Chapter 15
Entrepreneurial Behavior: Its Nature, Scope, Recent Research, and Agenda for Future Research

Barbara Bird and Leon Schjoedt

An action is the perfection and publication of thought.
Ralph Waldo Emerson

The end of all the cognition and motivation of entrepreneurs is to take some action in the world, and by doing so, give rise to a venture, an organization. Thoughts, intentions, motivations, learning, intelligence without action does not create economic value. The very nature of organizing is anchored in actions of individuals as they buy, sell, gather and deploy resources, work, etc. The values created by exploiting of opportunity undoubtedly include some that are intrapsychic and personal, but those we study, those of value to the readers of this book, are inherently interpersonal and social and thus observable and learnable. This chapter provides a brief overview of entrepreneurial behavior using a limited but hopefully representative lens on recent research. We call for more research on what entrepreneurs do and that this research be both more rigorous than what we currently have and also more creatively sourced.

15.1 The Nature and Scope of Entrepreneurial Behavior

Entrepreneurial behavior as an academic interest is the study of human behavior involved in finding and exploiting entrepreneurial behavior opportunity through creating and developing new venture organizations. Entrepreneurial behavior is the proximal outcome of the cognitions and emotions of entrepreneurial actors; it is also the proximal individual-centric cause of venture outcomes. The major goals of research are to explain, predict and control (change and change) behavior of individuals and teams. Knowledge of entrepreneurial behavior has value to actors – entrepreneurs as it allows them to shape and change their behaviors for better outcomes and to venture stakeholders, such as investors, local governments, and employees, insofar as entrepreneurial outcomes meet their respective goals.

B. Bird (✉)
Kogod School of Business, American University, Washington, DC 20016, USA
e-mail: bbird@american.edu

A.L. Carsrud, M. Brännback (eds.), *Understanding the Entrepreneurial Mind*,
International Studies in Entrepreneurship 24, DOI 10.1007/978-1-4419-0443-0_15,

Knowledge of entrepreneurial behavior is important to educators, students, news media, and creative writers. Entrepreneurial behavior eventually results in the creation of innovations, new competition, new jobs, and new revenue streams, and scholars from several disciplines such as economics, sociology, psychology, social psychology, and organizational design may find interest as well.

Entrepreneurial behavior as a research construct is the concrete enactment of individual or team tasks or activities required to start and grow a new organization. As we will argue, behaviors are best understood as discrete units of action that can be observed by others and which are "sized" to be meaningful. These activities are consciously chosen by individuals with the intention of finding and exploiting an opportunity and forming an organization of human, financial, physical, social, and intellectual resources. Examples of such activities are illustrated in a study by Carter et al. (1996). The resulting organization may be for profit or not, may vary on a continuum of virtuality and size, but it contributes economic and social value to its surroundings (Davidsson et al. 2006; Mitchell et al. 2007). This behavior (these actions) draws upon the experience, knowledge, skills, abilities, cognitions, intelligence, learning, intentions, and motivations of entrepreneurial individuals and teams. Behavior is visible, auditory, and/or kinesthetic and if others are present, social or potentially interpersonal in nature. Thus deciding is a cognitive process invisible to others and is different from the action of writing down the decision, orally communicating the decision, or taking other action to implement the decision. In the same way, learning is a cognitive process and objective assessment of learning results from behaviors.

15.1.1 Differentiating Concepts

First, entrepreneurial behavior is individual behavior, not firm behavior. Thus work on entrepreneurial orientation (Lumpkin et al. 2009; Wiklund and Shepherd 2003) and the operationalization of Stevenson's dimensions (which items are also attitudinal and ipastive) do not fall into our purview (Brown et al. 2001).

At the individual level of analysis, often researchers and certainly students and laypeople fail to differentiate behavioral terms. Behaviors are actions and therefore also *activities* of individuals (entrepreneurs). *Responses* are behaviors that follow from and presumably caused or evoked by some preceding stimulus. *Performance* is usually understood as results achieved by an action and when measured is often a complex aggregation of many behaviors (e.g., a high-performing student combines reading, writing, exam-taking, critical thinking, life-management behaviors, and many other behaviors).

Ability is a relatively stable broad characteristic of individuals that underlies their maximum performance and would include various forms of intelligence and physical attributes, such as strength or height. In general, abilities are difficult to change; however, they can be enhanced over time with education and experience. For example, intellectual ability refers to individuals' all-around effectiveness in activities directed by thought, such as thinking, reasoning, and problem solving,

and in one approach (Sternberg 1988) has three facets: (1) analytic intelligence (*g*), (2) practical intelligence ("street smarts") which is domain specific, and (3) creative intelligence which is the ability to produce something that is, both, novel and useful. *Skills* are abilities to perform specific tasks and can be either broadly or narrowly construed (e.g., general skill at negotiation or more specific skill at bluffing). *Knowledge* is information the individual has in specific areas (e.g., knowledge about a market or how to make an oral presentation) acquired through education and experience. Knowledge can be either explicit or tacit and general or specific. *Competence* may be defined as abilities, knowledge, skills, traits, and concepts of self such as self-efficacy beliefs that are "causally related to criterion-referenced effective and/or superior performance in a job or situation" (Spencer and Spencer 1993). These capacities (abilities, skills, knowledge, and competencies) enable behaviors but are not behaviors themselves.

Processes may involve behavior but not necessarily. Decision making is a process that is largely cognitive and which leads to a choice among alternatives and may result in some action. Creativity is also a process often largely cognitive, of producing something new or partially new (Amabile 1996). Searching for opportunity is a process that may share elements of cognition, creativity, learning, and behavior (Corbett 2007; Sternberg 2004).

Whereas behavior is observable, performance, capacities, and processes are derived by inference from behaviors. For capacities to result in action, motivation and opportunity must also be present for behavior. For processes to have an impact in adding economic and social value, action or behavior must follow.

15.2 Recent Research on Entrepreneurial Behavior

15.2.1 Conceptual Efforts

In assessing the recent research on entrepreneurial behavior, we reviewed conceptual and theoretical articles that aim squarely at our topic. Action theory advanced by Frese (2007) builds on the cybernetic control model of Miller et al. (1969) and links the chapters which define this book to "action." This model, as well as that discussed by McMullen and Shepherd (2006), describes the judgmental processes which precede action or behavior and the cognitions which either enable or impede individuals from acting entrepreneurially when faced with an opportunity. Both models define action as consciously chosen (intentional) responses of individuals. While Frese (2007) focuses on behavioral control through planning, feedback, cognitive regulation, and traits of individuals such as initiative, McMullen and Shepherd (2006) focus on how decision uncertainty is perceived and impacts entrepreneurial action (which they leave undefined). Thus both of these efforts discuss action, address precursors to action but offer little insight into the action or behavior itself.

