stimulating activities. Following this line of reasoning, the

classic pathological perspective would suggest that individuals with ADHD are less likely to take entrepreneurial action, compared to individuals without this condition.

The exact opposite may however also be true. Considering that entrepreneurship requires an action orientation (e.g., Frese, 2009; Sarasvathy, 2001), individuals with ADHD may act impulsively on the spur of the moment, a perspective supported by evidence that intentions do not always precede action (Kautonen et al., 2015: 668). With ADHD, “act first, think later” behavior prevails, meaning action itself is often prepotent (i.e. will be expressed absent top-down restraint) (Barkley, 1997). This suggests that, at least in the realm of entrepreneurial opportunity pursuit, those with ADHD may indeed act with little or no consideration of the potential consequences.

*At the earliest stage*, entrepreneurial action primarily involves initiating entrepreneurial behavior in spite of a priori irreducible uncertainty (McMullen & Shepherd 2006; Van Gelderen et al., 2001), conditions under which the circumstances are replete with unknown-unknowns, a mélange of factors that would constitute serious obstacles to action for many individuals. Recent findings (Lerner, Verheul & Thurik, 2017; Wiklund et al., 2016a) suggest that far from being a deterrent, high ambiguity – and the premium ambiguity places on “shaping actions” that simultaneously derive sense-making and create new avenues of sense-making – is fertile ground for entrepreneurs with ADHD. Specifically, Lerner, Verheul and Thurik (2017) found individuals who are diagnosed with ADHD were almost two times more likely to engage in entrepreneurial action than those without ADHD. In this respect, ADHD’s disinhibition (e.g. Barkley, 1997; Lerner, 2016) appears to substantially neutralize the impact of obstacles that might otherwise forestall entrepreneurial action.

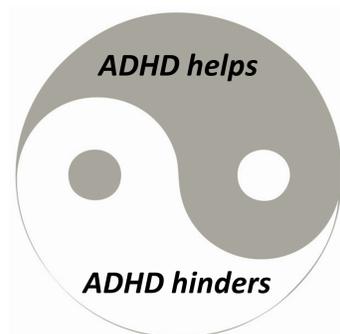
The proposed trade-off between disinhibition and obstacle neutralization forms the basis of a broadening effort to explore the positive association between ADHD and entrepreneurial action – a line of inquiry that, to date, has generally supported the hypothesized association (e.g. Lerner, Verheul & Thurik, 2017; Wiklund et al., 2016a). The emerging research in this area has however yet to consider the extent to which some stages of the entrepreneurial process exhibit greater complementarity with ADHD than others. Nascent-stage processes involving opportunity identification and an initial call to action may be well suited to the proclivities of individuals with ADHD, whose pre-potent tendencies are potentially an asset in circumstances for which the exact nature of a potential opportunity is ambiguous. In these instances, the benefits of vigorous, disinhibited engagement with the potential opportunity may prove decisive in determining whether or not the opportunity even exists (Lerner, Hunt, & Dimov 2017). Conversely, later-stage, execution-oriented activities may be a function of resource orchestration (Sirmon et al., 2011) that demands consistent messaging to stakeholders, diligent planning and attentiveness to continual improvement, activities that seem less compatible with ADHD. Relatively unreasoned actions may correspond to greater quantity and diversity of opportunity identification and pursuit; yet expedience may carry a corresponding price tag in organizational and operational quality, especially when measured by long-term, market-based measures of success or failure.

### **ADHD and Entrepreneurship - A Dualistic Framework**

To return to our central question: Does ADHD help or hinder entrepreneurial actions and outcomes? Given the dualistic nature of ADHD, involving significant assets and liabilities, at best the answer to this question is that “It depends.” Moreover, those assets and liabilities are wound around one another in complementary fashion both because they are simultaneously

resident in individuals with ADHD, and because it is impossible to separate the benefits – such as rapid unfettered action – from the detriments, such as inadequately considered or poorly orchestrated action (e.g. leading to flawed business models or causing issues with key stakeholders) (Lerner, Hunt & Dimov 2017). Depending on the decision-making context, the ingeniousness of acting very creatively, very frequently and very fast may prove to be decisively favorable or cripplingly unfavorable (e.g. Lerner et al., 2017). In some sense, that which helps advance opportunity development and that which hinders it are simply two sides of the same coin. Borrowing from Taoist philosophy, the complementary, dualistic nature of the ADHD–entrepreneurship relationship can be usefully framed by the two opposing sides of the Tao (Figure 1).

**Figure 1: The Dualistic Nature of ADHD**

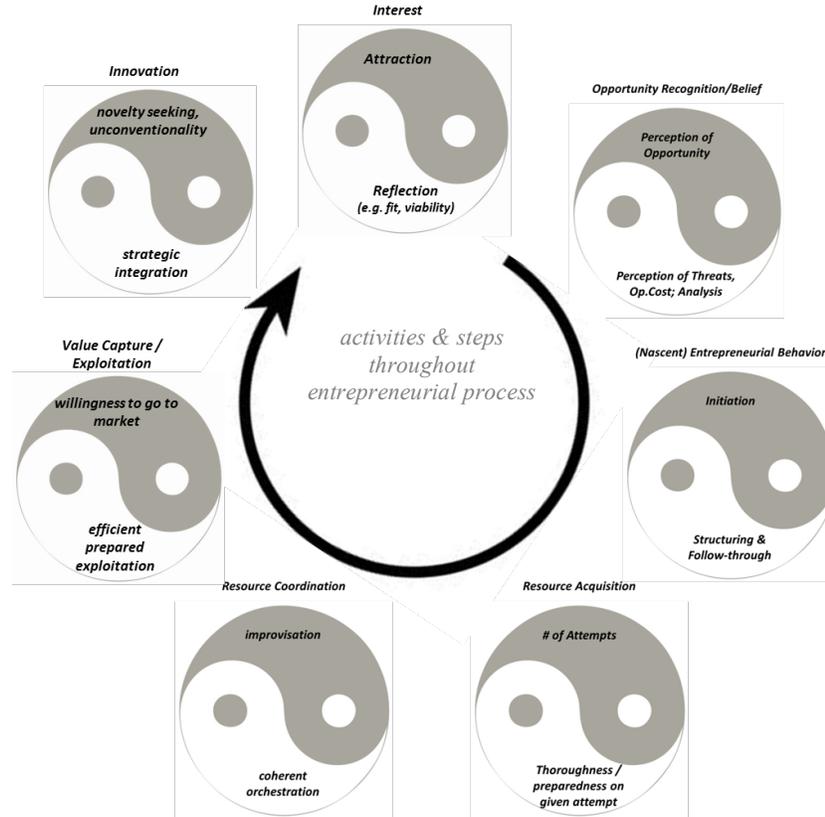


The dark and light halves of the Tao, *yin* and *yang*, respectively, convey masculine-feminine energies that both create and characterize the manifest world (Liu, 1998; Yip, 2004). The interlocking, complementary patterns have been described as a “kaleidoscope-like movement” (Hung, 2016) for which all elements necessarily and definitionally rely on the existence of each element’s contrary (e.g., light and dark, birth and death). As the adage above suggests, there is no front side of a coin that does not have a back side. Flipping the coin does not change the fact that the coin has a head’s side and a tail’s side, only that one or the other is immediately apparent to us at any given moment, even while both exist together in the Tao. A

person's *yang* essence (i.e. active, energetic, doing, engaging, penetrating, separating, grasping) and *yin* essence (i.e. relaxed, restful, contemplative, being, receiving, nurturing, integrating) are in balance, to varying degrees, depending on contextual and personal conditions, but neither side ever completely disappears.

Thus, some of the variability in entrepreneurial outcomes in the context of ADHD stems from the fact that ADHD is a condition that is manifested idiosyncratically in individuals across a wide range symptoms and degrees of severity. Since entrepreneurship involves evolutionary pathways that are often fast-changing (Eisenhardt, 1989) and a priori uncertain (McGrath, 1999), it is reasonable to expect that over time individual differences may be substantial. Additionally, variance arises as a consequence of changes to the person-environment “fit” (Antshel, 2017). One inevitable cause of these changes pertains to the entrepreneurial lifecycle, where an opportunity evolves into a business organization and eventually an active market participant; key considerations related to the entrepreneurial environment during the opportunity initiation phase may bear little resemblance to the considerations that are pertinent during phases emphasizing opportunity development and operational excellence.

