



Entrepreneurial action as human action: Sometimes judgment-driven, sometimes not

Richard A. Hunt^{a,1}, Daniel A. Lerner^{b,c,*,1}

^a Virginia Tech., USA

^b Deusto Business School, Spain

^c Universidad del Desarrollo, Chile

ARTICLE INFO

Keywords:

Entrepreneurial logics
Behavioral pathways
Impulse-based logics
Judgement-based logics
Non-deliberative pathways
Disinhibition
Entrepreneurial action
Business venturing
Entrepreneurship

ABSTRACT

This article elaborates on a lively and rapidly evolving conversation central to entrepreneurship: the underpinnings of entrepreneurial action. In particular, we respond to a critique published in this journal by Brown, Packard, and Bylund (BPB), in which they argue that *all* EA is based on intendedly-rational judgment. The empirical reality of rational, deliberative intentionality in entrepreneurship is beyond dispute and we have argued that behavioral logics do not simply supplant intendedly-rational ones. However, mounting evidence suggests that the wide-spectrum framework developed by Lerner, Hunt and Dimov – ranging from impulse-driven, a-rational action to deeply deliberative, rational action – offers a more veridical and useful perspective. Although BPB's critique succeeds in underscoring the exciting challenges facing entrepreneurship scholars; in our view, the critique largely relies on philosophical argumentation and definitional boundary-setting that are inconsistent with decades of scientific advancement in the psychological sciences. Given this, and recent empirical evidence from entrepreneurship scholars, we think it would be counter-productive to consider entrepreneurship as the sole domain of human activity completely circumscribed by rational judgment.

1. Introduction

This article addresses the *JBV Insights* piece by Brown et al. (2018. Hereafter, “BPB”), which challenges the expanding body of research on less-deliberative, a-rational, and impulsive entrepreneurial action (EA). BPB particularly direct their arguments towards our recent article, published in the *Journal of Business Venturing*, entitled: *Action! Moving Beyond the Intendedly-Rational Logics of Entrepreneurship* (Lerner et al., 2018. Hereafter “Action!”). BPB’s critique is a welcome step towards joining us, and others, in tackling an important topic confronting entrepreneurship scholars. While we find aspects of BPB’s critique to be unnecessarily tautological and largely dissociated from scientific findings, the debate is important and even useful; and, we suspect that many entrepreneurs would likely benefit from a stronger dose of the reasoned judgment BPB propound. As Gandhi noted, “Honest disagreement is often a good sign of progress”!

The key contribution of *Action!* involves the development of a spectrum approach to the drivers of entrepreneurial actions and outcomes, ranging from that which is thoroughly rational, deliberative and judgment-driven, to that which is thoroughly non-deliberative and impulse-driven, recognizing that virtually all action falls somewhere between these two extremes. Our spectrum approach injects much-needed veridicality into the examination of EA by acknowledging that while rational, judgment-based logics

* Corresponding author.

E-mail address: daniel.lerner@colorado.edu (D.A. Lerner).

¹ Both authors contributed equally to this work.

often precede entrepreneurial actions and outcomes, it is also common for entrepreneurship to spring forth from alternative logics and a host of other biological, psychological, sociological, and anthropological drivers.

Wide support is building for explanatory frameworks of entrepreneurial action and outcomes that include a-rational, less-deliberative, and even impulsive drivers of business venturing (e.g. [Lerner, 2016](#); [Lerner et al., 2018a, 2018b, 2018c, 2018d](#); [Spivack et al., 2014](#); [Wiklund et al., 2016, 2017, 2018a, 2018b](#)). These serve to augment, not supplant, more established and more exhaustively investigated explanations that are grounded in the notion of entrepreneurship as an exercise in rational, deliberative judgments (e.g. [Foss and Klein, 2012](#)). Advancements and breakthroughs in the psychological sciences over the past decades have revealed remarkable insights related to individual-level proclivities that define and demarcate idiosyncratic facets of human action; facets that can exert an indelible influence on the complete business venturing lifecycle ([Lerner et al., 2018b, 2018d](#)). Accounting for this broadening spectrum of behavioral drivers in the context of entrepreneurial action presents scholars with both opportunities and challenges (e.g., [Shepherd, 2015](#); [Wiklund et al., 2018b](#)).

Meanwhile, BPB take the far more austere position in their piece – *Judgment, Fast and Slow: Toward a Judgment View of Entrepreneurs' Impulsivity* (2018) – asserting that entrepreneurial action “can and ought to be understood within the framework of judgment and, thus, as rational human action.” That view, heavily influenced by the theories of [Mises \(1949\)](#) and other scholars embodying the Austrian economics perspective, holds that all EA is definitionally the result of intendedly-rational, judgmental reasoning.² We applaud BPB’s efforts to enliven a vital and exciting scholarly conversation, and even agree with a number of observations they make, including the notion that rational, deliberative, well-considered judgments constitute a considerable bulwark of business venturing.