An initial effort to bring the field of organizational behavior to entrepreneurship came in 1989 when the first author (Bird 1989) summarized the then extant research pertaining to entrepreneurial behavior, defining it as "opportunistic, value-driven,

value-adding risk-accepting, creative activity where ideas take the form of organizational birth, growth or transformation" (p. 5). The book included chapters on the person-centered variables (i.e., experience, education, motivation, values, and emotions), social and political contexts of entrepreneurial behavior, careers, teams, staffing, governance, leadership, competencies, and learning. Following that, Gartner et al. (1992) had one of the earliest journal articles that attempted to map organizational behavior onto emerging (compared to existing) organizations. They reviewed managerial work as a field of research, hoping for guidance in framing entrepreneurial behavior but found managerial work literature to be as atheoretical as entrepreneurship at the time. They recommended richer description of entrepreneurial behavior. It is interesting to note that this article has been cited only 43 times in the past 10 years and of these only 16 reference the behavior of entrepreneurs. A more recent effort to extend this bridge from organizational behavior to entrepreneurship was forged by Baron (2002). His review addressed the basic OB model (found as a framework in most textbooks) of individual, interpersonal, and organizational/social factors at three phases of the entrepreneurship process (pre-launch, launch, and operations). Much of his contribution here and elsewhere (Baron 2008) anchors on individual cognition and decision making but he has also introduced OB links for some specific person-centric predictors of outcomes that include learning from a mentor, social competence, successful and emotional intelligence, charismatic, visionary, and situational leadership, influence processes, and group dynamics of teams. In same vein, Shook et al. (2003) review behavioral research in entrepreneurship with a focus on judgment (cognition) but pointing to emerging interest in individuals who engage in active search for opportunities (see discussion on active search below) briefly mentioning opportunity exploitation activities. Shook and colleagues observe: "Perhaps the most under-researched aspect of individual and venture creation is exploitation activities. We know very little about the role of the individual in acquiring resources and organizing the company" (p. 390). We concur.

Several scholars have postulated behaviors that are important to opportunity exploitation without testing or measuring these. For example, Shepherd et al. (2000) suggest venture survival depends on organizing activities such as specifying tasks, allocating people to tasks, defining authority structures, and building communication channels. The next section of this chapter offers a brief review of recent empirical research that includes entrepreneurial behavior. Following that, we attempt to frame entrepreneurial behavior concretely and call for better measurement. Finally, we offer five research areas wherein entrepreneurship scholars can build upon the foundation of organizational behavior.

15.2.2 Empirical Efforts

To examine contemporary entrepreneurial behavior research, we reviewed empirical papers published over the last 3 years (2005–2007) in two top entrepreneurship journals – *Entrepreneurship Theory and Practice* and *Journal of Business Venturing*.

While we recognize that research on entrepreneurial behavior is published in other journals, like *Journal of Applied Psychology* (Baum and Locke 2004), and *Management Science* (Baron and Ensley 2006), we chose to focus our attention on *Entrepreneurship Theory and Practice* and *Journal of Business Venturing* as they, in our view, represent the two most recognized entrepreneurship journals and should provide a reasonable approximation of the approaches and findings of scholars. We identified articles pertaining to behavioral constructs at the individual and group levels. To focus on research addressing the entrepreneur, we excluded research addressing strategic firm decisions such as competitive stance or internal policies, corporate entrepreneurship including that of small organizations, older firms, and venture capital, and other stakeholders. We included only empirical papers as these efforts show operationalizations of behavioral constructs, which we consider important in assessing the state of entrepreneurial behavioral research. A total of 28 empirical articles that address behavior are shown in Table 15.1. The total number of articles published in these two journals was 223+, so empirical studies of behavior constituted about 12% of published efforts in this time period.

This limited review of the literature is insufficient for a theory-based approach to entrepreneurial behavior but it does serve to highlight the relative lack of attention to behavior in recent entrepreneurship literature. This is surprising insofar as individual and group levels of analysis remain a strong focus in entrepreneurship. While there has been some fertilization from organizational behavior, with its extensive research (Gatewood et al. 2002; Vecchio 2003b), much more could be done. To illustrate the fragmented nature research on entrepreneurial behavior, we have divided the articles into four groups – entrepreneurial behavior as a criterion for sampling, as an independent variable, as a dependent variable, and description of behaviors based on social theories.

Behavioral precision began with the initiation of a national panel study of startups in the United States where the first data collection and test of the sampling procedure was done in 1992 with the adult population in Wisconsin (Reynolds 2000; Reynolds and White 1997). Eventually, this led into the Panel Study of Entrepreneurial Dynamics (PSED) conducted by telephone and mail from 1998 to 2000. See Garnter et al. (2004) and Reynolds (2000) for details on methods and sampling. This was followed by similar studies internationally as part of the Global Entrepreneurship Monitor (Arenius and DeClercq 2005; Langowitz and Minniti 2007). Embedded within the survey two questions were designed to identify nascent entrepreneurs: (1) Are you, alone or with others, now trying to start a business? (2) Are you, alone or with others, now starting a new business or new venture for your employer?

Together the telephone interview and mail questionnaire provided information on a broad range of topics including activities of individuals that might be related to success in organizing an entrepreneurial business. There are two primary advantages to the PSED data set. First, the data were collected contemporaneously with the new venture creation process, unlike samples based on retrospective accounts. Second, the PSED data set allows for generalizations to the United

Table 15.1 Summary of literature

Year/journal	Citation	I, D, C variable	Exemplar behaviors
2005/ETP	Corbett (2005)	?	Market testing, selecting options, finalizing choices
	Forbes (2005)	I	Implied delegation, consulting with outsiders, scanning, analysis, planning
	Fiegener (2005)	D	Involvement of board
	Rauch et al. (2005)	I	Training/development of employees, encourage others to participate initiate, communicate goals
	(Singh and Lucas 2005)	D	Prepare business plan
	Hite (2005)	?	Working for partner, problem solving, communicating
2006/ETP	Orser et al. (2006)	D	Apply for external capital
	Alsos et al. (2006)	I	Adding, hiring a new team member
	Forbes et al. (2006)	D	Adding, hiring a new team member
	Vanaelst et al. (2006)	?	Joining or leave team, roles
2007/ETP	Schjoedt and Shaver (2007)	C	Trying to start a business
	Hanlon and Saunders (2007)	I	Receiving support
	DeTienne and Chandler (2007)	D	Self-reports on behavior sequences
	Langowitz and Minniti (2007)	C	Trying to start
	Cloninger and Oviatt (2007)	D/C	Internationalize
JBV/2005	Talaulicar et al. (2005)	I	Decision-making processes
	Grandi and Grimaldi (2005)	?	Articulation of roles, interaction with external agents
	Chrisman and Hall (2005)	I	Guided preparation in the research, planning and "activities" by advisors
JBV/2006	Kolvereid and Isaksen (2006)	D	Starting up a self-employment entity
	Ebben and Johnson (2006)	D	Bootstrapping such as delaying payments, joint utilization
	Ensley et al. (2006b)	I	Transformational and transactional behaviors
	Lichtenstein et al. (2006)	I/D	Strategic organizing – many behaviors talking with friends, formatting book
JBV/2007	(Watson 2007)	I	"Networking"
	Gruber (2007)	I	Market mix planning
	Tornikoski and Newbert (2007)	I/D	Categories of activities
	Lichtenstein et al. (2007)	I	Activities
	Haber and Reicheil (2007)	I	Writing business plan

States as a whole when post-sampling stratification weights are employed as these make the aggregate sample match the population in sex, race, age, and education level.

Subsequent research with this data set has developed a behavioral criterion for when an individual is a "nascent" entrepreneur by whether or not they have engaged in a number of behaviors, such as having developed a product/service, established credit with suppliers, filed a tax return for a new business, hired employees for pay, or invested own money (Garnter et al. 2004). Other studies categorize a respondent as having an operating business based on some of these behaviors (e.g., Edelman et al. 2008). In this way, *behaviors are a sampling criterion*.