Therefore, with ADHD positively linked to *yang* (gray in Figures 1 & 2), and negatively to *yin* (white), the kaleidoscopic nature of ADHD and the complementary dualities of the Tao must be considered in a contextually dynamic fashion. Each step of the entrepreneurial lifecycle can be considered as a distinctive person-environment context against which fit must be evaluated (Figure 2). To give greater shape to our perspective, we illustrate how two sides of the same coin can exist and play-out across separate activities and stages of the entrepreneurial lifecycle. In particular, we give form to the yang (positive side) and yin (negative side) of ADHD across the venturing lifecycle, offering specific propositions along the way.

**Figure 2: The Tao of ADHD across the Entrepreneurial Lifecycle**

### Decomposing the Entrepreneurial Lifecycle

Entrepreneurship involves various types of action. In early stages, actions may be more creative and exploratory in nature, while later stages are, by necessity, more structured, predictable and execution-driven. It is rare to find all the requisite skills and insights embodied in a single founder for the entire arc of the entrepreneurial lifecycle. This truism at least partially explains the scholarly focus on founding teams (e.g., Klotz, Hmieleski, Bradley & Busenitz, 2014; Jung, Vissa, & Pich, 2017). It also explains the venture community's focus on the founder problem, the phenomenon in which venture creators are often replaced by business leaders who excel at execution and scaling as new ventures begin to grow and mature (Wasserman, 2008). It is interesting to consider whether the focus on founding teams and the urgency of founder problems are exacerbated or even driven to a substantial degree by ADHD-type individuals.

Stevenson and Gumpert (1985) suggest that entrepreneurship involves a range of behaviors of which the foundational archetypes are entrepreneurial (or promoter) behavior and administrative (or trustee) behavior. Both types of behavior are required at various stages of the venturing lifecycle, regardless of whether the opportunity is made manifest through creation (Gartner, 1985; Baker & Nelson, 2005), discovery (Kirzner, 1979; Shane & Venkataraman, 2000), effectuation (Sarasvathy, 2001), imagination (Klein, 2008), or inter-subjectivity (Alvarez & Barney, 2012). Regardless of whether one adopts a realist, constructionist or evolutionary realist perspective (Alvarez et al., 2010), the common thread running through each of these perspectives is the basic premise that opportunity development requires entrepreneurial action (Hunt & Kiefer, 2017; McMullen & Shepherd, 2006), channeled towards the engagement of three distinct processes: opportunity *identification* (by whatever means: discovery, creation, imagination etc.), opportunity *evaluation*, and opportunity *exploitation*.

At the beginning, the emphasis is on exploratory and generative actions, such as taking steps to try to identify, define, evaluate or develop an opportunity (Ardichvili et al., 2003) – whereas exploitation involves the structuring steps necessary to monetize an opportunity, which requires both the willingness and ability to acquire and operationalize the requisite resources (Gnyawali & Fogel, 1994). Definitionally, promoter behaviors precede trustee behaviors – even in opportunity development through effectuation (Sarasvathy 2001) – because the activation of resources requires an organization of some sort. For example, there is no basis to obtain formal licensing, establish bookkeeping or enter third party agreements prior to the identification of a potential opportunity. Before trustee-focused *structuring* behaviors are relevant, an entrepreneur necessarily engages in promoter-focused *initiating* behaviors.

While no phase of the entrepreneurial lifecycle is ever entirely devoid of either trustee-structuring or promotor-initiating behaviors, the identification, evaluation and exploitation of opportunities each involve a different mix of these behaviors, depending upon the specific requirements at any point in time. Thus, the required mix of structuring and initiating behaviors should be taken into account when seeking to understand ADHD's influence on entrepreneurial outcomes. ADHD symptoms present both opportunities and challenges to entrepreneurs with ADHD and their various stakeholders. For example, Lerner (2016) found that ADHD's hyperactivity, impulsivity, and attentional variability fit better with 'generative' qualities of entrepreneurs – in essence, those needed for *initiating* behaviors – whereas the same characteristics tend to collide with 'administrative' qualities, those needed for *structuring* behaviors. We discuss each in turn, as we walk through the entrepreneurial lifecycle.

### ***Interest and Opportunity Identification***

The association between initiating behaviors and ADHD-driven preferences and proclivities suggests that nascent-stage entrepreneurial activities involve processes that cast ADHD as an asset rather than a liability. Specifically, the first three steps – interest, opportunity identification, initiating nascent entrepreneurial behavior – would seem to be areas in which individuals with ADHD gain the greatest value from the promoter-generative facets of hyperactivity, impulsivity, and attentional variability. In these instances, the positive (yang-oriented) factors are well-suited to the entrepreneurial demands associated with these stages, which are characterized by extensive decision-making under conditions of exogenous a priori irreducible uncertainty. In the earliest stage of business venturing, individuals with entrepreneurial interest use prior knowledge (Eckhardt & Shane, 2003), experience (Sarasvathy, 2001), creative vision (Baker & Nelson, 2005) and or imagination (Klein 2008) to perceive

opportunities. Entrepreneurial interest is an enabler and, by definition, a precursor to that which follows. Absent interest, individual attention and motivation are typically devoted elsewhere (e.g. Barkley, 1997). Even if somehow confronted with an opportunity, the uninterested individual is not apt to share and test ideas within and across personal and professional networks (Hoang & Antoncic, 2003) and form first-person opportunity beliefs (McMullen & Shepherd, 2006).

At this stage, individuals need to perceive value-added bridges between a current state and a future state, usually involving the effort to offer a value proposition to willing parties. This requires inspired perceptions and unfettered, associative thinking to see novel connections and new means-ends frameworks (Gavetti, 2012; Shane, 2003). Often, the novelty emerges from unconventional thinking, extraneous details, “outside the box” hybrids, shrewd perceptions and dynamic linkages (Baron & Tang, 2011; Ward, 2004). This perspective is supported by the observation that creativity is an important precursor of opportunity discovery or creation (Amabile et al., 1996; Ardichvili et al., 2003). Moreover, there are demonstrable linkages between these types of creative, generative activities and the presence of ADHD (White & Shah, 2006; 2011; Wiklund et al., 2016a) and related disinhibition (Carson, Peterson, & Higgins, 2003). Extending the emerging body of empirical work that self-stated entrepreneurial intentions are positively associated with ADHD (Verheul et al., 2015; Lerner et al., 2017), we propose the earliest form of entrepreneurial activity exhibits heightened levels of awareness and interest in such activities among individuals with ADHD (P1a & P1b). Furthermore, based on the positive linkages between ADHD, disinhibition, and creativity, we propose that individuals with ADHD envision more novel and innovative business ideas (P1c); concurrently, their ideas will also tend to be more sensational, relatively less reasoned and less likely to be viable (P1d).

**Proposition 1a:** Individuals with ADHD think about potential entrepreneurial opportunities more often than do individuals without ADHD.

**Proposition 1b:** Individuals with ADHD display greater interest in entrepreneurial opportunities than individuals without ADHD.

**Proposition 1c:** Individuals with ADHD generate more distal, unconventional and novel entrepreneurial ideas than do individuals without ADHD.

**Proposition 1d:** Individuals with ADHD generate entrepreneurial ideas that are more sensational and aspirational – as compared to practically grounded in reasoned considerations of viability and extant demand – than do individuals without ADHD.

McMullen and Shepherd (2006) talk about the transformational process that occurs when an entrepreneur shifts from considering an opportunity in the third person (meaning that some action constitutes a potential opportunity to someone), to considering it in the first person (meaning that the entrepreneur considers the opportunity to be an explicit, personal call to action). This distinction may be less applicable to individuals with ADHD because the immediacy of an active, creative visioning process ignites high interest and forceful intentionality (e.g. Wiklund et al., 2017), in turn resulting in more frequent and rapid conversion of ideas into broad convictions that an entrepreneurial opportunity exists or can be created (Lerner, Hunt, & Dimov, 2017). Obstacles that may inhibit or even prevent individuals without ADHD from taking ideas a step further, such as perceptions of restricted agency, recognition of social blocks, and practical consideration of verifiable resource impediments, may not apply to ADHD-type individuals. This can result in a greater quantity and diversity of perceived entrepreneurial opportunities in the early stage of the entrepreneurial lifecycle (P2a & P2b).

