

TOWARD AN INTEGRATION OF THE BEHAVIORAL AND COGNITIVE INFLUENCES ON THE ENTREPRENEURSHIP PROCESS

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Research summary: *Entrepreneurs develop innovations, fulfill customer needs, and spur economic growth by recognizing, evaluating, and exploiting opportunities. Despite progress, scholarly understanding of how entrepreneurs achieve these objectives may be incomplete. For instance, little explanation exists for why entrepreneurs may pursue activities seemingly at random, nor is there a clear endpoint to the entrepreneurship process. To address these concerns, we present a framework that integrates sensemaking and structuration perspectives to specify the cognitive and behavioral influences on the entrepreneurship process. Within this framework, entrepreneurs ultimately pursue opportunities through developing and deploying capabilities to create value for customers.*

Managerial summary: *While entrepreneurs' initial insights regarding innovations and customer needs are important, these insights are only the beginning of an interactive, iterative path that ends with the formation of an organization that can reliably produce value for customers. One of entrepreneurs' most important tools along this path is their set of scripts. Scripts help define how entrepreneurs act and interact so they can fully understand market needs and develop the means for solving these needs. In this paper, our objective is to describe how these scripts help entrepreneurs do the hard work of thinking and acting to effectively create new venture capabilities and to explain how entrepreneurs, who may possess similar sets of scripts, may nevertheless conceptualize different opportunities and solutions. Copyright © 2015 Strategic Management Society.*

INTRODUCTION

Entrepreneurs develop innovations, fulfill customer needs, spur economic growth, and improve the overall quality of life within society. The individual-

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opportunity nexus framework proposes that entrepreneurship, as a field of research, concerns questions related to the process through which individuals recognize, evaluate, and exploit opportunities in creating these valuable socioeconomic outcomes (Shane and Venkataraman, 2000). The individual-opportunity nexus has produced cohesion among those advancing entrepreneurship theory (Short *et al.*, 2010; Venkataraman *et al.*, 2012).

Despite significant progress, a need persists to develop a more comprehensive understanding of

how entrepreneurs engage the process. Increasingly, research suggests that entrepreneurs do not follow a consistent, preset path toward venture creation (e.g., Lichtenstein *et al.*, 2007). Moreover, scholars do not yet fully understand why entrepreneurial activities and behaviors unfold differently for different entrepreneurs (Zahra and Dess, 2001).

In response, our goal is to develop theory to explain the various means through which entrepreneurs recognize, evaluate, and exploit opportunities. To do so, we take into account the equally important and concurrent cognitive and behavioral mechanisms to explain why multiple paths of entrepreneurship can exist to pursue opportunities. More specifically, we integrate theory on sensemaking (Weick, 1979, 1995) and structuration (Giddens, 1984) to explain the cognitive and behavioral mechanisms that entrepreneurs use to recognize, evaluate, and exploit opportunities (i.e., unmet market needs (Eckhardt and Shane, 2003)).

In doing so, we introduce two notions. *Opportunity conceptualization* refers to how entrepreneurs make sense of unmet market needs they have recognized. In a complementary sense, *solution conceptualization* refers to how entrepreneurs make sense of how they develop and deliver market value through venture activities in addressing the conceptualized opportunity. These two notions are premised on the idea that entrepreneurship does not unfold via a ‘single person, single action, single insight, or any other single factor’ (Dimov, 2011: 59). Rather, opportunities and solutions are viewed as dynamic conceptualizations, beginning as initial beliefs with the potential to form into well-conceived value-creating meanings through multiple actions and interactions that entrepreneurs undertake (Venkataraman *et al.*, 2012). That is, the conceptualization of an opportunity and solution, from a cognitive standpoint, is supported by an entrepreneur’s behaviors. Entrepreneurs, who are embedded in a social structure, acquire behavioral patterns from their social structure and retain them in memory. These behavioral patterns, called scripts, guide entrepreneurs’ efforts through the various stages of the entrepreneurship process, allowing them, in turn, to transform their social structure (e.g., create a new venture, develop solutions for market needs).

Congruent with extant models of entrepreneurship (Alvarez, Barney, and Anderson, 2013), our model begins with beliefs about future environmental conditions that spark entrepreneurs’ initial conceptual-

izations. These conceptualizations can then manifest either into venture capabilities or into entrepreneurs’ understandings that there are no opportunities or no viable way for them to exploit the opportunities. These latter conceptualizations lead to venture termination. Within our theoretical framework, entrepreneurs arrive at conceptualized opportunities and solutions (or not) through simultaneous and iterative cognitive activities and behaviors.¹