Entrepreneurship research uses *behavior as an independent variable*. Here specific behaviors such as locating the business in a specific area, writing a business plan, opening a business bank account, seeking outside advice (Haber and Reicheil 2007; Lichtenstein et al. 2007; Tornikoski and Newbert 2007), or the degree of improvisation or number or pacing of activities (Hmieleski and Corbett 2008; Lichtenstein et al. 2007) might predict something, usually venture outcomes. In other studies, behavior is less specific and more cognitive to include self-reports of planning and time spent on planning (Alsos et al. 2006; Chrisman and Hall 2005; Gruber 2007) or initiating investor relationships measured in part by a self-report of confidence in "identifying sources of finance" (Alsos et al. 2006). Often behavior is global in nature (e.g., as an indicator of transformational leadership, "provides vision," Ensley et al. 2006b). Just as often, it is global in nature and poorly measured. For example, employees reported "support for personal initiative" and "communicating business goals" using single items (Rauch et al. 2005). In most cases, the entrepreneur's behavior is self-reported, but in other cases (as with Rauch et al. 2005) it is captured through the perception of a stakeholder such as a member of the venture team. Usually the focus is individual behavior of the self-reporting entrepreneur, but occasionally the focus is team behaviors such as decision-making processes (Forbes 2005; Talaulicar et al. 2005).

Other research seeks to predict behavior, treating *behavior as a dependent variable*. In some cases demographic variables that reflect human capital and individual differences such homemaker status, sex of entrepreneur, and prior experience are used to predict self-reported behaviors (e.g., preparing business plans, choosing a location, or seeking funding, Orser et al. 2006; Singh and Lucas 2005; Wright et al. 2008). For example, DeTienne and Chandler (2007) using sex and human capital as predictors, asked CEOs of young firms to choose among four sequences of actions those they themselves or their organization took in finding and acting on their start-up opportunity. In other cases, categories of context such as organizational size, board composition, need for strategic decision making, or operations predict CEO (entrepreneur) behavior such as bringing issues to the board of directors (Fiegener 2005) or deciding to open foreign operations (Cloninger and Oviatt 2007). Organizational age was used to predict bootstrapping behaviors (Ebben and Johnson 2006). In less frequent cases, cognitions such as beliefs and intentions as well other individual differences predict nascent behaviors such as those developed by PSED or the GEM (Langowitz and Minniti 2007) or a self-reported measure

of "working" in a start up (Kolvereid and Isaksen 2006). In some cases, the actual entrepreneur is not wholly visible as decision maker or implementer (Cloninger and Oviatt 2007).

While prediction is the focus of most studies, some only *seek to describe or explain behavior in the context of extant social theories*. For example, Forbes and his colleagues (2006) sought to explain new venture hiring of new team members based on theories of attraction and resource dependence. In another example, using a single in-depth case study, Lichtenstein and his colleagues (Lichtenstein et al. 2006) observed three modes of organizing some of which are clearly behaviorally anchored: organizing the vision (expressing a strong vision) but also less behaviorally (changing thoughts and vocabulary about the opportunity); strategic organizing (tangible events such as formatting a book, deciding to publish as book or web page; committing personal funds, and coping with non-venture responsibilities); and tactical organizing (developing a product/service, establishing credit with suppliers, filing a tax return for a new business, hiring employees for pay, or investing own money).

In most cases, the behaviors are self-reports and are broad and unspecific in nature (e.g., initiating investor relationships, preparing a business plan, articulating a business idea). These behavioral constructs are not necessarily linked to observable objective behaviors and could be interpreted in very different ways by different audiences, but these kinds of constructs are often used in entrepreneurship research. For example, in the DeTienne and Chandler (2007) study, behaviors were self-reports of action sequences, which included "I/we found or developed a product or technology then looked for a market". A would-be or even successful entrepreneur might have some understanding of concrete referents for "product or technology" but may not differ widely on what is done to "look for a market." Another example is the use of self-reports by entrepreneurs of their strategic actions of exploration and exploitation (e.g., "We are usually one of the first companies in our industry to use new, breakthrough technologies"; "We frequently adjust our procedures, rules, and policies to make things work better" [Bierly and Daly 2007). We suspect that different audiences will concretely interpret "use of new, breakthrough technology" and "adjusting rules" in behaviorally very different ways.

In only one case in our review did an empirical article include behavior as both an independent and a dependent variable. Tornikoski and Newbert (2007) used PSED data for both independent and dependent variables. They looked at venture improvising (prepare business plan, start marketing, apply for patent, project financial statement, open bank account, list in phone book), resource combination (develop prototype, purchase raw materials, purchase facilities), and networking (ask for funds, establish credit, received outside assistance) as predictors of organizational emergence (make a sale, hire employees, received external funding).

Finding a paucity of empirical research and a lack of conceptual clarity on entrepreneurial behavior, we propose further refinement of our behavioral research methods. Following that we propose four broad organizational behavior areas from which entrepreneurship scholars can borrow, as long as we borrow wisely.

15.3 Behavioral Research Methods for Entrepreneurship

Entrepreneurial behaviors are discrete units of individual activity that can be observed by an "audience" and that have a meaning that is likely to be shared between actor and audience. By this definition, teams and organizations do not behave but individuals comprising them do. By this definition making a decision is not a behavior, announcing a decision is a behavior.

Many of the "behaviors" of entrepreneurship research are not discrete but complex and often ill defined. Planning a business is not a discrete unit of activity but a complex set of activities, some done sequentially, most done iteratively, almost always with interruptions for other activities, some done alone and others done by outsiders, such as consultants or teams of local college students. The behaviors embedded in "planning" might include consulting a text or template for business plan components (market size, competition, costs, legal protection, potential financing sources, board of advisors, etc.) and gathering information on various plan components through the discrete acts of web search, telephone calls, business meetings, etc. Planning also includes codifying and prioritizing the information and sense making through writing and speaking of the plan.

Bhide (2000) in his review of the process new ventures take to become large and enduring organizations draws on data from these large firms (no longer start up, nascent, or entrepreneurial by most definitions). He sees "critical tasks" for new ventures to include articulating audacious goals, formulating strategy, and implementing strategy which are likely comprised of many different behaviors of individuals (or teams). Only in his discussion of implementation of strategy does Bhide give hints at what behaviors one might want to engage to grow a venture (e.g., finding specific store locations, negotiating leases). Unfortunately other implementation behaviors are quite broad (e.g., upgrade resources, build infrastructure).

Behaviors need to be distinguished from their results. Asking for funds is a behavior (from whom, how, and when might usefully be specified), whereas receiving funds is a result. Writing a business plan is a behavior, having a written business plan is a result. In this particular case, entrepreneurs who hire others to write their plan are behaviorally distinct from those who write their own plan. When we use results as a surrogate for behavior, we infer behavior. Sometimes this is sensible, but it leaves the audience to our research to imagine what the entrepreneur actually did to achieve the result.

15.3.1 Molarity Issues

Just how specific should our behavioral variables be? Early behavioral psychologists applied the term "molarity" to behavior to focus attention on meaningful perceptual behavioral units or activities. Just as in chemistry a "mole" is a unit of matter that is often more useful and an atom or molecule, the meaningful unit of behavior is more useful than its component behaviors. For example, using the Internet for 4 hours to research markets or competition is more useful than the specific flexing muscles,

moving joints or in our example, keystrokes. These "molecular" behaviors are less visible and combine together to make the observable behavior qualitatively different from underlying physiological processes (W. Baum 2002; Hauser 2006). We apply the concept here to focus attention on the wildly divergent sizes of behavioral units that are reported in the entrepreneurship literature. Whereas behavioral psychologists (e.g., Edward Toleman and others) differentiated holistic units of behavior from reflexive, simple stimulus–response connections, entrepreneurship scholarship errs in making our behavioral units far too galactic in size.

Behavior is concrete, not abstract. To pass the test of being behavior, it must be theoretically, if not practically observed by someone (or something in the case of a recording) other than the actor. It refers to an action or set of actions that can be seen, heard, or measured. Many of the behaviors of entrepreneurship research are under-specified and operationalizations unique to the particular manuscript and purpose (and far too often based on self-reports and single-items). A respondent, another researcher or a student wishing to learn to act as an entrepreneur, may not know what specific action is called for.