Concurrently, however, we also see significant points of divergence. These differences underscore the importance of clarifying key aspects of *Action!*, and perhaps even more urgently, highlighting the importance of using a wide-spectrum approach to entrepreneurial action; an approach that augments classical, judgment-based conceptions of EA by identifying, describing, and predicting the presence of a-rational determinants.

2. Human action and entrepreneurship: augmenting judgment-based conceptions

Much of the color and confounds of the human condition hinge on the extent to which our individual and collective actions are borne out of a vast array of motivations: some simple, identifiable, and planned; some convoluted, chaotic, and spontaneous; and, some simply unknowable ([McClelland, 1984](#)). While the exposition of rational, deliberative logics has received ample play in the past fifty years of entrepreneurship research, a focus on less-deliberative, a-rational sources of business venturing and entrepreneurial outcomes is still just emerging (e.g. [Lerner, 2016](#); [Lerner et al., 2018a, 2018b, 2018c, 2018d](#); [Wiklund et al., 2016, 2017](#)).

As much as we are forever surrounded by human actions and their consequences, our understanding of why people do the things they do is still limited. “Technological and theoretical advances in neuroscience have continued to open up the internal workings of the human brain,” noted [Becker et al. \(2011: p933\)](#), enabling us to witness, understand, and incorporate the “cognitive machinery” of human biology as a “new level of analysis” in the study of management and organizations. Looking more to the “heart” than the “head,” empirical studies have also shown that emotional responses to risk are actually better predictors of behavior than cognitive assessments ([Cardon et al., 2012](#); [Loewenstein et al., 2001](#)). Even impulsive actions, reflecting “the simplest and biologically most general form in which emotions can cause action” and requiring “no reflection, no foresight, and no planning” are now known to occupy a central role in the human “repertoire” ([Frijda, 2010: p570](#)) and with lasting consequences. Sitting in the midst of these emerging streams and dynamic cross-currents is the question of entrepreneurial action.

Regardless of whether one's purview extends all the way down to the level of neuroscience or the heart, entrepreneurship scholarship has been a notable beneficiary of decades-long advancement in the psychological sciences (e.g., [Mitchell et al., 2002, 2007](#); [Ward, 2004](#)), prompting an explosion of interest in deploying the tools and methods of individual psychological and biological differences towards a deeper understanding of who is an entrepreneur, in what manner they act, and with what effect. Recognition of the tremendous potential in pursuing these lines of analysis are evidenced by an escalating commitment among scholars and key journals to demarcate and investigate these domains, such as a recent special issue call on “Biology and Entrepreneurship” by [Entrepreneurship: Theory and Practice \(2018\)](#). Thus, the clear trend is towards applying more insights and better technologies from diverse fields towards the deeper excavation of entrepreneurial action in all its varied forms.

3. The deliberative judgment approach: “All Rational, All the Time”

The argument advanced by BPB is that “impulsive behaviors can and ought to be understood within the framework of judgment and, thus, as rational human action” (2018: p1). Extending foundational texts from the Austrian view – Mises, Hayek, Kirzner, Lachmann, and more modern proponents – BPB assert that “action is ‘entrepreneurial’ if and only if it is intendedly so” (BPB, 2018: p2, italicized emphasis in the original).³

² Accordingly, their argument seems to fit nicely with facets of traditional economic theory; yet, issues arise when attempting to apply aggregate or stylized entrepreneurial economic functions (e.g. the Kirznerian entrepreneur) to how heterogeneous individuals actually behave.

³ We empathize with BPB’s desire to craft a unified theory of entrepreneurial action; but, we strongly caution that the use of tautological categories and reasoning tends to result in an unreliable foundation. For instance, we struggle to see how any taxonomy that categorizes impulsive action as a form of rational action is useful, given that impulsive action is defined as action in the *absence* of rational, reasoned, deliberative judgment. Based on BPB, it is impossible to speak of EA without divining the consciously held beliefs of a particular actor at a particular point in time. The exact same action (Action X), could constitute EA for Actor A, but not for

In attempting to explain unreasoned and impulse-driven entrepreneurial action, playing off the title from Kahneman's popular book, *Thinking Fast and Slow* (2011), BPB argue that whether occurring rapidly or slowly, EA is always judgment-based. They seek to support the claim with an argument framed around the rapid processing system often described as *System 1* (e.g. Stanovich and West, 2000; Kahneman, 2011) – where, according to BPB's depiction, impulsive actions are the result of rationally employing learned routines oriented towards consciously known and selected higher-level goals. Indeed, effectively unreasoned action can arise from routines, scripts, and heuristics “formed (intentionally and reasoned) over time to produce fast, adequate decisions when deliberation is unwarranted” (BPB, p3). The issue however is whether this truly explains all unreasoned action. Eschewing psychophysiology research that has already validated the presence of bottom-up logics, BPB suggest a patently top-down hierarchy in which even the most stridently impulsive *System 1* actions are preceded by and attributable to *System 2* judgments. Impulsive action, according to BPB, is simply a manifestation of *System 2* intentionality, such that deeply deliberative, judgmental decision-making somehow underlies disinhibition, impulsivity, and various forms of spontaneous action.