We seek to make several theoretical contributions. First, we address calls for increased understanding of the entrepreneurship process (Shane, 2012). Our theorizing attempts to unite disparate work on the cognitive activities and behaviors of entrepreneurs, providing a stronger foundation for future research. Our notions of opportunity conceptualization and solution conceptualization seek to begin building a bridge for explaining how entrepreneurs’ initial recognition of opportunities can influence how, why, and when entrepreneurs eventually exploit opportunities. Also, we provide theorizing that informs why the entrepreneurship process can unfold very differently across entrepreneurs, based on cognitive and behavioral idiosyncrasies and unique contextual conditions. An additional contribution concerns the fact that sensemaking and structuration theories have traditionally emphasized cognitive and behavioral influences on individuals, respectively. By integrating these theories, we present a finer-grained understanding of the influences underlying individuals’ efforts, taking into consideration joint cognitive and behavioral influences on the entrepreneurship process (Venkataraman *et al.*, 2012).

THEORETICAL FRAMEWORK

Entrepreneurs’ activities and behaviors are shaped by the interactions they experience within their external environments (Chiasson and Saunders, 2005; Venkataraman *et al.*, 2012). We next discuss sensemaking and structuration theories in order to lay the foundation for our theoretical model.

¹ As process-based perspectives, both sensemaking and structuration discuss individuals’ activities. As noted, although both perspectives recognize the importance of cognitive and behavioral activities, sensemaking predominately emphasizes *cognitive* activities and structuration predominately emphasizes *behavioral* activities. For the sake of clarity, we discuss sensemaking ‘activities’ and structuration ‘behaviors.’

Sensemaking

In our view, beliefs are initial ideas or suppositions that are, for the most part, unexplained and unformed within individuals' minds, but that can become the basis for greater understanding. When individuals develop new beliefs, they may attempt to discern the meaning of the new beliefs in regard to their existing knowledge as well as the implications that the beliefs may have on their expectations of the future (Weick, 1995). The source of new beliefs may be either exogenous or endogenous to an individual (Alvarez *et al.*, 2013). New beliefs are derived exogenously when individuals perceive unexpected environmental conditions and encounter either uncertainty or a departure from what they expected, which reveals either gaps in their knowledge or incorrect expectations (Balogun and Johnson, 2004). In contrast, imagination and creativity serve as endogenous means through which individuals originate and form new beliefs (Felin and Zenger, 2009). As individuals seek to more fully understand their exogenously or endogenously derived beliefs, they rationalize a new understanding of their situation. This cognitive process is called sensemaking, and it constitutes individuals' acts of assigning meaning to a gap in their understanding.

Whether exogenously or endogenously stimulated, sensemaking occurs through the interplay between the environment and individuals' cognition (Weick, 1979; Weick, Sutcliffe, and Obstfeld, 2005). The sensemaking process evolves through the activities of attention, selection, and retention. New beliefs create equivocality and may uncover sources of uncertainty, which allow individuals the potential to form new conceptualizations of their reality. *Attention* refers to individuals' perceptions of new beliefs: individuals bracket their attention around cues that signal potential deviation, and they train their focus on them (Weick, 1979). Next, *selection* occurs once individuals interpret the meaning of the new beliefs within the context of their prior knowledge and environmental conditions. Finally, *retention* is the individuals' internalization or storage of their interpretations. Retention is dependent on how well the interpretation fits with individuals' cognitive frameworks that define plausibility, effectiveness, or some other form of acceptability. Individuals' interpretations will be retained until subsequent deviations in beliefs challenge their accuracy (Weick *et al.*, 2005). The outcome of the sensemaking process is an interpretation for the new

beliefs that subsequently inform individuals' behaviors (Campbell, 1988; Weick 1979). In other words, beliefs can transform into individuals' conceptualizations via sensemaking.

Structuration

Whereas the sensemaking perspective primarily emphasizes individuals' cognitive activities triggered by new beliefs that subsequently inform behavior, the structuration perspective more directly addresses individuals' behaviors and their outcomes. The structuration perspective also provides a framework for examining the dual nature of social structure and agency and how each interacts and instantiates the other (Giddens, 1984). Social structure refers to the sets of rules and resources that exist across time and space, whereas agency describes individuals who are able to 'make a difference' by exercising influence (Giddens, 1984: 14). Social structure guides and constrains behaviors (Giddens, 1984). However, social structure cannot exist as an ongoing phenomenon of social life without independent actors' behavior, which perpetuates and even alters structure.

Social structures influence individuals' behaviors through scripts. Scripts are defined as the 'observable, recurrent [behaviors] and patterns of interaction characteristic of a particular setting' (Barley and Tolbert, 1997: 98). Individuals acquire scripts through social interaction, which they can either replicate or revise (Chiasson and Saunders, 2005). There are three types of social structures, each of which contains sets of unique scripts (Giddens, 1984).² *Signification structures* contain scripts that influence the behaviors through which individuals search and perceive, *legitimation structures* contain scripts that influence the behaviors through which individuals interpret, and *domination structures* contain scripts that influence the behaviors through which individuals acquire and control resources.