The behaviors listed in the PSED/GEM studies come close to the specificity we may need; some moreso than others. For example, one PSED behavior is "applied for patent." We may not need to know that the entrepreneur read the requirements and completed and submitted the paper work and paid the fees for patent or that they hired a patent attorney to do this for them. However, other PSED behaviors remain less specified. What specifically does one do to "define market opportunities/customers, competitors"?

We do not expect or suggest that entrepreneurship scholars drill down to keystrokes or "molecular" behaviors. We do think that just as scholars recognized the need to collect and report demographic data on respondent individuals and firms (so that context and comparisons could be made), we need to present greater unity on how we measure behavior. One step is finer granularity and another to begin to use similar if not identical operationalizations of key behaviors.

15.3.2 Need to Move Beyond Self-Report Methods

Since the behaviors of interest to entrepreneurship scholars are consciously undertaken, individual actors can reasonably report on their behaviors. But as is true in other research critiques (e.g., Chandler and Lyon, 2001), self-reports are limited by recall and social desirability bias. Self-reports of behavior can be more reliably and accurately obtained with any variant of an experience sampling diary (beeper) method (Spain et al. 2001) to capture frequency, sequence, duration of behaviors within and across entrepreneurs. These methods suffer from being intrusive but could provide us with a finer grain on what entrepreneurs actually do. Behavior can be assessed with other methods including observation both in the field and in the laboratory. Field observations are done and done well (Lichtenstein et al. 2007; Lichtenstein et al. 2006) but suffer from the inability to gather sufficient sample sizes to generalize. Laboratory studies (using experimental designs) in entrepreneurship

are few and none, to our knowledge, observe behavior. Often these types of studies use students (not entrepreneurs) as subjects (Grichnik 2008), are often time consuming, and require the subject to be in a laboratory environment. It might also be possible to obtain unobtrusive measures of behaviors (Webb et al. 2000) if entrepreneurs could reasonably be expected to show up at a conference, meeting, or web site. This type of measure could count clicks, visits, or even employ photography or video methods. Finally, of course, is ask others who observe entrepreneurs to report on their observations, a method best used if triangulation (multiple observers) is employed.

As a field of research, let us move beyond self-reports as our primary way to measure behavior. If we must use self-reports, control for social desirability, which is the tendency to report socially desirable but possibly untrue results (Arnold and Feldman 1981). Let us employ the rigorous methods of other social scientists.

15.3.3 Need to Move Beyond Single Items

One of the most serious threats to research on entrepreneurial behavior, which was evident in the early research on entrepreneurial traits, is poor construct measurement. Considering the relatively complex nature of new venture creation and of entrepreneurial behavior, quality measurement is crucial (Boyd et al. 2005; Godfrey and Hill 1995). While advanced statistical methods allow single items to serve in statistical models, a real question must be raised about not only reliability but also validity since a single-tem measure can be ambiguous with respect to the intended meaning and can be changed by the context of previous items. Reliance on single-item measures at the exclusion of multi-item measures weakens results. More than two decades ago, marketing researchers (Churchill 1979; Jacoby 1978) critiqued the use of single-item measures to assess constructs. As Jacoby puts it:

> Given the complexity of our subject matter, what makes us think we can use responses to single items (or even to two or three items) as measures of these concepts, then relate these scores to a host of other variables, arrive at conclusions based on such an investigation, and get away calling what we have done Quality research? (1978, p. 93).

Considering the majority of research in entrepreneurship, even recent research, in the context of Jacoby's comment, how can we, as entrepreneurship scholars, claim that we have advanced the literature instead of adding clutter to our collective understanding of entrepreneurship.

Reliability of measurement is better assured and often obtained through psychometric development of scales comprised of multiple items. Reliability is a requirement for self-reports and other reports of behavior but also a requirement for measures of cognitive, motivational, attitudinal, and perceptual constructs. Reliability refers to the extent to which a measure is repeatable (Nunnally and Bernstein 1994) and consistent (Torabi 1994). Since reliability is a necessary condition for validity, unreliable measures lessen the observed correlation between measures. Consequently, if the correlation between two construct measures is low, it is not

possible to determine whether there is no relationship between the two constructs or whether the measures are unreliable (Peter 1979). A single item to assess behavior not only is psychometrically unreliable, but often grossly over-simplifies behavior.

A good example of a study that used multiple items for all independent and dependent variables is offered by Baum and Bird (forthcoming). Of particular interest here is the behavior scale of "multiple improvement actions" which used eight items such as "We frequently experiment with product and process improvements" and "Continuous improvement of our products and processes is a priority".

15.3.4 Need to Include Time

There are critical time lag issues in translating cognitions into behavior and behavior into results. There are issues of how long a behavior takes to complete (when it begins and when it is finished and a new behavior begins). In the experimental design framework, the time between an independent variable change and a dependent variable measurement for the effects of that change is subject to "errors" that include history. Things happen between the formation of an intention and action based on that intention, especially when dealing with complex and relatively "galactic" behaviors such as defining markets and competition. These historical effects are likely to be more confounding the longer the behavior takes to complete. When does the entrepreneur begin planning and when is she finished? When does she begin to ask for funds and when does she get an answer (or the funds)? When does she approach her first customer and when does she make the first sale? These are identifiable behaviors and results, which are considered clear indicators of venture start-up according to Carter et al. (1996).

Undoubtedly, the entrepreneur is juggling these "behaviors" with other behaviors such as filing for patents, purchasing equipment, leasing space, etc. An illustrative example of juggling "behaviors" (activities) is *Heather Evans* (Roberts 1998). In this case, Heather incorporates the business, designs a clothing line, hires and pays an employee, arranges for factoring and production, locates a location for her store, and more while still attending classes at Harvard Business School and conducting a field study as well as moving from Boston to New York to further facilitate her venture creation process.

15.4 Behaviorally Anchored Research Agenda

As we addressed the very large issue of entrepreneurial behavior, we considered finding links between the issues and problems of entrepreneurs and the theories and research in the more mature field of organizational behavior. Clearly, entrepreneurship scholars are importing many ideas from OB, such as leadership (Ensley and Pearce 2001); job characteristics and satisfaction (Schjoedt forthcoming; Schjoedt and Shaver 2007); and team formation, composition, and processes (Forbes et al. 2006). We also recognize that this book is individual centric and

cognition/motivation focused, and while personality, diversity, human capital, and attitudes such as satisfaction are important and they have a longer history of inclusion and extension into entrepreneurship, they are not behavioral but rather precursors to or moderators of behavior. For example, the growing body of research on women and minority entrepreneurship (Alsos et al. 2006; DeTienne and Chandler 2007; DeTienne et al. 2008; Essers and Benschop 2007) and the extensive research on personality characteristics of entrepreneurs (e.g., Stewart and Roth 2007) has applied OB insights but are not behavioral. Much of the rest of the OB domain is less directly relevant (e.g., political behavior, organization culture and design). Rather than repeat the overview of possibilities of OB-inspired research covered by Baron (2002), we choose to point to five areas of potential use to entrepreneurship scholars and practitioners. Three are strongly anchored in behavior (1) leadership (including shared leadership), (2) communication, (3) behavioral roles and two are less behavioral but critically important areas of (4) creativity and (5) opportunity discovery.