Setting aside for a moment the fact that both common parlance and scientific application of “impulsivity” are geared towards connoting the *absence* of deliberation and judgment (and differs from predictable routinized behavior oriented toward higher-order goals), there are facets of BPB's formulation that are consistent with the flexible spectrum we develop in *Action!*. First, we agree that learned routines, as well as the deliberative, reflective consideration of potential action pathways and outcomes often play a role in determining entrepreneurial perceptions, actions, and outcomes throughout the business venturing lifecycle (Ardichvili et al., 2003; Lerner et al., 2018a, 2018b). Second, we agree that radical subjectivism is a provocative and sometimes attractive touchstone for the assessment of human behavior. Subjective evaluations of perceived opportunities often exert substantial influence in determining business venturing decisions. While extensive existing research demonstrates that such perceptions must be evaluated while remaining cognizant of their socially-situated context, individual differences can and often do play an intermediating role. The teleological errors that inevitably arise when divining human intent from a rarified set of outcomes are sometimes worth the cost of those flaws, when doing so allows scholars to spotlight individual differences that are otherwise obscured. Third, we agree that both inside and outside the domain of entrepreneurship, scholarship on human motivation is complex and often highly individualized. More generally, we agree that what may be irrational for one individual is not necessarily irrational for another, and that subjective preferences and differential logics preclude an objective, broadly-applicable specification for rational action (this is why we speak of *a*-rational and intendedly-rational; e.g. *Action!* p56, 58, 64).

While we reject BPB's penchant for an omnibus set of judgment-based determinants, we are empathetic to their general desire to find a conceptual “home” for this multiplicity for human motivators. The spectrum approach that we develop in *Action!* is, we believe, more veridical and more consistent with decades of psychological and neurobiological research, but our framework is borne out of a similar intent to explore and explain the underlying mechanisms of business venturing.

4. The problems with an exclusively judgment-based approach to entrepreneurship

As noted, while we find agreement on a number of the ideas proffered by BPB, and appreciate greatly their spirited contribution to enriching the scholarly conversation, there a number of points at which our perspectives diverge. In these cases, a few clarifications and elaborations are warranted, including further understanding the emerging research stream – an effort that collectively seeks to open the black box of individual pursuits by examining the biological, psychological, and or sociological drivers underpinning human action. Scientific advancement in these areas has upended many of the traditional 20th century notions of decision-making and action. Failure to account for this progress runs the risk of dissociating theory from the reality, thereby forcing entrepreneurship research into an unwanted cul-de-sac of self-limiting relevance. After drawing attention to several key points of clarification related to the BPB critique, we will underscore the importance of these emerging streams.

In marked contrast to the judgment perspective propounded by BPB and others (e.g. Foss and Klein, 2012) empirical work continues to suggest that the motives precipitating entrepreneurial action and the modes of business venturing used to undertake those actions are as varied as the nature of human existence itself (Baron, 2004; Baum et al., 2014), consisting of all the affect (Foo et al., 2009; Baron, 2008), contagion (Hunt, 2013, 2015), emotions (Cardon et al., 2012; 2013), creativity (Fillis and Rentschler, 2010), improvisation (Baker et al., 2003), irrationality (Schenkel et al., 2009), luck (Dew, 2009), impatience (Wiklund et al., 2016), impulsivity (Wiklund et al., 2017), and disinhibition (Lerner, 2016) that penetrates, enriches, and complicates every facet of our lives. This does *not* mean that all or even most entrepreneurial action is unreasoned, just as it does not imply unreasoned action is adaptive for entrepreneurial performance – matters that prior work in this vein have expressly noted (e.g. Lerner, 2016; Lerner et al., 2018a, 2018b).⁴ It means simply that unreasoned and unintendedly rational human action exists and that the first action towards entrepreneurial outcomes may or may not consist of demonstrable, readily recognizable, neatly definable entrepreneurial action

(footnote continued)

Actor B. Additionally, the disconnect generates other inconsistencies, for example: If Actor B later (t_3) forms conscious entrepreneurial intentions, what then of Action X, performed at t_{x-1} and t_{x+2} ? BPB do acknowledge that unobservable intentions are “difficult to use as a foundational construct for entrepreneurial science” – noting the stated goal of not seeking “scientific convenience, but correctness and precision” [another point we share with BPB, and one that drove our inquiry into disinhibition, as we captured in *Action!*]. Yet, they “leave how such intentions can and ought to be best captured to future work” (p2), despite the fact that the veridicality of their proposed frameworks relies upon resolving this matter as convincingly as the psychological sciences have demonstrated the undisputed presence and influence of disinhibition and impulsivity.