**Proposition 2a:** Individuals with ADHD will identify more entrepreneurial opportunities than individuals without ADHD.

**Proposition 2b:** Individuals with ADHD will express **greater optimism regarding** the efficacy of an entrepreneurial opportunity than individuals without ADHD.

***Nascent-Stage Entrepreneurial Behavior***

The influence of these venturing proclivities extends beyond individual interest and opportunity identification to the earliest steps towards organization formation. Prior research has established a weak, though positive, link between entrepreneurial intentions and action (Van Gelderen, Kautonen, & Fink, 2015). Building on recent evidence of a positive link between ADHD, entrepreneurial intentions (Verheul et al., 2015; Lerner et al., 2017) and entrepreneurial action (Verheul et al., 2016; Lerner et al., 2017), and taking account of the action-orientation that is characteristic of individuals with ADHD, we propose that entrepreneurial intentions will translate into entrepreneurial action with greater frequency and with a greater sense of urgency for individuals with ADHD as compared to those without (P3a).

**Proposition 3a:** Individuals with ADHD will act upon perceived entrepreneurial opportunities more quickly and with greater frequency than will individuals without ADHD.

Individuals with ADHD can also leverage the promoter-initiator focus of early-stage, initiating activities by evangelizing the entrepreneurial opportunity. In a study focusing on the venturing implications of ADHD-type behavior, Lerner (2016) found that disinhibited entrepreneurs were better able to convince potential resource providers of their ‘generative qualities’. Specifically, such entrepreneurs were more successful than the non-ADHD entrepreneurs in conveying creativity and vision (P3b). They were also judged to be superior at idea generation and opportunity recognition.

**Proposition 3b:** Individuals with ADHD will be more effective in communicating a bold, novel nascent-stage entrepreneurial vision than will individuals without ADHD.

Such an evangelical spirit, as well as a lack of inhibition in trying to engage others and less reasoning about selecting the *right* others, is apt to translate into a greater number of attempts to

recruit others (P3c), and thus eventually adherents and early nascent-stage venturing momentum (P3d).

**Proposition 3c:** Individuals with ADHD will more rapidly attempt to recruit others than will individuals without ADHD.

**Proposition 3d:** Individuals with ADHD, even if less likely to successfully recruit others on a given attempt (than individuals without ADHD), will none the less successfully recruit others to a nascent venture early on.

### ***Resource Acquisition***

The extent to which ADHD can be considered an advantage in successfully acquiring resources is very much an open question. The answer is likely to be conditional upon the specific nature of the resources and the timing of their acquisition. For instance, as suggested above, recruiting individuals to a nascent venture is early stage and involves evangelizing the vision to various potential recruits. The acquisition of other resources, such as external financing, professional office space, an organized staff, and formal processes and systems requires prior organizing activities (e.g. formal firm registration and financial accounts) and typically necessitates at least some due diligence. Such activities and resource acquisition thus require more of a trustee-administrative orientation than a promoter-initiator orientation. Hence, *initiation* behavior at this stage begins to extend into what could be considered *structuring* behavior. Summarized in propositional form, our perspective suggests:

**Proposition 4a:** Nascent-stage resource acquisitions that are associated with primarily initiating behaviors (e.g. recruiting others) will favor individuals **with** ADHD (over those without ADHD).

**Proposition 4b:** Later-stage resource acquisitions that are associated with primarily structuring behaviors (e.g. bank loans) will favor individuals **without** ADHD (over those with ADHD).

Regardless of how or why an opportunity is identified and developed, ultimately, entrepreneurship becomes a social activity (Aldrich & Ruef, 2006). Resource acquisition and

later-stages of business venturing involve extensive interpersonal coordination, communication, joint-production, and market-based transactions and, thus, well-developed social skills on the part of the entrepreneur (Baron & Markman, 2003). While the social coordination imperative is clearly relevant to all entrepreneurs, it is more acutely a concern for entrepreneurs with ADHD (especially those with clinical ADHD), by virtue of having a condition characterized by impairments that typically place the individual at a disadvantage in executing social structuring behaviors in an effective and efficient manner (e.g., Wiklund et al., 2016a).

Although promoter-focused initiating behaviors remain to a degree relevant across the entrepreneurial lifecycle, the transition from initiating activities to structuring or opportunity development activities (involving business implementation and commercialization) often require a different set of behaviors from entrepreneurs. Many of these activities place a higher premium on replication, predictability, and sustainable excellence. It would be a misconception though to suggest that ADHD renders founders utterly incapable of being effective administrators. As noted earlier, the elements of *yin* and *yang* are not absolutes, but rather inter-locking complements whose potency lies along a context-dependent, personality-dependent and, in the case of ADHD founders, condition-dependent spectrum. Nonetheless, ADHD classically involves symptoms that can be a notable liability when the business requires effective administration and operations hinging on day-to-day concerns and execution risks.

Drawing on findings from the clinical literature on ADHD, Lerner (2016) found a negative relationship between ADHD and expected administrative qualities relevant to structuring behavior. In a randomized experiment, ADHD-type behavior by aspiring entrepreneurs increased the wariness of others regarding the entrepreneurs' administrative qualities, including key factors such as consistency, reliability, clarity in defining next steps, and implementation acumen.

In line with this, people with ADHD tend to lose interest once the more stimulating, initial work is done (Barkley, 1997), at which point entrepreneurs with ADHD are at particular risk of losing focus. Placed in circumstances that necessitate convergent structuring behavior, individuals with ADHD may find themselves unable to inhibit continued exploration, even when doing so comes at the expense of much-needed, trustee-based opportunity exploitation. Mission-critical activities such as ordering and managing raw materials, providing patient customer support, dealing with regulations, and maintaining financial records, are often considered mundane -- if not altogether odious -- to individuals with ADHD, making them even more vulnerable to distraction and prone to activity avoidance. It is well-known that ADHD symptoms can become more severe in situations that “*require sustained attention or mental effort or that lack intrinsic appeal or novelty*” (APA, 2000, p. 86). Thus, ADHD undermines an individual’s capacity to mitigate the execution risks that characterize the stages wherein new ventures transition to a more structured set of entrepreneurial activities, ones that place a premium on consistent follow-through and effective administration. The relative prominence and importance of such activities grows increasingly across the arc of business venturing, from resource acquisition to resource coordination to value capture (Figure 2). These later steps are essential to the long-term vitality and survival of an organization, and involve a diverse array of managerial leadership challenges, including customer care, constant innovation, and attentiveness to employees’ needs (Darling, Keefe & Ross, 2007).

Depending on the nature of the resource and the degree to which it is principally associated with initiating or structuring activities, resource acquisition has elements of ADHD-benefiting *yang* and non-ADHD-benefiting *yin*. The acquisition of financial resources is often a pivotal milestone. On the one hand, confidence in and passion for novel technologies,

organizational forms and business models can be decisive in charismatically inciting enthusiasm for an emerging venture (Baumol, 1968). On the other hand, when preparedness is required to acquire a resource, then trustee-oriented proclivities are likely to be more successful. Angel and venture investment decisions often hinge on the achievability of financial forecasts and the resilience of such models to unforeseen, unfavorable contingencies (Clark, 2008; Pollack, Rutherford & Nagy, 2012). At this level, the acquisition of financial resources requires painstaking due diligence, an expert's knowledge of market and industry dynamics (Mullins, 2013), and facility in handling financial data. The *intra-individual* action that involves translating inspired ideas into perceived opportunities and then into initiating actions with a cadre of close associates gives way to *inter-individual* action that is grounded in social considerations that involve increasingly formal means to investigate and evaluate the opportunity. The latter becomes more important for ADHD entrepreneurs who may tend to be discouraged by structuring activities, thereby leading them to procrastinate or ignore seemingly mundane, mission-critical processes. Attentive to this dynamic, we offer the following:

**Proposition 4c:** The importance of social skills – for resource acquisition, for transitioning to collective entrepreneurial action, and for venturing success – is much greater for entrepreneurs with ADHD entrepreneurs than those without ADHD.