15.4.1 Leadership

We believe that the vast body of leadership research does pertain to entrepreneurship and excellent reviews of intersections for entrepreneurship scholars are offered by Cogliser and Brigham (2004) and Vecchio (2003a). Leadership is simultaneously about individual leader/entrepreneur behavior and the relationship of the leader/entrepreneur to the "followers" or "constituents" and external environment of the organization being formed and grown. It bridges the individual to the team and to the eventuality of dissent, political behavior, and organizational culture. We will provide a short review of the OB approach to leadership behavior framed as that stream of research shifted from traits to behaviors. Then we add the more recent work on shared leadership that may of particular interest to new ventures.

Leadership research began with attention to traits of executives. When those traits (e.g., intelligence, achievement motivation, power motivation) did not sufficiently discriminate between leaders and those in other roles such as managers and did not predict who would become a leader, attention shifted to leader behaviors. However, important trait-related leadership research continues (Kouzes and Posner 2002) as it does in entrepreneurship research (Ciavarella et al. 2004; Zhao and Seibert 2006). The behavioral study of leaders (Fleishman 1998) which is discussed below found two sets of behaviors that describe leaders – initiating structure/task focused and consideration/people focused. Again, the power of these tools to predict and shape leaders proved to be less than ideal and researchers proceeded to develop the currently most advanced theories, which address contingencies for when specific leadership behaviors or styles are more effective in achieving organizational results (House 1996).

The behavioral study of leaders, which was undertaken by a large interdisciplinary team including personnel officers of the military services, foundations, and firms and led by researchers at the Ohio State University, began with a definition of

leadership: "behavior of an individual when he is directing the activities of a group toward a shared goal" (Hemphill and Coons 1957). The team held long discussions during which apparent conflicts arose over issues of independence of dimensions of leader behavior, linkages to existing theory, the molar–molecular level of analysis, and whether objective measurement was possible from asking about frequency of behavior (in a Likert-type scale). With some reservations, the team settled on nine leadership dimensions (integration, communication, production emphasis, representation, fraternization, organization, evaluation, initiation, domination). The team and two advanced classes at Ohio State University, based on their experience and knowledge, used these dimensions and their descriptions to create 1,790 potential items for an instrument. The team used their own expertise to determine items that belonged to only one of the nine dimensions and eliminated items that overlapped content and reduced the number to 150 behavioral descriptions, a number which would fit on an IBM test answer sheet (remember this study was published in 1957 and conducted before the development personal computers in the 1960s or SPSS and SAS in 1968). In creating Likert-like scales for each item, the team debated and eventually structured an approach selecting the frequency and extent adverbs to use (e.g., Always-Never, Often-Very seldom, A great deal-Not at all, each with five anchors). They empirically tested the Leader Behavior Description Questionnaire (LBDQ) on 357 individuals (205 were describing a leader of their group and 152 describing themselves as a leader). Groups included educational, social, military settings, and a diversity of respondents. From this and subsequent studies, two factors (initiating structure and consideration) and shorter scales with strong psychometric properties were developed (Stogdill and Coons 1957).

We believe that entrepreneurship scholars could apply the methods used in the behavioral approach to leadership to achieve more highly consistent measures of entrepreneurial behavior. Once those dimensions and measures have been psychometrically tested, entrepreneurship scholars can advance to our own contingency approach to entrepreneurship behavior. We believe this is the optimal way to "borrow" from OB research and that merely applying extant leadership measures and models to entrepreneurs will not suffice if indeed entrepreneurs are different from executives, team leaders, or supervisors who are the focus and respondents in mainstream OB leadership research. As "sexy" as it may be to apply new models, such as transformational–transactional leadership (Avolio and Yammarino 2002) to entrepreneurs, these efforts move away from entrepreneurship as a distinct phenomenon.

15.4.2 Shared Leadership

Although leadership is a social process involving both leaders and followers (Lord et al. 1999), leadership scholars have largely focused on the leader as an individual in a hierarchical system which makes sense given the history of OB leadership emerging from studies of the military and large organizations (Campbell et al. 1970). Hierarchical or vertical leadership is based on unity of command that stems from an

appointed or formal leader of a team (e.g., the CEO) (Daft 2004). In contrast, shared leadership is a form of distributed leadership that occurs when all team members are engaged in the leadership of the team. Shared leadership is "a dynamic, interactive influential process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both" (Pearce and Conger 2003). Thus when leadership is shared within the team, the member with the most relevant experience, knowledge, skills, or abilities pertaining to the situation facing, the team communicates and influences others on the team. Through debate (i.e., the statements, action, and reactions of the debating team members) the team develops commitment to a decision to take action. For shared leadership to emerge, members of the team must have a shared purpose (i.e., venture success), provide support to one another by communicating their agreement or support, and opportunity to voice their views via debate (Carson et al. 2007).

At least five factors influence the appropriateness of shared leadership (Pearce and Manz 2005) – situational urgency, need for creativity and innovation, team member commitment, task interdependence, and degree of complexity. In situations with a high level of urgency, hierarchical leadership may be more appropriate than shared leadership. Even though there are few truly urgent situations facing most organizations, urgent situations may be more prevalent in new ventures. For example, bootstrapping to meeting payroll on a week-to-week basis may present an urgent situation where delegation to one team member is appropriate. Even though shared leadership is not necessarily appropriate in urgent situations, shared leadership may provide a basis for avoiding urgent situations in the first place by providing creative solutions to reoccurring problems.

In contrast, creativity and innovation are important factors for the development for the new venture and its product/service offerings. When members of the entrepreneurial team share their various points of view and influence each other in problem solving and decision making, they build a collective creative capacity. The commitment of team members to go beyond what is minimally required might be expected in new venture teams when each member has a stake in its success and this commitment contributes to the potential for shared leadership. When task interdependence is high and the tasks are complex, as when team members take on different specific roles such as technical development, market creation, and financing, shared leadership becomes more important and possibly more likely. In addition, shared leadership lowers monitoring costs and provides a system of checks and balances of team members' actions and performance (Barker 1993; Pearce et al. 2008).

There is some emerging evidence of the effectiveness of shared leadership in new venture teams. Ensley et al. (2006a) studied 66 top management teams drawn from Inc. Magazine's annual list of the 500 fastest growing US firms and 154 randomly sampled top management teams of start ups from Dun and Bradstreet. They found that both shared and hierarchical leaderships predicted new venture performance, with shared leadership having a stronger effect in both samples. We believe that these findings and the novelty of shared leadership as a research topic point to shared leadership as a fruitful avenue for entrepreneurial behavior research. To get objective team behaviors of the appropriate "molarity" will be an important research

problem to solve. Clearly teams provide a minimum of triangulation on the emergent behaviors of shared leadership.

This setting may also be one where participant observation is appropriate and useful. It may also be worthwhile to return to systematic observation of behavior in new venture teams rather than relying on self-reports. Bales and others (Bales 1951; Hare et al. 1955) developed a system of observing, counting, and categorizing group interaction which may be useful to those truly interested in new venture groups and the emergence and evolution of shared leadership as well as group-level communication, role development, creativity, and systematic search (below).

15.4.3 Communication

Communication is critical to entrepreneurial organizations – from writing a business plan through incorporation and team building to selling a product or service, some form of communication occurs. Communication is critical to overcoming the liabilities of newness since actions taken to legitimize, create a positive perception or reputation, and establish reliable production, delivery, and accountability systems all involve communication or display. Given its critical role and potential for easy observability (Ziegler et al. 1992), it is surprising that little research directly addresses communication behaviors of entrepreneurs.