⁴ We wish to emphatically underscore the point that there is indisputable merit to incorporating the judgment perspective. The utility of reasoned consideration in the combination and deployment of heterogeneous assets is central to the aim of satisfying customer wants and generating profits under uncertainty (Foss and Klein, 2012). The issue at stake here is BPB's attempt to render axiomatic the notion that judgment drives all entrepreneurial action.

(e.g., [Hessels et al., 2008](#); [Lerner et al., 2018a](#)). Early venturing, especially prior to firm formation, is often messy, recursive, unfocused, fitful, and easily mistaken for activities that appear to be anything other than profit-motivated, utility-maximizing endeavors (e.g., [Lerner et al., 2018a](#); [Wiklund et al., 2016](#)).

Thus it is that a broadening and deepening conversation has emerged in entrepreneurship scholarship investigating facets of new venture initiation and pursuit that are induced and shaped by a-rational and impulsive drivers, including aberrant individual-level factors that scholars have found empirically to be associated with business venturing, such as ADHD, impulsivity, and Autism spectrum disorder (e.g. [Lerner et al., 2018a, 2018c](#); [Wiklund et al., 2016, 2017; 2018b](#)). While it is definitively not the intent of this research stream to fully circumscribe entrepreneurship through the lens of these maladies, the discovery of key connections between entrepreneurship and these conditions has made the issue of individual differences more salient across the entire entrepreneurial life-cycle (e.g., [Lerner, 2016](#); [Lerner et al., 2018b](#)), generating a host of new insights and provocative research questions (e.g. [Wiklund et al., 2018b](#)).

While BPB note that the rapid processing described as *System 1* ([Stanovich and West, 2000](#); [Kahneman, 2011](#)) can drive human behavior, their judgment argument is stretched so far as to define non-deliberative, a-rational action out of existence through definitions that force-fit all human action into rational intentionality. In essence, BPB define impulsivity – which is commonly and scientifically understood as effectively the opposite of reasoned rational behavior – as a form of rational judgment-driven behavior. This, however, cannot solve the reality that human action takes many forms and is instigated by a dense morass of precipitating events, emotions, proclivities, and influences. Without question, much that ultimately becomes a successful or failed entrepreneurial outcome may be the child of deliberation and *a priori* intentionality ([Foss and Klein, 2012](#)), but actions embodying entrepreneurial content may significantly precede the conscious characterization of an entrepreneurial pursuit ([Lerner et al., 2018a](#)). More than anything else, the a-rational, act-first dynamic elaborated in *Action!* is captured in the absence of routines accompanying impulse-driven action and impulsivity ([Wiklund et al., 2017](#)).

As Lerner and colleagues (2018b) propose, the relative paucity – and in some cases, outright abhorrence – of systems, routines, and norms is a double-edged sword for impulsive or ADHD individuals who find themselves on the entrepreneurial trajectory. To suggest that unreasoned, non-routinized impulses can be classified as a form of rational intentionality fails as a function of veridicality and usefulness – as all venturing behavior and all entrepreneurs simply cannot be fit to the intendedly-rational *Homo economicus* (e.g. [Lerner et al., 2018a; Sassower, 2010](#)). Variations in triggers, motivations, modes, and outcomes, are not subservient to the aims of achieving a unitary, omnibus conception of why and when people do what they do; rather, explanatory frameworks need to account for the richness of the underlying variation – of which there is a great deal in entrepreneurship ([Shepherd, 2015](#)).

Ultimately, the philosophical nature of BPB's argument does not square with the underlying science, which instead supports a spectrum approach to reason and intentions. Although BPB quote Mises and Knight in support of their *Action!* critique, neither of these early- to mid-20th century scholars were well-equipped to address modern conceptions of human behavior and entrepreneurial cognition, much less the underlying biology and neuroscience.⁵

Pervading scholarly treatments of impulsivity (e.g. [Sharma et al., 2014](#); [Carver and White, 1994](#); [Wiklund et al., 2017; 2018a](#); [American Psychiatric Association, 2013](#)) substantively differ from what BPB suggest. Impulsivity can be and typically is considered from various perspectives in the psychological sciences, cutting across virtually all personality trait models, and serving as a core conceptual basis for the study of human and non-human psychophysiology ([Carver and White, 1994](#); [Sharma et al., 2014](#)). While we understand the convenience and rhetorical attraction of simply recasting disinhibition and impulsivity within the framework of a rational intentionality taxonomy; regrettably, decades of psychology research suggest that doing so – particularly as BPB have undertaken in their critique – is inconsistent with empirical reality (e.g. [Sharma et al., 2014](#); [Nigg, 2000](#)).