### ***Resource Coordination***

Of all the steps comprising the entrepreneurial lifecycle, none appears to be less well-suited to the ADHD mind than resource coordination. The ability to effectively orchestrate resources (Sirmon et al., 2011) is critical to establishing credibility and intelligibility with the organization's stakeholders. Often, this involves developing and instituting a formalized set of policies, procedures and processes that allow for the replication of high-quality goods and services (Gupta, 2004; Ronstadt, 1988). Entrepreneurship scholars have effectively argued that in

many cases less formal resourcing behaviors, such as bricolage (Baker & Nelson 2005) and improvisation (Miner, Bassof & Moorman, 2001), can be indispensable facets of opportunity development and entrepreneurial success. To a certain degree, all new and small firms must be willing and able to improvise. Where bricolage and improvisation play a key role in acquiring and coordinating resources, creative facets of ADHD could be strategically important. This means that even though individuals with ADHD are typically disadvantaged when engaging in coordinating activities (P5a), there are situations in which the reverse may be true (P5b).

**Proposition 5a:** Individuals without ADHD will be more successful than individuals with ADHD when resource coordination demands coherent, replicable, and scalable outcomes.

**Proposition 5b:** Individuals with ADHD will be more successful than individuals without ADHD when resource coordination demands bricolage or improvisation.

### *Value Capture*

Leepak, Smith and Taylor (2007) argued that value creation and capture must be viewed as being distinct since it cannot be assumed that the party capturing value unequivocally created that value. Thus, any firm's survival depends upon the extent to which value that has been created can be captured. For new and small firms this concept has added importance because they may find themselves unable to capture some or all value that they have created due to a lack of scale, key resources, socio-cognitive legitimacy, market access or experience. No new venture enters the market in perfect fashion. A priori irreducible uncertainty bedevils firms even after they make market inroads through structuring behaviors that allow new ventures to appear and function like incumbents. However, the uncertainty faced at this point is endogenous to the strategy and activities of the firm, versus the exogenous irreducible uncertainty confronted by individuals and founding teams in the first phases of the entrepreneurship lifecycle. Endogenous considerations involve issues such as market acceptance, supplier and customer preferences and

behaviors, and the ability of employees to execute against the business plan. For example, Shane and Delmar (2004) found that entrepreneurs who completed business plans before engaging in efforts to talk to customers and engage in marketing and promotional efforts, were more successful than those who did not engage in formal organizational planning processes. In a fashion similar to that involving resource coordination, value capture that is contingent upon replication will favor trustee-centric structuring and administration, thus presenting a misfit for entrepreneurs with ADHD (P6a). However, when the conditions for value capture are dynamic or ambiguous, then ADHD could once again be an asset (P6b).

**Proposition 6a:** Individuals without ADHD will be more successful than individuals with ADHD when the means to capture value demand coherent, well-prepared action and coordination with stakeholders.

**Proposition 6b:** Individuals with ADHD will be more successful than individuals without ADHD when the means to capture value are volatile and or ambiguous.

### ***Innovation and Renewal***

To varying degrees, entrepreneurial firms must find ways to continually evolve and adapt throughout the process of seeking to establish themselves in the marketplace for goods and services. As the literature on organizational ambidexterity makes clear, the perspectives and processes supporting an atmosphere of renewal are often elusive (Gibson & Birkinshaw, 2004). Excellence in achieving increasing returns to scale does not transfer smoothly to excellence in achieving breakthrough innovations. This difficult balance is not solely the domain of large incumbent firms. Consistent with the *yin-yang* theme developed here, ADHD is both an asset and a liability in the arena of innovation and renewal. Given their tolerance of uncertainty and preference for novelty, founders with ADHD can be expected to embrace innovation and unconventionality. The question is whether these proclivities come at the expense of much-needed continuity, or strategically coherent innovation/diversification (Hunt, 2015). For new and

small firms, the thin line separating financial success and failure raises the stakes involved in deftly balancing the change versus continuity conundrum. Individuals without ADHD are more likely to be attracted to deliberative processes that evaluate the attractiveness of new initiatives against the relevant opportunity costs and risk factors (P7a). Novelty for novelty's sake is less likely to be a factor when the founder and leadership team embraces the benefits of structuring behaviors. While less mercurial, this balanced attempt to consider continuity and change is likely to yield a better chance of innovation success and firm profitability.

**Proposition 7a:** Individuals without ADHD will be more successful than individuals with ADHD in balancing the aims of innovative renewal and scaled competence.

Meanwhile, it seems likely that founders with ADHD will look for the next new opportunity at this point, either within the same or in a newly started firm (P7b). We thus suggest:

**Proposition 7b:** Founders with ADHD who are still with their respective firms when the firm survives past initial value capture will either: (a) attempt to take the firm in radically new directions; or, (b) depart in order to start again at the beginning of the entrepreneurial lifecycle.

## Discussion

Our proposed framework, developed for future scrutiny through the presentation of nineteen testable propositions, offers a key assertion regarding the veridicality of individual differences: the exact same actions by founders with ADHD may exert a significant positive influence at one juncture and then a significant negative influence at another juncture, even though the actions themselves may be substantively the same. This suggests that progress in understanding the ADHD-entrepreneurship connection requires a lifecycle perspective. Entrepreneurship is ultimately a long process comprised of many steps and fuzzy phases – typically involving intentions and creative actions, but also stability, operational reliability and strategic direction-setting (Frese, 2009). Since entrepreneurial environments are characterized by

dynamic, high-velocity conditions (Eisenhardt, 1989), the “person-environment fit” (Lasky et al., 2016) is not a fixed factor that is locked in place during the initial phase of new venturing. Rather, the “fit” conditions change, often quite dramatically, when ADHD is involved. Thus, while ADHD conditions may offer an exceptional fit with nascent-stage risk-taking that more willingly confronts and more easily surmounts early-stage obstacles (Drechsler, Rizzo & Steinhausen, 2010; Evenden, 1999; Sorensen, Sonuga-Barke, Eichele, van Wageningen, Wollschlaeger, & Plessen, 2017), ADHD tendencies may circumvent later-stage entrepreneurial processes that would otherwise benefit from attributes such as persistence and conscientiousness, both of which are notoriously under-expressed by individuals with ADHD (Halbesleben et al., 2013; Knouse, Traeger, O’Cleirigh, & Safren, 2013).

As Antshel’s (2017) review of ADHD fit conditions for entrepreneurial intentions and entrepreneurial orientation reveal, it would be unwise to categorize the ADHD-entrepreneurship fit based on a single frame of reference uniformly constructed to address all the phases from intentions to outcomes. Only through a conceptualization that contemplates the entire lifecycle of opportunity development can the complete panoply of pros and cons be credibly sorted. Oft-cited work on opportunity development (e.g. Ardichvili, Cardozo & Ray, 2001; Gnyawali and Fogel, 1994) tends to stress the role of utility, opportunity costs, due diligence and plans of action, as would-be entrepreneurs painstakingly devise and revise potential opportunities in the context of shifting environmental realities.

The difficulty is that opportunity development requires a multiplicity of capabilities. “Careful investigation of and sensitivity to market needs and sub-optimally deployed resources may help an entrepreneur begin to develop an opportunity,” noted Ardichvili et al. (2003: 113), but opportunity development also involves creative input by the entrepreneur. Moving away

from the rational, more formally conceived aspects these precepts invites fresh perspectives and previously unforeseen possibilities (Lerner, Hunt, & Dimov 2017; Wiklund et al., 2017); but, depending on the stage in an opportunity's development, efforts to keep more formal deliberative assessments at a distance, also have the potential to invite discord, confusion and inefficiency. In a milieu characterized by high-velocity sectors and fast-paced launch logistics (Eisenhardt, 1989, 2013; Eisenhardt & Tabrizi, 1995; Nadkarni, Chen & Chen, 2016), speed-to-market would seem to be a great asset. In reality, however, short-term efforts to increase the speed of opportunity development may actually cause gridlock farther down the road when the conditions involved with start-up risk prove to be markedly different from those involved with execution risk. Thus, in this investigation we ask critical questions through the lens of ADHD: Where do the benefits of "differentness" begin and end? And, how can the realities of this double-edged sword be managed to fully harvest the benefits without being overwhelmed by the detriments?