Communication briefly defined is information exchange, which can be one way or two way in dyad linkages. That is, the communication process has sender, receiver, and mediating variability. Communication can be seen as precursor to and outcome of intentions. As a precursor/mediator, we ask what role communication plays in forming the intention. Receiving information through listening (reading) or watching may be more critical for shaping an intention than is sending information through speaking or writing. As an outcome of intention, one of the earliest acts entrepreneurs take to manifest their intentions is to speak/write about it. Speaking and writing are entrepreneurial behaviors that warrant additional academic research. If a product is developed, prototyping and displaying become critical. For both directions (the sending and receiving of information), cognitive errors can become communication errors but at the same time communication can reduce those perceptual or cognitive errors through feedback and iteration.

There is a scattering of conceptual and theoretical work that addresses or touches upon communication in the entrepreneurship process or setting. One example is debate about the impact of written business plans on venture outcomes (Honig 2004). Others have theorized about the translation of entrepreneur's mental models (sense making) into communication (sense giving), entrepreneurial vision communication (written and spoken), and the importance of linguistic metaphors (Hill and Levenhagen 1995). More recently, empirical studies found vision communication to have significant impact on venture growth (Baum et al. 1998). Communication is sometimes assumed and sometimes measured as "frequency of contact" in the growing literature on entrepreneur's social network and social capital (West 2007; West

and Wilson 1995) and entrepreneurial teams (Forbes et al. 2006; Schjoedt forthcoming). Extending beyond the start-up processes and early opportunity identification communication is critical to venture financing, alliances, and technology choices (Redoli et al. 2008; Roodt 2005). Included here is the choice of what information to share, with whom and when and includes the issues of non-disclosure and protection of intellectual property. In addition, communication is critical and problematic for entrepreneurs who internationalize or establish virtual workplaces (Matlay and Westhead 2007; Todd and Javalgi 2007). Finally communication takes on greater complexity and perhaps more importance in teams. Sharing leadership and working as a team requires individuals to listen more and talk less, ask more questions and offer fewer answers, and openly share information.

Entrepreneurship scholars could more precisely link the cognitions, which are the foci of this book, to venture outcomes (start ups, organizations, growth of organizations) through careful attention to communication as a mediator of those intentions, with stories and narrative methods as important considerations (see discussion below). One highly cognitive turn on communication is the potential of entrepreneurs "inner conversation" or self-talk (an element of thought self-leadership) (Neck et al. 1999). Thinking out loud protocols are a way to operationalize this (Sonnentag 1996).

To develop our research on communication as entrepreneurial behavior, we might usefully form research relationships with communications scholars (from a range of specialties including rhetoric, social construction, and public relations) and scholars in information technology who are grounded in communications theories. Among the many questions we might ask are: How does a web-centric start up communicate effectively to gain legitimacy and reputation? What forms of communication best lead to commitments of others to the intention? What channels of communication are most useful and for what purposes? What types of communication errors are most likely among entrepreneurs of different types (novices, experts, gender, ethnic, and age differences) and at different stages in the venture creation process?

15.4.4 Behavioral Roles

Roles are abstractions and aggregations of behaviors, tasks, activities that comprise sensible, meaningful clusters (Mintzberg 1973) and differ from what Vesper (1980) and others refer to as "types of entrepreneurs." So while we have argued for precision and finer-grained accounting of behavior, we also believe that aggregation of individual behavior into roles is of potential value. Mintzberg found ten *managerial* roles in three clusters – interpersonal, informational, and decisional (one of which was "entrepreneurial" and referred to planned change inside organizations). If entrepreneurial behavior is to be distinct from managerial, entrepreneurship scholars need to follow Mintzberg's model, observe entrepreneurs, and "chunk" behavior into roles that they perform. These might be opportunist (finding, shaping opportunity), resource acquirers, salesman, etc. To do this, we must be clear on what constitutes role and the dynamics of role processes.

The concept of role derives, in part, from the dramaturgical approach to behavior (Goffman 1959), which uses theater as a metaphor for social interaction of many kinds. Many conceptual and some empirical efforts have hinted at the dramaturgical approach to entrepreneurship. The seminal paper by Gartner et al. (1992) tiled itself "Acting as if." One of the original outlines for that paper included a section on roles and scripts, entrepreneur as actor. Gartner (personal communication, 1990) commented "I want to get as much in about Stanisklavski's book CREATING A ROLE as possible, but there is a lot of material on roles that would be valuable to have." The dramaturgical approach would consider (among other elements) the relationship between actor, audience, backstage and outsiders (Goffman 1959), props, timing, costumes, impression management, rehearsals, and, importantly, the story being told. That section never got written into the text of the 1992 article. Nor did that manuscript make good use of the "if" of its title. In theater, the "if" is a method acting instruction that allows the actors to bring authenticity to the stage or screen (e.g., acting as if there were a man with a gun in corner). "*If* acts as a lever to lift us out of the world of actuality into the realm of imagination" (Stanislavski 1948). Insofar as ventures operate to create novelty, "something out of nothing" (Baker and Nelson 2005) or fulfill a vision (Baum et al. 1998), this *if* is important. Finally, the manuscript left out the mystification of the audience (its willingness to believe in the story of possibilities). For mystification to occur one of the five elements of social interaction is absent or obscure: the act (what is done), the scene (when and where), the agent (actor, here the entrepreneur), the agency (how the actors do it), or purpose (Manghan and Overington 1983).

Since then there has been some attention to role-related improvisation in the entrepreneurship literature (Baker et al. 2003; Hmieleski and Corbett 2008) which has both musical and theatrical roots. However, entrepreneurial behavior as drama and storytelling has not been developed other than the efforts by Martens et al. (2007) and Gartner (2007) who develop a narrative method issue of the *Journal of Business Venturing*, methods which are discursive, reflexive, and sense making and deal with story meaning and context.

There has been virtually no research on role taking and role making or role theory as it applies to entrepreneurs.[1] Scholars who do use the term "role" use it in different ways, lending to imprecision. When the role concept has been applied to entrepreneurship it often refers to how entrepreneurs are different in economic and organizational functions compared to other individuals. Thus some research and commentary refer to the role of entrepreneur as venture creator, change agent, risk bearer, or champion for innovation (Gartner 1988; Hayek 1985). Some use the term or imply the term when comparing nascent entrepreneurs to others (Carter et al. 2003) and when looking at categories of experience prior to becoming an entrepreneur (Dorbrev and Barnett 2005; e.g., previous work roles). Markman and

[1] ABIinform found only two articles with the joint search fields of entrepreneur and role behavior. The same two articles surfaced with search terms of entrepreneurship and role behavior. One article, Ortqvist et al. (2007), is in an obscure journal and described below. The other article dealt with corporate entrepreneurship.

Baron (2003) conceptualize person-role fit for entrepreneurs but do not cite role theory or operationalize that fit.

Katz and Kahn (1978) have defined role as a set of expectations about the behaviors of the role holder (here, the entrepreneur). Expectations about conduct are sent by individuals or groups that have formal, organizational relationship to the entrepreneur (e.g., investors, customers, and employees) and by those in informal relationships (e.g., family and friends). These expectations can be explicit (telling) or implicit (nonverbal signals or observed in a role model) and inform a "role schema" or prototype about what an entrepreneur is supposed to do (generally or in a specific situation). These expectations can conflict among senders resulting in role conflict for the entrepreneur; they can vary in clarity or change over time, resulting in role ambiguity for the entrepreneur; they can exceed the skills, resources, and time of the entrepreneur, resulting in role overload for the entrepreneur. Role conflict, ambiguity, and overload are sources of stress for entrepreneurs (Ortqvist et al. 2007; Schindehutte et al. 2006).