Recent empirical work involving psycho-physiology ([Baucus et al., 2014](#); [Lerner et al., 2018d](#)), biological factors ([Johnson et al., 2018](#); [Nicolaou and Shane, 2014](#); [Obschonka and Silbereisen, 2012](#)), genetics ([Nicolaou et al., 2008](#); [Nicolaou and Shane, 2009](#)), clinical disorders ([Wiklund et al., 2016](#); [Lerner et al., 2018c](#); [Yu et al., 2018](#)), and even non-human entrepreneurial activity ([Hunt et al., 2018](#); [Noë and Hammerstein, 1994](#)) have created momentum away from the model that BPB propose, not towards it. Looking in the backyard of entrepreneurship research, [Mitchell et al. \(2011: p774\)](#) summarized the role of entrepreneurial cognition, noting that "... cognition depends on the physical brain and body where, in essence, the body shapes the mind" and that to a substantial degree "genetics influences entrepreneurs' engagement in entrepreneurial activity (e.g., [Nicolaou et al., 2008](#))," and that hormonal influences, such as higher testosterone levels ([White et al., 2007](#)) impact the willingness to venture. All of which suggests that complex nature versus nurture forces contribute to the array of biological influences.

As a final clarification, we want to correct the misunderstanding that in *Action!* we propose that what is entrepreneurial is temporally bounded, consisting of neat and clean, identifiable triggers and 'watershed' events. On the contrary, we share that

⁵ In BPB's argument, both Mises and Knight could be (mis)read as recent scholars. BPB cite a 1998 edition of Mises's (1949) tome, and a 1985 edition of Knight's seminal 1921 book (despite both scholars dying in the early 1970s). While it is not uncommon to cite the publication date for the edition that was utilized, it is important to remember that both books were originally published two to three generations before major advancements in the psychological sciences, such as MRIs and fMRIs (invented in 1977 and 1990 respectively), which have been instrumental in the advancement of scientific theory ([Grégoire et al., 2011](#)). In addition to the ability to test, refine, and refute prior theories of human behavior, personality, and cognition, such advancements have also opened entirely new possibilities, including the development of organizational neuroscience, allowing organizational theory to be evaluated "inside the neural black box" ([Becker et al., 2011](#)). To contextualize the scientific tools available when Mises published *Human Action* in 1949, consider for a moment that this was the same era as the invention of ENIAC, the first mechanical computer, a behemoth of a machine, occupying 1800 square feet, running on 18,000 vacuum tubes, and weighing almost 50 t. The ENIAC, at its time, was a futuristic, state-of-the-art computer – 400,000 times larger than an iPhone, but 320,000,000 times less powerful, and as inaccessible and unusable to the lay person as to any psychology or business PhD of the time. Such was the social, cultural, and technological context for Mises's thoughts on cognition.

concern about much extant literature, early in *Action!* drawing the distinction between synchronic and diachronic temporal frames. Consistent with Dimov (2011), we indicate that entrepreneurship is clearly diachronic. This is an essential perspective in order to understand and articulate entrepreneurial action at the mechanisms level. However, this can only occur when applying a spectrum approach to reasoned consideration. This logic is further underscored by the life-cycle perspective of ADHD entrepreneurs; notably by Lerner et al. (2018b), who take careful measures in the “*Dueling Banjos*” perspective to emphasize that impulse-driven action is neither simply good nor bad for performance. Rather, a propensity towards disinhibition or impulsive action logics are a double-edged sword that should neither be vilified nor romanticized when scholars assess the mixed effects of such throughout the complete arc of business venturing.