In speaking to each of these key questions, we have taken a full lifecycle approach that offers a more useful and veridical middle road between the ADHD-as-stigma and ADHD-as-blessing perspectives. Quite conveniently, Ardichvili and colleagues' (2003: 109) conception of the opportunity development process is noteworthy for its efforts to explicate the complete range of processes associated with opportunity identification and development: "We regard opportunity development as a continuous, proactive process essential to the formation of a business." The perspective extends and amends earlier work by Timmons, Muzyka, Stevenson and Bygrave (1987) regarding opportunity evaluation and is grounded in the presumption of rigor, such that the development process enriches the entrepreneur's knowledge base (2003), better equipping him or her to assess the attractiveness and feasibility of each opportunity with respect to finite productive resources. Feasibility analysis, exemplified by Ronstadt's "knowledge corridor"

(1988) is a perspective that attempts to balance the acknowledgment of bounded rationality with the conception of entrepreneurs fundamentally engaged in the rational evaluation of opportunities, involving vigorous due diligence. Evaluative judgments function in the model as indispensable tools to determine whether or not the necessary resources can be accessed and whether or not these resources should be deployed towards further development of a perceived opportunity. This is, in essence, Ardichvili et al.'s notion that there are no shortcuts to the arduous process of developing and exploiting profitable opportunities (2003).

Leveraging alertness (Kirzner, 1997) and prior knowledge (Shane, 2000), the rational pursuit model depicts entrepreneurs as seeking to identify opportunities that are worth developing through an objective assessment of environmental signals. Proclivities that short-circuit this ardor may speedily unlock opportunities, but doing so may seed challenges that will arise as the opportunity inevitably evolves. "The development process is cyclical and iterative: an entrepreneur is likely to conduct evaluations several times at different stages of development; evaluation could also lead to recognition of additional opportunities or adjustments to the initial vision" (Ardichvili et al. 2003: 106). An unwillingness or inability to pursue opportunities in this fashion may lead to what Kirzner referred to as "maladjustment," circumstances in which entrepreneurs persist in implementing a business model that is fundamentally at odds with the true market conditions (Kirzner 1979). This is because, as Kirzner noted, entrepreneurs are not simply selling their inspiration and innovation, nor even simply goods and services, but rather in the end the vital determinant involves their knowledge of how to assemble and market valued resources. The latter among these aims necessarily leverages creativity, novelty and action, but ultimately monetary rewards flow from the ability to execute operationally (Gnyawali & Fogel 1994). The relationship between ADHD and entrepreneurial action that is so readily apparent at

the most nascent stages of opportunity development, is unlikely to be sustained in like fashion across the complete arc of all the processes constituting opportunity development. In fact, a more telling reality could be afoot: that the ADHD-entrepreneurship association actually peaks in the earliest stages, and then steadily devolves thereafter.

Generally, research on the workplace implications of *disorders* should take into account the reality that an entrepreneur or employee does not operate in a vacuum. Focusing on the entrepreneurial process, even if an individual seeks to start a company, firm formation (let alone successful venturing) involves much more than actions undertaken by a single would-be entrepreneur. Following initial individual action, entrepreneurship is a social phenomenon. Irrespective of the design of the venture or the ultimate boundaries of the firm, the would-be founder must engage others in some form of joint-production to exploit an entrepreneurial opportunity. Although the scope of mobilization of others will vary among entrepreneurs (e.g. depending on whether employees and co-founders are needed, the degree to which venture financing is required), given the acutely limited time and abilities of a single individual, even solo-operated ventures at some point will depend on interaction with outside stakeholders to survive or grow. Accordingly, the role of socially relevant individual-differences in would-be entrepreneurs is of concern. While germane to all aspiring founders, such is apt to be particularly relevant for those with clinical conditions, which by definition involve significant weaknesses.

Structuring activities and the day-to-day operational challenges that ADHD presents are relevant even beyond the boundaries of the firm. For example, in their qualitative study of ADHD entrepreneurs, Wiklund and colleagues (2016a) found that all the entrepreneurs needed others to handle their bookkeeping activities. While markets exist for such services, and in theory entrepreneurs with ADHD should be able to simply acquire such services, the reality was far

more convoluted and impactful. In actuality, the study revealed that some of the ADHD entrepreneurs were at a complete loss to even retain third party bookkeeping services – much to the entrepreneur’s detriment (Wiklund et al., 2016a).

### **Future Directions**

The implications of the dualistic, complementary, *yin-yang* perspective we have developed here reveals numerous lines of analysis for future research, related to specifically ADHD and to individual differences more generally. First, building on the process view of entrepreneurship, which considers different stages of the entrepreneurial process, an essential follow-on question is: How does ADHD affect the workplace and colleagues throughout the entrepreneurial venturing process? The entrepreneurial exploration versus exploitation differences related to *initiation* and *structuring* behavior suggest the need for research examining how entrepreneurs with ADHD benefit from creating complementary teams and structures – and how this might be done. Given the pejorative perspective towards ADHD in most workplace settings, it may be challenging for entrepreneurs exhibiting ADHD to overcome stigmatizing facets and engage supporting parties and co-founders. An examination of successful and unsuccessful ventures would be illuminating in this regard.

Second, given that disinhibition is the essence of ADHD, it would be valuable to understand if and how one may induce *disinhibition* when desired (e.g. to initiate change/venturing) and reduce it when prudence is warranted (e.g., for convergence and efficient exploitation). This might be done at the individual-level, by making entrepreneurs with ADHD aware of their respective operating styles and then seeking to mesh that style in the most productive fashion at the group-level, or as it is expressed in the firm’s culture and climate. At the individual-level this would involve entrepreneurs developing metacognitive abilities that

assist them in recognizing and regulating ongoing behavior. At the group level, team members with complementary skills could be called upon to recognize and act upon support opportunities when doing so serves the aims of the organization. Tailored business policies could also be specified, seeking to match circumstances with routines for either divergent or convergent action.

Third, selected examples demonstrating the existence and persistence of ADHD among highly successful founders such as Richard Branson and Ingvar Kamprad suggests that ADHD founders can scale and administer novel organizations. There may be important learnings from these and many other real-world cases. For example, Richard Branson's urge to time and again start new ventures in different lines of business while at the same time developing many of these ventures into successful multi-billion companies, raises intriguing questions including: Is serial or portfolio entrepreneurship more prevalent among entrepreneurs who experience ADHD, and if so, how have they been able to cope with the associated challenges? Have they developed individual coping mechanisms or built teams that are able assume structuring responsibilities when the entrepreneur moves on to exploring other business opportunities?

The high-profile cases demonstrate that ADHD may not only be a catalyst in starting a high-potential business, but that it is also possible to remain engaged in a leadership position once the business has scaled. This suggests that ADHD may also have important implications for management and leadership positions and associated research. Leaders with ADHD may be uniquely suited to contribute in times of adversity. For example, their ability to break through inertia and business routines can help struggling companies to envision and pursue new business strategies (e.g., *The Economist*, 2012). Finally, under which conditions and to what ends do entrepreneurs with ADHD pursue distinct business strategies?

Fourth, applying ADHD as a lens through which to study business phenomena is not limited to a focus on entrepreneurs. Its relevance extends to ADHD employees, as well. Considering well-known issues of fit between ADHD, traditional wage employment and job design, as well as what we know from organizational practice involving other *disorders*, future research can focus on work contexts and design factors that enable mutual benefit to ADHD employees and the organization. One might explore, for example, the extent to which ADHD facilitates intrapreneurial behavior and productive change within established organizations. Given that people with ADHD are often attracted to positions that require more action and risk, what are the favorable and unfavorable implications for ADHD employees serving in sales, investment, and business strategy position?

## **Conclusion**

Given the prevalence of ADHD, simple probabilities virtually guarantee that business managers, management scholars and fellow founding team members will encounter ADHD with some frequency. Implications related to the degree of ADHD's prevalence and the sheer breadth of its intra and inter-personal influences are relevant to research streams seeking to understand individual differences.