Role theory as described above was developed for organizational behavior settings (existing, often large, and formalized organizations) where roles and jobs are more clearly defined, not for organization creation. As we have discussed, the work, job, tasks, and expected behaviors of entrepreneurs are conceptually underdeveloped. However, social psychological constructs related to role such as identity and self-efficacy have found a place in the entrepreneurship literature (Down 2006; Elfring and Hulsink 2007; Martens et al. 2007). Of potential value is the literature on role taking or shaping and role transitions which entrepreneurial literature treats in the context of careers (Burke et al. 2008; Schjoedt and Shaver 2007) and learning (DeTienne and Chandler 2004). However, the role behaviors of the entrepreneur are not developed.

The novice entrepreneur, before becoming an entrepreneur, has had other roles and must transition from employee, student, etc., to entrepreneur. The early work of Nicholson (1984) provocatively suggested that entrepreneurs might take on that role with less change to themselves and more proactive determination of the content and structure of their role or work than organizational employment transitions (e.g., from individual contributor to supervisor). To date, only one study has attempted to empirically test this assertion. Ortqvist and associates (2007) measured entrepreneurs' perception of their role redefinition (self-reports of negotiating different expectations or changing personal priorities or expectations of self) and role behavior (increasing performance or passively withdrawing or engaging in diversions). They found that negotiating expectations and increasing performance to meet role expectations associated with higher venture performance.

More research on role taking and shaping of entrepreneurs could follow and use a finer grained approach to self- and other expectations about behavior as entrepreneurs develop. While there are many provocative research questions, we propose these: To what extent and how accurately and effectively do role schemas develop out of active experience (class room activities, role modeling) compared conceptualizing (reading/watching about entrepreneurs in the media)? To what extent do entrepreneurs experiment with imitation and find "true-to-self" behavioral

strategies or roles and evaluate those strategies (Ibarra 1999) and are these more effective than other processes that result in behavioral strategies? How much novelty, autonomy, and discretion (Nicholson 1984; Parasurman et al. 1996) do entrepreneurs have in creating their role at the various transitions from nascent, start up, small business, family business, growth business, publicly traded/acquired business? To what extent do factors such as cognitive complexity, role breadth, self-efficacy, and situational attributes such as feedback and time spent "acting as if" mediate transitions in entrepreneur's roles (Neale and Griffin 2006)?

15.4.5 Creativity

This section takes a turn from our previous considerations above insofar as entrepreneurial creativity is an enormous construct worthy of a book on its own merits. Creativity research is also far from being "behavioral" in the way we call for. Creativity in entrepreneurs encompasses traits, intelligence, processes, abilities, competencies, and behaviors that produce effective novelty, generating variations that have relevance to the situation or task at hand (Amabile 1996). This creativity applies importantly to opportunity identification (Corbett 2005; Ward 2004). In addition to playing an important role in shared leadership (Pearce and Manz 2005), creativity competence plays a role in the growth stages of a venture (Baum and Bird forthcoming).

Generally most scholars accept that creativity is a cognitive and behavioral process (Csikszentmihalyi 1996), similar to problem solving, that begins with some sort of tension, followed by preparation (information collection and immersion), incubation, insight (articulation or expression), evaluation, followed by elaboration and iteration where the "devil is in the details." The process is rarely linear but iterative and recursive and includes both conscious search and expression but also often deeply subconscious incubation. Most creative insight comes as a result of immersion in an intellectual, economic, or social domain and/or immersion in a problem or object of curiosity. In many organizational and educational settings, the problems are presented and the individual asked to apply themselves to develop a solution. Presented problems often have a "rightness" or rationality criteria applied (or implied) to solutions, from cost-effectiveness, political correctness, timeliness to fit with prototype (as in educational settings where we grade exams, case solutions, and research assignments).

Finding problems (opportunities) worthy of solution (or new venture creation) may emerge from the three sources provided by Csikszentmihalyi (1996). One source is personal life experience, including overcoming deprivations and setbacks, a life-long habit of curiosity, or frustration with a product or process in the marketplace. The second source is knowledge of the domain and recognition of anomalies or gaps in knowledge and/or the ability to bridge to other domains. The third source is the larger social environment that might include having trusted "think tank" friends or advisors and the emotional intelligence or "presence of mind" while experiencing social or economic chaos. Whatever the source, creativity takes

incubation time, time for reflection, and puttering – sometimes only moments and at other times, years.

Most of the approaches to creativity in entrepreneurship and the larger domains of organizational behavior and psychology have not addressed creative behavior in the way we call for in this chapter (molecular enough to specify the observable actions taken). It turns out that measures of individual creativity in these larger domains vary widely in what they measure, what audience is appropriate for the measure, and usefulness in surveys, field studies, and experimental design. Most psychology and organizational behavior approaches look for personality precursors (openness to experience, tolerance for ambiguity), while others more in line with this book focus on cognition to assess individual creative capacity (Simonton 2003).

Psychologists partition the measurement of creative capacity into *creative products* such as drawings, lists, stories, etc., and *creative cognitions* which individuals use to generate these products (Cropley 1999, 2000). Organizational behavior researchers have looked at patents or idea disclosures and superior/peer ratings of individual innovativeness (which are correlated) (Keller and Holland 1982; Tierney et al. 1999). Creative products (perhaps including patents and idea disclosures) require an expert panel of judges whose expertise is in itself a source of variance although rigorous methods for this type of qualitative measurement have been developed (Boyatzis 1998).

Although there are measures of creative cognition (Guilford 1962; Torrance 1965; Treffinger 2003; Treffinger et al. 1971), these measures and others less well known are inappropriate for surveys and for field studies of entrepreneurs as they are timed and generally oriented to a school environment. In addition, these measures which focus on divergent thinking have been criticized as not tapping the whole of creative capacity (Torrance 1965). In addition, debate lingers over whether divergent thinking (or creative intelligence for that matter) is a generalized capacity or domain specific.

More recent efforts show a broad range of creative processes (problem construction or problem finding, information encoding, category selection, and category reorganization and combination) can be assessed and significantly contribute to problem solution quality and originality (Mumford et al. 1997). Of these, problem construction is the earliest to operationalize and closest to opportunity identification and thus to entrepreneurship. These scholars (Mumford et al. 1994; Mumford et al. 1993) used four complex and ill-defined problems and respondents chose four alternative definitions of the problem from a previously developed list of 16, which varied in use of original goals, approaches, information, and restriction of problem construction. Both of these studies used unidentified expert judges to rate quality and originality of solutions. The four problems include (1) diplomat with State Department sees colleague who has had too much to drink at a social event, (2) athlete representing your country told by a doctor he/she is going to need surgery, (3) principal at an elementary school with a snake that got loose, and (4) student on a team project with a member not showing for meetings. An additional two problems perhaps more relevant to entrepreneurship are not published.

Thus when Baum and Bird (forthcoming) wanted to assess creative intelligence of entrepreneurs using survey methods, they chose Mednick's (1968) Remote Word Association Test (RAT) as extended by Bowden and Jung-Beeman (2003). RAT measures divergent and creative thinking by testing individuals' ability to see associative concepts among 30 sets of three words (e.g., Water:Tobacco:Stove = Pipe). RAT is a commonly used measure of creativity and has been shown to correlate with supervisor ratings of creativity (Fong 2006), which is the most common operationalization of individual creativity in OB. This worked well in their study of successful intelligence, which helped to predict new venture growth.

What of the behaviors that lead to outputs judged creative? Getzels and Csikszentmihalyi (1976) looking at problem finding and construction found that art students faced with the task of drawing still life images who did more manipulation of more of the objects (of a fixed set provided), who chose unusual combinations of objects, and who erased and changed their drawing more often produced drawings that were judged (by lay people, artists, and expert judges) as being more creative. This study found that time spent finding the problem and working out the "devilish details" of solutions is important for esthetic value and originality.