The notion that all human behavior related to entrepreneurship is subsumed by reasoned intentions defies common sense and scientific findings. The notion of all human action being definitionally rational is even more problematic to reconcile. How can *all* action, including all unreasoned action, be rational? Are we to understand that the (manipulated) behavior caused by parasites and recently linked to entrepreneurship (Johnson et al., 2018) is rational (the parasite manipulates the host's subjective utility function)? What should be done regarding action *contrary* to one's reasoned intentions (e.g. phobic behavior, PTSD behavior, unintended addictive behavior)? And, what of Libet's (1985) famous series of experiments demonstrating that brain processes precede the conscious experience of the intention? Three decades of neurophysiology has revealed a diversity of complex brain activities, through the use of technologies not available to Mises when he penned *Human Action* (1949). As Wood (1985) wrote:

“... if we assume that conscious intention is one of the many brain processes that contribute to the initiation of a voluntary movement, then...the brain process(es) that mediate the conscious intention to act must begin before subjects can report that they are aware of that intention. Unless conscious experience is totally unlike every physical process we know anything about...” (1985: p557)

5. Looking to the future

Two millennia ago, Aristotle averred, “All human actions have one or more of these seven causes: chance, nature, compulsions, habit, reason, passion and desire” – as he sagely avoided situating any one of the seven taxonomically above the others. Rather, there is abiding multi-disciplinary support for the notion that the consequences of human action stem from a multiplicity of tangled and idiosyncratic drivers. It is important and worthwhile, then, to ground the community of entrepreneurship scholars in the key aims of *Action!* and other recent research. While adamantly supporting, and even modeling, the role of reasoned, deliberative intentionality, *Action!* addresses the notion of whether entrepreneurial action is always so. The reasoned intentions perspective is implicit “not only in traditional models involving boundedly-rational actors, but also in perspectives based on effectuation or higher-order aspirations (e.g. autonomy, achievement motivation)” (Lerner et al., 2018a; p54).

As appealing and logical as the judgment-then-action paradigm is for organizational theory and explanatory models of entrepreneurial action, the issue with such assumptions is that the paradigm incompletely circumscribes the empirical diversity of entrepreneurial behavior in the face of an opportunity (Lerner, 2016; Lerner et al., 2018a). Frameworks designed to predict entrepreneurial action and outcomes need to incorporate antecedents that are both intentional in nature and those that are not. Though notoriously elusive, unexpected a-rational, impulse-driven entrepreneurial actions must also be captured, understood, and assessed as they are – thereby expanding the panoply of entrepreneurial action drivers across a spectrum of considerations. In agreement with BPB, we resist the temptation to label such logics ‘irrational’ – just as we resist BPB's temptation to define all entrepreneurial action as rational; instead, we allow for action that is *a*-rational and outside of intendedly-rational logics (Lerner et al., 2018a). Future research opportunities abound for scholars to explore the ways in which varied logics and motives underlie entrepreneurial action. In addition to the findings generating by fMRI analysis, scholars who are willing and able to push ever-closer to the early-stage actions that ultimately deliver entrepreneurial outcomes will be in excellent position to contribute novel insights regarding both impulsive and judgment-based motivators of entrepreneurial action.

The more accommodating and robust spectrum-based framework put forth in *Action!* offers a conceptually stronger, empirically grounded basis for future research considering both the intended and unintended, and myriad overlooked factors. By opening an entire realm beyond intendedly-rational action, it offers new ground for entrepreneurship research, and a more veridical basis for grounding findings otherwise apt to be misclassified (e.g. *Action!* p57).

Acknowledgements

The authors are grateful for anonymous reviewer comments that have improved this paper.

References

American Psychiatric Association (APA), 2013. Diagnostic and statistical manual of mental disorders (5th ed.) (DSM-5). Washington, DC.

Ardichvili, A., Cardozo, R., Ray, S., 2003. A theory of entrepreneurial opportunity identification and development. *J. Bus. Ventur.* 18, 105–123.

Baker, T., Miner, A.S., Eesley, D.T., 2003. Improvising firms: bricolage, account giving and improvisational competencies in the founding process. *Res. Policy* 32 (2), 255–276.

Baron, R.A., 2004. The cognitive perspective: a valuable tool for answering entrepreneurship's basic “why” questions. *J. Bus. Ventur.* 19 (2), 221–239.

Baron, R.A., 2008. The role of affect in the entrepreneurial process. *Acad. Manag. Rev.* 33 (2), 328–340.

Baucus, D., Baucus, M., Mitchell, R., 2014. Lessons from the neural foundation of entrepreneurial cognition: the case of emotion and motivation. In: Mitchell, J.

Robert, Mitchell, Ronald K., Randolph-Seng, Brandon (Eds.), *Handbook of Entrepreneurial Cognition*. Edward Elgar Publishing, 254–315.

Baum, J.R., Frese, M., Baron, R.A., 2014. *The Psychology of Entrepreneurship*. Psychology Press.

Becker, W.J., Cropanzano, R., Sanfey, A.G., 2011. Organizational neuroscience: taking organizational theory inside the neural black box. *J. Manag.* 37 (4), 933–961.

Brown, L., Packard, M., Bylund, P., 2018. Judgment, fast and slow: toward a judgment view of entrepreneurs' impulsivity. *J. Bus. Ventur. Insights*. <http://dx.doi.org/10.1016/j.jbvi.2018.e00095>.