In some important respects, the differences that arise as a consequence of ADHD are simply a poignant example of the benefits and complications that have been shown to accompany various forms of diversity (e.g. Kavadias & Sommer, 2009; Kirton & Greene, 2015), particularly diversity's impact on creativity (Wang, Fussell & Cosley, 2011), idea generation (McLeod & Lobel, 1992), and innovation (Østergaard, Timmermans & Kristinsson, 2011). However, among the various forms of employee diversity that may come to influence opportunity identification and development -- age, education, national origin, race, gender --

there seems to be something different about the diversity of perspective that connects ADHD to entrepreneurship. First, the size of ADHD's influence is apt to be significantly greater than other sources of diversity. Second, the differences accompanying ADHD appear to be so demonstrably impactful – sometimes for better (e.g. Healey & Rucklidge 2005; Honos-Webb 2008; White & Shaw 2010), sometimes for worse (e.g. Fiore, et al., 2001; Metin et al. 2013; Thompson-Schill, et al., 2009). Finally, we observe that no other source of diversity appears to impact entrepreneurship so differently at different steps of the venturing lifecycle.

Our work elucidates the extent to which individual differences – even those involving diagnosable conditions – can sometimes serve as a well-spring of entrepreneurial aspirations and action. Consistent with new insights from evolutionary biology, this perspective underscores the growing awareness that neurodiversity bears fruit even when it is, strictly speaking, pathological.<sup>3</sup> Instructively, this suggests the potential adaptiveness of that which is ostensibly pathological, particularly in an organizational environment, where there is the possibility for matching configurational arrangements that are not possible at the individual level. Yet, as our framework cautions: Were it only so simple! The downsides to ADHD in the context of entrepreneurship cannot be overlooked since they are often part and parcel to the upsides.

---

<sup>3</sup> Neurodiversity is “a concept where neurological differences are to be recognized and respected as any other human variation” (Wikipedia; National Symposium on Neurodiversity at Syracuse University, 2011). Evolutionary biology suggests that naturally occurring conditions (e.g. ADHD), even if *apparently* impairing, are apt to be in some way adaptive as they would otherwise have been selected-out over time.

## References

- Adler, L.A., Faraone, S.V., Spencer, T.J., Berglund, P., Alperin, S. & Kessler, R.C. (2017). The structure of adult ADHD. *International Journal of Methods in Psychiatric Research* 26, 1-12.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50(2), 179-211.
- Akhtar, R., Ahmetoglu, G. & Chamorro-Premuzic, T. (2013). Greed is good? Assessing the relationship between entrepreneurship and subclinical psychopathy. *Personality and Individual Differences* 54 (3), 420-425.
- Aldrich, H. E. and Ruef, M. (2006). Entrepreneurs and the emergence of new organizations. In Aldrich, H. E. and Ruef, M. (Eds), *Organizations Evolving*, 2nd edition. London: Sage, 61-92.
- Alvarez, S.A. & Barney, J.B. (2010). Entrepreneurship and epistemology: The philosophical underpinnings of the study of entrepreneurial opportunities. *The Academy of Management Annals* 4(1), 557-583.
- Alvarez, S.A., Barney, J.B. & Anderson, P. (2012). Forming and exploiting opportunities: The implications of discovery and creation processes for entrepreneurial and organizational research. *Organization Science*, 24(1), 301-317.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J., Herron, M., (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39, 1154-84.
- Antshel, K. (2017). Attention deficit/hyperactivity disorder (ADHD) and Entrepreneurship. *The Academy of Management Perspectives*, amp-2016.
- Archer, D. (2014). ADHD: The Entrepreneur's Superpower. *Forbes Magazine Online*. <http://www.forbes.com/sites/dalearcher/2014/05/14/adhd-the-entrepreneurs-superpower>. Retrieved 11/22/2016.
- Ardichvili, A., Cardozo, R., Ray, S., (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18, 105-123.
- Bagozzi, R.P. (1992). The self-regulation of attitudes, intentions, and behaviour. *Social Psychology Quarterly* 55 (2), 178-204.
- Baker, T. & Nelson, R.E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage (2005). *Administrative Science Quarterly*, 50(3), p. 329-366.
- Barkley, R.A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of AD/HD. *Psychological Bulletin* 121(1), 65-94.
- Barkley, R.A., Murphy, K.R., Fischer, M. (2008). *ADHD in Adults: What the Science Says*. Guilford, New York.

- Baron, R. A. (2004). The cognitive perspective: A valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221–239.
- Baron, R. A. (2007). Behavioral and cognitive factors in entrepreneurship: Entrepreneurs as the active element in new venture creation. *Strategic Entrepreneurship Journal*, 1(1–2): 167–182.
- Baron, R. A. and Markman, G. D. (2003). Beyond social capital: the role of entrepreneurs' social competence in their financial success. *Journal of Business Venturing* 18, 41–60.
- Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26(1), 49-60.
- Baumol, W. (1968). Entrepreneurship in economic theory. *American Economic Review*, 64-71.
- Bird, B. & Schjoedt, L. (2009). Entrepreneurial Behavior: Its Nature, Scope, Recent Research, and Agenda for Future Research. In *Understanding the Entrepreneurial Mind*, International Studies in Entrepreneurship, Volume 24, Part 5, 327-358. Springer, New York. DOI: 10.1007/978-1-4419-0443-0\_15
- Bozionelos, N. & Bozionelos, G. (2013). Attention deficit/hyperactivity disorder at work: does it impact job performance? *Academy of Management Perspectives*, Vol. 27 (3), <http://dx.doi.org/10.5465/amp.2013.0107>.
- Branson, R. (2002). *Losing my virginity: the autobiography*. Virgin Books, London.
- Cable, D.M., & Edwards, J.R. (2004). Complementary and supplementary fit: A theoretical and empirical integration. *Journal of Applied Psychology* 89(5), 822-834.
- Cardon, M.S., & Kirk, C.P. (2015). Entrepreneurial passion as mediator of the self-efficacy to persistence relationship. *Entrepreneurship Theory and Practice*, 39(5), 1027-1050.
- Carland, H., Carland, J. W., Hoy, F., & Carland, J. A. C. (2002). Who is an entrepreneur? Is a question worth asking. *Entrepreneurship: Critical perspectives on business and management*, 2(178), 47-67.
- Carson, S., Peterson, J., & Higgins, D. (2003). Decreased latent inhibition is associated with increased creative achievement in high-functioning individuals. *J. Pers. Soc. Psychol.*, 85 (3) 499-506.
- Che, J. (2016). Why More Companies Are Eager To Hire People With Autism. Huffington Post, online. [http://www.huffingtonpost.com/entry/companies-hiring-people-with-autism\\_us\\_56e99cdf4b065e2e3d82ab4](http://www.huffingtonpost.com/entry/companies-hiring-people-with-autism_us_56e99cdf4b065e2e3d82ab4) retrieved 12/20/16
- Chu, J. (2016). Why SAP Wants to Train and Hire Nearly 700 Adults With Autism. Inc. Magazine, online. <http://www.inc.com/andy-molinsky/want-to-be-great-at-making-small-talk-learn-this-one-simple-trick.html>. retrieved 12/20/16

- Clark, C. (2008). The impact of entrepreneurs' oral 'pitch' presentation skills on business angels' initial screening investment decisions. *Venture Capital*, 10(3), 257-279.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331.
- Darling, J. R., Keeffe, M. J., & Ross, J. K. (2007). Entrepreneurial leadership strategies and values: Keys to operational excellence. *Journal of Small Business & Entrepreneurship*, 20 (1), 41-54.
- Dimov, D. (2007). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, 31 (5), 713-731.
- Drechsler, R., Rizzo, P., & Steinhausen, H. C. (2010). Decision making with uncertain reinforcement in children with attention deficit/hyperactivity disorder (ADHD). *Child Neuropsychology*, 16(2), 145-161.
- Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, 32 (3), 543-576.
- Eisenhardt, K. M., & Tabrizi, B. N. (1995). Accelerating adaptive processes: Product innovation in the global computer industry. *Administrative Science Quarterly*, 40 (1), 84-110.
- Eisenhardt, K. M. (2013). Top management teams and the performance of entrepreneurial firms. *Small Business Economics*, 40 (4), 805-816.
- Evenden, J. L. (1999). Varieties of impulsivity. *Psychopharmacology*, 146(4), 348-361.
- Fiore, S. M., Schooler, J. W., Linville, P. A., & Hasher, L. (2001). The creative costs and benefits of inhibition. *Psychonomic Society*, 6, 42.
- Frese, M. (2009). Towards a Psychology of Entrepreneurship: An Action Theory Perspective, *Foundations and Trends in Entrepreneurship*, 5 6, 437-496.
- Gartner, W.B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10 (4), 696-706.
- Gartner, W.B. & Carter, N.M. (2003). Entrepreneurial behaviour and firm organizing processes, in: D.B. Audretsch and Z.J. Acs (eds.), *Handbook of Entrepreneurship Research*, Boston/Dordrecht: Kluwer Academic Publishers, 195-221.
- Gavetti, G. (2012). Toward a behavioral theory of strategy. *Organization Science*, 23 (1), 267-285.
- Gibson, C.B. & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal* 47(2), 209-226.