Creative problem finding and problem solving seems to engage the whole person. Gelb (1998) who consults on creativity in organizations thinks that curiosity (perhaps behaviorally assessed by asking good questions), actively engaging all senses, and developing kinesthetic or physical grace, poise, and fitness are important (and behavioral) contributors to creativity. He also proposes "mind mapping" as a way to actively and concretely explore the relationships among facets or ideas (that may be part of an opportunity or problem). Likewise Twyla Tharp, a noted dancer and choreographer speaks of developing rituals of preparation, organizing in boxes (literally), and "scratching" for a good idea which for a fashion designer maybe visiting vintage stores, for an actor it may be doing theater games or improvisation, for others it is reading, talking with others, etc. (Tharp 2003). These writers suggest that creativity is indeed behavioral and not "merely" a function of predispositions or cognitions.

15.4.6 Opportunity Discovery

Like creativity, opportunity recognition and discovery is a largely cognitive process (and thus not behavioral). However, there is an emerging behavioral approach to this important competency of entrepreneurship. This approach begins with identifying the differences in cognition and behavior between novice and repeat entrepreneurs who become "experts" in opportunity recognition. Thus while some scholars claim that entrepreneurs discover opportunities by accident or luck by being alert (Kirzner 1997), other research shows that repeat entrepreneurs actually engage in an active search for opportunities based on their existing knowledge. One scholar in particular, James Fiet, has made substantial contributions to this area (Fiet 2002, 2007). Based on information economics (e.g., Hayek 1945), Fiet argues that repeat entrepreneurs engage in a constrained, systematic search when they discover

opportunities. In an experiment, Fiet and Patel (2008) found individuals in the alertness group found 35 ideas of which one was high potential, whereas the group using constricted, systematic search identified 24 ideas of which nine were high in wealth-generating potential.

Fiet (2002, 2007) argues that specific knowledge (knowledge about people, places, technology, timing, and special conditions), which is a subset of prior experience and which is also seen as practical intelligence (Baum et al. 2009), is the basis for active opportunity discovery. In effect, opportunity discovering behaviors of repeat entrepreneurs are focused intentional acquisition and use of specific knowledge. These "behaviors" would include selection, identification, choice, specification, interpretation, revision, and interaction with other people.[2] These behaviors are evident in the opportunity discovery process as follows: First, based on the entrepreneur's prior specific knowledge, the entrepreneur selects information channels. An information channel is a relatively low-cost source of new specific information capable of directing the entrepreneur's attention toward opportunity discovery based on what and whom they know already. The search is thus actively constrained by the entrepreneur's prior knowledge and choice of information channels. Second, after choosing the information channels, the entrepreneur clusters the information channels into consideration sets to maximize results. A consideration set is a group of information channels that hold promise to be helpful for the entrepreneur to locate opportunity. Third, from the consideration sets the entrepreneur searches for signals (new information that provides view of the future, especially as it relates to new venture creation and wealth generation) that the entrepreneur interprets as the existence of an opportunity.

While constrained, systematic search for opportunity discovery is illustrated above for the individual; it is also applicable to teams. Actually, it may justify why entrepreneurial teams outperform ventures created by an individual (Baum and Silverman 2004; Chandler and Hanks 1998; Schjoedt 2009; Schjoedt and Kraus forthcoming). The benefits of team search for opportunity are based on team diversity expanding the number of information channels that comprise the consideration sets. This may also explain why shared leadership and intra-team communication (e.g., debate) enhance venture performance (Ensley et al. 2006a).

Clearly more refinement on opportunity search behaviors could help expand the knowledge and usefulness of entrepreneurial behavior. Search behaviors must necessarily include some communication behaviors (e.g., listening and reading). How is search behavior different from communication behavior? What methods and sources of search are used, how frequently, and in what order? While constrained by existing knowledge, do differences exist in systematic search behavior across industries? Are search behaviors different at different times in industry development? These and other research questions warrant our further attention.

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[2]Other than interaction with others, these behaviors may or may not be observable. As stated, they are lacking specificity we recommend.

15.5 Concluding Remarks

One cannot think one's way to creating a new venture. Actions in the form of concrete behaviors are necessary for new venture creation and organizational birth. Thus for the field of entrepreneurship research to provide valuable contributions to entrepreneurs, educators, and society, advances in the area of entrepreneurial behavior are critical. While 12% of the articles published in two top entrepreneurship journals – *Entrepreneurship Theory and Practice* and *Journal of Business Venturing* – over a 3-year period (2005–2007) addressed entrepreneurial behavior, more can be done to clarify what entrepreneurs do to enact their intentions. Greater specificity of behaviors will benefit our research and teaching.

With this chapter, we offered five behaviorally anchored research areas – leadership, communication, behavioral roles, and two less behavioral but critically important areas – creativity and opportunity discovery. These areas have scholars, research, and methods (organizational behavior, sociology, and behavioral psychology), which may be adapted and joined to our specific domain. In doing this, we emphasize three critical issues. First, entrepreneurial behavior consists of *discrete units of action that can be observed by others* – they are visible, auditory, and/or kinesthetic and if others are present, social or potentially interpersonal in nature – *they are "sized" to be meaningful*. However, today many of the "behaviors" considered in entrepreneurship research are not discrete but complex and often ill defined as they are broad and unspecific in nature (e.g., initiating investor relationships, preparing a business plan, articulating a business idea).

Second, we need to develop our own agreed-upon set of core behaviors and from this develop psychometrically sound empirical tools (similar to the work on leadership). Entrepreneurial behavior may be inherently more complex or multidimensional than the leadership in extant organizations that has been well measured and which spawned the situational and contingency approaches. Entrepreneurs face a process and stage of organization phenomena that may require different behaviors. However, if we begin with a manageable context such as start-up and nascent ventures, we stand a chance to accomplish our equivalent Entrepreneurial Behavior Description Questionnaire. A common core of behavioral constructs, if not measures, would allow theories of and empirical research on entrepreneurial behavior to accumulate. From this, we could also advance observational studies of entrepreneurial teams, role taking, communication, and creativity of individuals and teams as well as opening other fertile areas for research.

Third, however we measure behavior we need to do so more rigorously than the current state of the field. Single-item measures and self-reports need to be supplemented with methods drawn from the other disciplines of organizational behavior, sociology, and behavioral psychology. Minimally we need to control for social desirability bias. More innovatively, we could do behavioral sampling (beeper or diary studies), laboratory and field experiments (or quasi experiments) where behavior is a specified variable.

In sum, we call for more studies and better operationalizations of entrepreneurial behavior. We also caution against blindly adopting models, theory, and even

measures from organizational behavior, which have evolved in studies of larger, mature organizations. We have no reason a priori to expect entrepreneurs to behave as the leaders studied by the Ohio State researchers (Hemphill and Coons 1957) nor do we have any reason to suppose that there is a path-goal model to entrepreneurship such as that developed by House (1996). Likewise, the received knowledge of organizational behavior, sociology, and behavioral psychology needs to be well understood and critically applied to our domain.

Finally, if the postulates of this book are even in part true or verified, then entrepreneurial behavior broadly defined, would likely be seen in contexts that extend beyond the start-up new venture. With careful theorizing and better (general) measures of the entrepreneurial mind and entrepreneurial behavior, we might find people forming intentions, making choices and behaving entrepreneurially in a myriad of contexts including governmental agencies, non-governmental organizations, communities, families, and temporary settings such as rush hour subways, twitter collectives, singles bars, and natural disaster management.

> We have to understand the world can only be grasped by action, not by contemplation. The hand is more important than the eye . . . . The hand is the cutting edge of the mind. – Jacob Bronowski

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