Cardon, M.S., Foo, M.D., Shepherd, D., Wiklund, J., 2012. Exploring the heart: entrepreneurial emotion is a hot topic. *Entrep. Theory Pract.* 36 (1), 1–10.

Cardon, M.S., Gregoire, D.A., Stevens, C.E., Patel, P.C., 2013. Measuring entrepreneurial passion: conceptual foundations and scale validation. *J. Bus. Ventur.* 28 (3), 373–396.

Carver, C., White, T., 1994. Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: the BIS/BAS scales. *J. Pers. Soc. Psychol.* 67 (2), 319–333.

Dew, N., 2009. Serendipity in entrepreneurship. *Organ. Stud.* 30 (7), 735–753.

Dimov, D., 2011. Grappling with the unbearable elusiveness of entrepreneurial opportunities. *Entrep. Theory Pract.* 35 (1), 57–81.

Entrepreneurship: Theory and Practice, 2018. Call For Papers, Special Issue Entrepreneurship and Biology, (http://journals.sagepub.com/pb-assets/cmscontent/ETP/ETP_SI_EP.pdf), retrieved Oct 2, 2018.

Fillis, I., Rentschler, R., 2010. The role of creativity in entrepreneurship. *J. Enterprising Cult.* 18 (01), 49–81.

Foo, M.D., Uy, M.A., Baron, R.A., 2009. How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *J. Appl. Psychol.* 94 (4), 1086.

Foss, N.J., Klein, P.G., 2012. *Organizing Entrepreneurial Judgment: A New Approach to the Firm*. Cambridge University Press.

Frijda, N.H., 2010. Impulsive action and motivation. *Biol. Psychol.* 84 (3), 570–579.

Grégoire, D.A., Corbett, A.C., McMullen, J.S., 2011. The cognitive perspective in entrepreneurship: an agenda for future research. *J. Manag. Stud.* 48 (6), 1443–1477.

Hessels, J., Van Gelderen, M., Thurik, R., 2008. Entrepreneurial aspirations, motivations, and their drivers. *Small Bus. Econ.* 31 (3), 323–339.

Hunt, R.A., 2013. Essays concerning the entry and survival strategies of entrepreneurial firms: a transaction perspective. University of Colorado. ProQuest.

Hunt, R.A., 2015. Contagion entrepreneurship: institutional support, strategic incoherence, and the social costs of over-entry. *J. Small Bus. Manag.* 53, 5–29.

Hunt, R.A., Ortiz-Hunt, A.J., Lerner, D.A., 2018. Can Non-Humans Be Entrepreneurs? Working Paper Series, ResearchGate.

Johnson, S.K., Fitza, M.A., Lerner, D.A., Calhoun, D.M., Beldon, M.A., Chan, E.T., Johnson, P.T., 2018. Risky business: linking *Toxoplasma gondii* infection and entrepreneurship behaviours across individuals and countries. *Proc. R. Soc. B* 285 (1883), 20180822. <http://dx.doi.org/10.1098/rspb.2018.0822>.

Kahneman, D., 2011. *Thinking, Fast and Slow*. Farrar, Straus and Giroux, New York.

Lerner, D., Hunt, R., Dimov, D., 2018a. Action! moving beyond the intendedly-rational logics of entrepreneurship. *J. Bus. Ventur.* 33 (1), 52–69. <http://dx.doi.org/10.1016/j.jbusvent.2017.10.002>.

Lerner, D., Hunt, R., Verheul, I., 2018b. Dueling Banjos: harmony and discord between ADHD and entrepreneurship. *Acad. Manag. Perspect.* 32 (2), 266–286. <http://dx.doi.org/10.5465/amp.2016.0178>.

Lerner, D., Verheul, I., Thurik, R., 2018c. Entrepreneurship & attention deficit/hyperactivity disorder: a large-scale study involving the clinical condition of ADHD. *Small Bus. Econ.* <http://dx.doi.org/10.1007/s11187-018-0061-1>.

Lerner, D., Hatak, I., Rauch, A., 2018d. Deep roots? Behavioral inhibition and behavioral activation system (BIS/BAS) sensitivity and entrepreneurship. *J. Bus. Ventur. Insights* 9, 107–115. <http://dx.doi.org/10.1016/j.jbvi.2018.02.005>.

Lerner, D., 2016. Behavioral disinhibition & nascent venturing: relevance and initial effects on potential resource providers. *J. Bus. Ventur.* 31 (2), 234–252. <http://dx.doi.org/10.1016/j.jbusvent.2015.11.001>.

Libet, B., 1985. Unconscious cerebral initiative and the role of conscious will in voluntary action. *Behav. Brain Sci.* 8 (4), 529–539.