- Gilder, J.W., Allen, K. & Castillo, A. (2016). Reading disability and enhanced dynamic spatial reasoning: A review of the literature. *Brain and Cognition*, 105, 55-65.
- Gnyawali, D. R., & Fogel, D. S. (1994). Environments for entrepreneurship development: key dimensions and research implications. *Entrepreneurship Theory and Practice*, 18, 43-43.
- Gupta, P. (2004). Six sigma business scorecard. *Perspectives on Performance*, 3(1),10-28.
- Halbesleben, J.R.B., Wheeler, A.R., & Shanine, K.K. (2013). The moderating role of Attention-Deficit/Hyperactivity Disorder in the work engagement-performance process. *Journal of Occupational Health Psychology*, 18(2), 132-143.
- Hallowell, E. & Ratey, J. (2011) *Driven to Distraction*. (Revised) Anchor Books, New York.
- Hansemark, O. C. (2003). Need for achievement, locus of control and the prediction of business start-ups: A longitudinal study. *Journal of Economic Psychology*, 24(3), 301–319.
- Hatak I., Wiklund J., Phan P., Dimov D. (2016). Underdogs, Misfits and Weirdos: Entrepreneurship and Mental Health, Academy of Management Perspectives Showcase Session, Academy of Management Conference, Anaheim, CA.
- Healey, D., & Rucklidge, J. J. (2005). An exploration into the creative abilities of children with ADHD. *Journal of Attention Disorders*, 8(3), 88-95.
- Hmieleski, K.M. & Lerner, D.A. (2016). The Dark Triad and Nascent Entrepreneurship: An Examination of Unproductive versus Productive Entrepreneurial Motives. *Journal of Small Business Management*, 54(S1), 7-32. doi: 10.1111/jsbm.12296.
- Hoang, H., & Antoncic, B. (2003). Network-based research in entrepreneurship: A critical review. *Journal of Business Venturing*, 18(2), 165-187.
- Honos-Webb, L. (2008). *The gift of adult ADD: How to transform your challenges and build on your strengths*. New Harbinger Publications.
- Hung, R. (2016). *Kaleidoscopic View of Chinese Philosophy of Education*.
- Hunt, R. A. (2015). Contagion Entrepreneurship: Institutional Support, Strategic Incoherence, and the Social Costs of Over-Entry. *Journal of Small Business Management*, 53(S1), 5-29.
- Hunt, R.A. and K. Kiefer. (Forthcoming - 2017) “The Entrepreneurship Industry: Influences of the Goods and Services Marketed to Entrepreneurs.” *Journal of Small Business Management*.
- Jung, H., Vissa, B., and Pich, M. (2017). How do entrepreneurial founding teams allocate task positions? *Academy of Management Journal*, 60(1), 264-294.
- Kanter, R.M. (1988). When a thousand flowers bloom: Structural, collective and social conditions for innovation in organizations. In B.M. Straw & L.L. Cummings (Eds.), *Research in Organizational Behavior*, 10, 123-167.

- Kautonen, T., Van Gelderen, M. and Fink M. (2015). Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice* 39(3), 655-647.
- Kavadias, S. & S.C. Sommer (2009). The effects of problem structure and team diversity on brainstorming effectiveness. *Management Science*, 55(12), 1899-1913.
- Kessler, R. C., Lane, M., Stang, P. E., & Van Brunt, D. L. (2009). The prevalence and workplace costs of adult attention deficit hyperactivity disorder in a large manufacturing firm. *Psychological Medicine*, 39, 137–147.
- Kessler, R.C., Adler, J. Gruber, M.J. Sarawate, C.A. et al. (2007). Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) screener in a representative sample of health plan members. *Int. J. Methods Psychiatr. Res.*, 16(2), 52–65.
- Kessler, R.C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M.J., Jin, R., Secnik, K., Spencer, T., Ustun, T.B., Walters, E.E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS). *Psychological Medicine*, 35(2), 245-256.
- Kessler, R.C., Greif Green, J., Adler, L.A., Barkley, R.A., Chatterji, S., Faraone, S.V., Finkelman, M., Greenhill, L.L., Gruber, M.J., Jewell, M., Russo, L.J., Sampson, N.A. & Van Brunt, D.L. (2010). Structure and diagnosis of adult Attention-Deficit/Hyperactivity Disorder. *Archives of General Psychiatry* 67 (11), 1168-1178.
- Kirton, G., & Greene, A. M. (2015). *The Dynamics of Managing Diversity: A Critical Approach*. Routledge.
- Kirzner, I. M. (1979). *Perception, Opportunity and Profit*. Chicago: University of Chicago Press.
- Klein, P.G. (2008). Opportunity discovery, entrepreneurial action, and economic organization. *Strategic Entrepreneurship Journal*, 2(3), 175-190.
- Klotz, A.C., Hmieleski, K.M., Bradley, B.H. & L.W. Busenitz. (2014). New venture teams: A review of the literature and roadmap for future research. *Journal of Management*, 40(1), 226-255.
- Knouse, L. E., Traeger, L., O'cleirigh, C., & Safren, S. A. (2013). Adult attention deficit hyperactivity disorder symptoms and five-factor model traits in a clinical sample: a structural equation modeling approach. *The Journal of nervous and mental disease*, 201(10), 848-854.
- Koellinger, P., Minniti, M., & Schade, C. (2007). “I think I can, I think I can”: Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28, 502–527.
- Kristof-Brown, A.L., Zimmerman, R.D., & Johnson, E.C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58, 281-342.
- Lasky, A. K., Weisner, T. S., Jensen, P. S., Hinshaw, S. P., Hechtman, L., Arnold, L. E., ... & Swanson, J. M. (2016). ADHD in context: Young adults' reports of the impact of

- occupational environment on the manifestation of ADHD. *Social Science & Medicine*, 161, 160-168.
- Lerner, D., Crawford, C., Bort, J., & Wiklund, J. (2017). Speed versus Accuracy: Experimentally Modeling the Strategic Utility of Impulsivity in Entrepreneurship. Babson College Entrepreneurship Research Conference, Oklahoma, USA.
- Lerner, D., & Hunt, R. (2012). Sensation seeking and entrepreneurial behavior in the formal and informal economy. In *Academy of Management Conference, Boston, MA*.
- Lerner, D., Hunt, R., & Dimov, D. (2018). Action! Moving Beyond the Intendedly-Rational Logics of Entrepreneurship. *Journal of Business Venturing*. 33(1).
- Lerner, D.A. (2016). Behavioral disinhibition and nascent venturing: Relevance and initial effects on potential resource providers. *Journal of Business Venturing* 31(2), 234-252.
- Linan F. & Chen Y-W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship: Theory and Practice* 33(3), 593-617.
- Liu, X. (1998). Naturalness (Tzu-jan), the core value in Taoism: Its ancient meaning and its significance today. *Lao-tzu and the Tao-te-ching*, 211-28.
- Mannuzza, S., Klein, R.G., Bessler, A., Malloy, P., LaPadula, M., 1993. Adult outcome of hyperactive boys: Education achievement, occupational rank, and psychiatric status. *Archives of General Psychiatry*, 49, 565-576.
- McGrath, R. G. (1997). A real options logic for initiating technology positioning investments. *Academy of Management Review*, 22(4), 974-996.
- McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24(1), 13-30.
- McGrath, R. G., & MacMillan, I. C. (2000). *The Entrepreneurial Mindset: Strategies for Continuously Creating Opportunity in an Age of Uncertainty*. Harvard Business Press.
- McGrath, R. G., MacMillan, I. C., & Scheinberg, S. (1992). Elitists, risk-takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs. *Journal of Business Venturing*, 7(2), 115-135.
- McMullen, J. S., & Dimov, D. (2013). Time and the entrepreneurial journey: The problems and promise of studying entrepreneurship as a process. *Journal of Management Studies*, 50(8), 1481-1512.
- McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management review*, 31(1), 132-152.