Loewenstein, G., Weber, E., Hsee, C., Welch, N., 2001. Risk as feelings. *Psychol. Bull.* 127 (2), 267.

McClelland, D.C., 1984. *Motives, Personality, and Society: Selected Papers*. Praeger, NY.

Mises, L., 1949. *Human Action: A Treatise on Economics* 1998 edition. Mises Institute.

Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A., Smith, J.B., 2002. Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research. *Entrep. Theory Pract.* 27 (2), 93–104.

Mitchell, R., Busenitz, L., Bird, B., Gaglio, C., McMullen, J., Morse, E., Smith, J., 2007. The central question in entrepreneurial cognition research 2007. *Entrep. Theory Pract.* 31 (1), 1–27.

Mitchell, R.K., Randolph-Seng, B., Mitchell, J.R., 2011. Socially situated cognition: Imagining new opportunities for entrepreneurship research. *Acad. Manag. Rev.* 36 (4), 774–776.

Nicolaou, N., Shane, S., Cherkas, L., Hunkin, J., Spector, T.D., 2008. Is the tendency to engage in entrepreneurship genetic? *Manag. Sci.* 54 (1), 167–179.

Nicolaou, N., Shane, S., 2009. Can genetic factors influence the likelihood of engaging in entrepreneurial activity? *J. Bus. Ventur.* 24 (1), 1–22.

Nicolaou, N., Shane, S., 2014. Biology, neuroscience, and entrepreneurship. *J. Manag. Inq.* 23 (1), 98–100.

Nigg, J., 2000. On inhibition/disinhibition in developmental psychopathology: views from cognitive and personality psychology and a working inhibition taxonomy. *Psychol. Bull.* 126 (2), 220–246.

Noë, R., Hammerstein, P., 1994. Biological markets: supply and demand determine the effect of partner choice in cooperation, mutualism and mating. *Behav. Ecol. Sociobiol.* 35 (1), 1–11.

Obschonka, M., Silbereisen, R.K., 2012. Entrepreneurship from a developmental science perspective. *Int. J. Dev. Sci.* 6 (3–4), 107–115.

Sassower, R., 2010. Review essay: is Homo economics extinct? *Philos. Social. Sci.* 40 (4), 603–615.

Schenkel, M.T., Matthews, C.H., Ford, M.W., 2009. Making rational use of 'irrationality'? Exploring the role of need for cognitive closure in nascent entrepreneurial activity. *Entrep. Reg. Dev.* 21 (1), 51–76.

Sharma, L., Markon, K.E., Clark, L.A., 2014. Toward a theory of distinct types of "impulsive" behaviors: a meta-analysis of self-report and behavioral measures. *Psychol. Bull.* 140, 374.

Shepherd, D., 2015. Party on! A call for entrepreneurship research that is more interactive, activity based, cognitively hot, compassionate, and prosocial. *J. Bus. Ventur.* 30 (4), 489–507.

Spivack, A.J., McKelvie, A., Haynie, J.M., 2014. Habitual entrepreneurs: possible cases of entrepreneurship addiction? *J. Bus. Ventur.* 29 (5), 651–667.

Stanovich, K.E., West, R.F., 2000. Individual differences in reasoning: implications for the rationality debate. *Behav. Brain Sci.* 23, 645–665.

Ward, T., 2004. Cognition, creativity, and entrepreneurship. *J. Bus. Ventur.* 19 (2), 173–188.

White, R.E., Thornhill, S., Hampson, E., 2007. A biosocial model of entrepreneurship: the combined effects of nurture and nature. *J. Organ. Behav.: Int. J. Ind. Occup. Organ. Psychol. Behav.* 28 (4), 451–466.

Wiklund, J., Patzelt, H., Dimov, D., 2016. Entrepreneurship and psychological disorders: how ADHD can be productively harnessed. *J. Bus. Ventur. Insights* 6, 14–20.

Wiklund, J., Yu, W., Patzelt, H., 2018a. Impulsivity and entrepreneurial action. *Acad. Manag. Perspect.* 32 (3), 379–403.

Wiklund, Hatak, Patzelt, Shepherd, 2018b. Mental disorders in the entrepreneurship context: when being different can be an advantage. *Acad. Manag. Perspect.* 32, 2.

Wiklund, J., Yu, W., Tucker, R., Marino, L.D., 2017. ADHD, impulsivity and entrepreneurship. *J. Bus. Ventur.* 32 (6), 627–656.

Wood, C.C., 1985. Pardon, your dualism is showing. *Behav. Brain Sci.* 8 (4), 557–558.

Yu, W., Wiklund, J., Pérez-Luño, A., 2018. ADHD symptoms, entrepreneurial orientation and firm performance. *Acad. Manag. Proc.* 2018 (1), 15046.