- Metin, B., Roeyers, H., Wiersema, J. R., van der Meere, J. J., Thompson, M., & Sonuga-Barke, E. (2013). ADHD performance reflects inefficient but not impulsive information processing: A diffusion model analysis. *Neuropsychology*, 27(2), 193.
- Miller D. & Le Brenton-Miller, I. (2016). Underdog entrepreneurs: A model of challenge-based entrepreneurship. *Entrepreneurship Theory & Practice*. DOI: 10.1111/etap.12253
- Miner, A. S., Bassof, P., & Moorman, C. (2001). Organizational improvisation and learning: A field study. *Administrative Science Quarterly*, 46(2), 304-337
- Mullins, J. (2013). *The New Business Road Test: What entrepreneurs and executives should do before launching a lean start-up*. Pearson UK.
- Mumford, M. D., & Gustafson, S. B. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin*, 103, 27-43.
- Nadeau, K.G. (2005). Career Choices and Workplace Challenges for Individuals with AD/HD. *Journal of Clinical Psychology: In Session*, 61: 549-563.
- Nadkarni, S., Chen, T., & Chen, J. (2016). The clock is ticking! Executive temporal depth, industry velocity, and competitive aggressiveness. *Strategic Management Journal*, 37(6), 1132-1153.
- Nicolaou, N., Shane, S., Adi, G., Mangine, M. & Harris, J. (2011). A polymorphism associated with entrepreneurship: Evidence from dopamine receptor candidate genes. *Small Business Economics* 36(2), 151-155.
- Nigg, J. T. (2000). On Inhibition/Disinhibition in Developmental Psychopathology: Views From Cognitive and Personality Psychology and a Working Inhibition Taxonomy. *Psychological Bulletin*, 126(2), 220-246.
- Orfalea, P. & Marsh, A. (2005). *Copy this! Lessons from a hyperactive dyslexic who turned a bright idea into one of America's best companies*. New York: Workman Publishing.
- Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy*, 40(3), 500-509.
- Painter, C., Prevatt, F., & Welles, T. (2008). Career beliefs and job satisfaction in adults with symptoms of attention-deficit/hyperactivity disorder. *Journal of Employment Counseling* 45, 178-188.
- Parker, S. C. (1996). A time-series model of self-employment under uncertainty. *Economica*, 63(3), 459-475.
- Pollack, J. M., Rutherford, M. W., & Nagy, B. G. (2012). Preparedness and cognitive legitimacy as antecedents of new venture funding in televised business pitches. *Entrepreneurship Theory and Practice*, 36(5), 915-939.

- Ronstadt, R., 1988. The Corridor Principle. *Journal of Business Venturing*, 1(3), 31–40.
- Sarasvathy, S.D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review* 26 (2), 243-263.
- Schindehutte, M., Morris, M. & Allen, J. (2006). Beyond achievement: Entrepreneurship as extreme experience. *Small Business Economics* 27, 349-368.
- Schlaegel, C., & Koenig, M. (2014). Determinants of entrepreneurial intent: a meta-analytic test and integration of competing models, *Entrepreneurship Theory & Practice* 38, 291–332.
- Schumpeter J.A. (1934) *Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. Harvard University Press, Cambridge, MA.
- Schwarz, A., & Cohen, S. (2013). ADHD seen in 11% of US children as diagnoses rise. *The New York Times*, 31.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research, *Academy of Management Review*, 25 (1), 217-226.
- Shapiro, A., & Sokol, L. (1982). The social dimensions of entrepreneurship. In C. Kent, D. Sexton, & K. Vesper (Eds.), *Encyclopedia of entrepreneurship* (pp. 72–90). Englewood Cliffs, NJ: Prentice Hall.
- Shaw, G.A., & Giambra, L.M. (1993). Task unrelated thoughts of college students diagnosed as hyperactive in childhood. *Developmental Neuropsychology* 9, 17-30.
- Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects. *Journal of Management*, 37(5), 1390-1412.
- Sorensen, Sonuga-Barke, Eichele, van Wageningen, Wollschlaeger, & Plessen (2017)
- Spivack, A., McKelvie, A., Haynie, J. (2014). Habitual Entrepreneurs: Possible Cases of Entrepreneurship Addiction. *Journal of Business Venturing*, 29(5), 651-667.
- Stevenson, H.H. & Gumpert, D.E. (1985), The heart of entrepreneurship, *Harvard Business Review* March-April.
- The Economist. (2012). In praise of misfits: Why business needs people with Asperger's syndrome, attention-deficit disorder and dyslexia, June 2<sup>nd</sup>, 2012.
- Thompson-Schill, S. L., Ramscar, M., & Chrysikou, E. G. (2009). Cognition without control: When a little frontal lobe goes a long way. *Current directions in psychological science*, 18(5), 259-263.

- Timmons, J. A., Muzyka, D. F., Stevenson, H. H., & Bygrave, W. D. (1987). Opportunity recognition: The core of entrepreneurship. *Frontiers of entrepreneurship research*, 7(2), 109-123.
- Van der Zwan, P., Thurik, A. R., & Grilo, I. (2010). The entrepreneurial ladder and its determinants. *Applied Economics*, 42(17), 2183–2191.
- 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, 655-673.
- Van Gelderen, M., Frese, M. & Thurik, R. (2001). Strategies, uncertainty and performance of small business startups. *Small Business Economics* 15, 165-181.
- Verheul, I., Block, J., Burmeister-Lamp, K., Thurik, R., Tiemeier, H. & Turturea, R. (2015). ADHD-like behavior and entrepreneurial intentions. *Small Business Economics* 45(1), 85-101.
- Verheul, I., Rietdijk, W., Block, J., Franken, I., Larsson, H., & Thurik, R. (2016). The association between attention-deficit/hyperactivity (ADHD) symptoms and self-employment. *European Journal of Epidemiology*, 31(8), 793–801.
- Wales, W.J., Patel, P.C., & Lumpkin, G.T. (2013). In pursuit of greatness: CEO narcissism, entrepreneurial orientation, and firm performance variance. *Journal of Management Studies* 50(6), 1041-1069.
- Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, 19(2), 173-188.
- Wasserman, N. (2008). The founder's dilemma, *Harvard Business Review*, February 2008.
- White, H.A., & Shah, P., (2006). Uninhibited imaginations: Creativity in adults with Attention-Deficit/Hyperactivity Disorder. *Personality and Individual Differences*, 40, 1121-1131.
- White, H.A., & Shah, P., (2011). Creative style and achievement in adults with attention-deficit/hyperactivity disorder. *Personality and Individual Differences*, 50, 673-677.
- Wiklund, J., Yu, W., & Patzelt, H. (2017). Impulsivity and Entrepreneurial Action. *The Academy of Management Perspectives*. doi: 10.5465/amp.2016.0177.
- Wiklund, J., Patzelt, H., & Dimov, D. (2016a). Entrepreneurship and psychological disorders: How ADHD can be productively harnessed. *J. of Business Venturing Insights*, 6, 14–20.
- Wiklund, J., Yu, W., Tucker, R., & Marino, L. (2016b). ADHD, Impulsivity, and Entrepreneurship. Paper presented at Academy of Management Conference, Anaheim, USA.
- Wynbrandt J. (2004) *Flying High: How JetBlue Founder and CEO David Neeleman Beats the Competition... Even in the World's Most Turbulent Industry*. Wiley & Sons.

Yip, K. S. (2004). Taoism and its impact on mental health of the Chinese communities. *International Journal of Social Psychiatry*, 50(1), 25-42.

Zander, I. (2007). Do you see what I mean? An entrepreneurship perspective on the nature and boundaries of the firm. *Journal of Management Studies*, 44(7): 1141-1164.