² Although Giddens does not explicitly discuss scripts or types of scripts, he does discuss individual-level practices, which are analogous to scripts (Barley and Tolbert, 1997; Giddens, 1979). Moreover, Giddens' (1984) notion of a duality of structure suggests that what exists at the structural level (i.e., signification, legitimation, and domination structures) must also exist at the individual level (i.e., signification, legitimation, and domination scripts). Therefore, to conceptualize structuration at the individual level, it may be useful to think of three different types of scripts and how those scripts facilitate the creation of new social structures, such as entrepreneurial ventures.

Scripts are derived from social structure and retained in individuals' memories. Various forms of experience, whether educational, functional, social, observational, or otherwise, contribute to script development (Baum, Li, and Usher, 2000; Gioia and Manz, 1985; Posen and Chen, 2013). Individuals learn through experiences; as they encounter variations in experience, they can tweak or revise scripts (e.g., Kolb, 1984; Gioia and Poole, 1984). Script revision can involve adding detail to a script, developing increasingly abstract scripts that enable individuals to behave appropriately in a wide range of similar situations (e.g., moving from a specific script related to visiting a particular doctor's office to a generalized 'doctor's office script') or, in some cases, even wholesale abandonment of a given script and development of wholly new ones (Baum *et al.*, 2000).

Scripts help resolve uncertainty by guiding behaviors in common social settings and interactions. Just as theater actors and directors use written scripts to chart the sequence of events and lines in a play, individuals rely on scripts to inform the sequence of events and behaviors in real-life situations (Abelson, 1981; Schank and Abelson, 1975). Specific contexts trigger individuals' use of scripts, and individuals may possess a broad cache of scripts appropriate for a wide range of situational experiences. Specific scripts are cued by signals that individuals perceive in a given situation, whether the college classroom, a doctor's office, or an entrepreneurial venture. The cues trigger individuals' memories regarding similar prior situations and enable them to reproduce behavior that was most useful and accepted in the past.

As the typicality of a situation increases, so does the likelihood that individuals will use scripts to behave in those situations. At one extreme, where situations are the most frequently experienced, individuals need not actively process information regarding the behavior to perform, and scripts may be followed automatically and unconsciously (Barley and Tolbert, 1997; Gioia and Poole, 1984). At the other extreme, where an individual encounters a situation that is wholly unique, behavior is likely to be largely unscripted because the situational cues are unfamiliar and the individual is not yet aware of the appropriate sequence of events or behaviors. Individuals' experiences in novel contexts can lead to forming new scripts, and individuals ultimately may begin to draw connections between the situations they routinely experience and the scripts they possess (Abelson, 1981; Gioia and Manz, 1985).

As patterns of behavior, scripts share certain characteristics in common with organizational routines and capabilities. Routines are defined as 'repetitive, recognizable pattern[s] of interdependent actions, involving multiple actors' (Feldman and Pentland, 2003: 96). Individuals' scripts may help define the activities underlying organizational routines; however, routines (and, hence, capabilities) are retained at the venture level and constitute a shared agreement among individuals about how to perform specific tasks (Feldman and Pentland, 2003). Individuals may cycle in and out of a venture, but the routines in that venture remain largely intact. In other words, the existence of routines is not dependent on the performance of a single individual. In a way, organizations may be thought of as microsocial structures containing sets of routines that script the behaviors of individuals within them (Giddens, 1984; Salvato and Rerup, 2011). Not all routines in a venture are directly tied to value creation (e.g., functions such as payroll processing, maintenance, and janitorial services); however, routines that contribute to a venture's ability to create market value constitute capabilities (Winter, 2003).

MAPPING THE ACTIVITIES AND BEHAVIORS OF ENTREPRENEURSHIP

Figure 1 presents a framework to explain the cognitive and behavioral dimensions that influence how entrepreneurs engage the entrepreneurship process. The framework consists of three phases. In *attention*, entrepreneurs form new beliefs either exogenously or endogenously. Signification scripts influence how entrepreneurs search and perceive, thereby facilitating their efforts to form new beliefs. In *selection*, entrepreneurs begin resolving the ambiguity and uncertainty underlying their new beliefs, remaining open to and incorporating feedback they receive from subsequent social interactions. Drawing upon legitimation scripts, entrepreneurs come to believe they understand how the environment works and more fully conceptualize an opportunity and solution (i.e., an innovative product or service and a venture to produce it (Hsieh, Nickerson, and Zenger, 2007)). Entrepreneurs then mobilize resources to deliver their solution to the market, guided by domination scripts. Through recursive iterations, entrepreneurs' activities and behaviors can lead to the *retention* of scripts that may form the basis for their ventures' routines and capabilities. In other cases, entrepre-

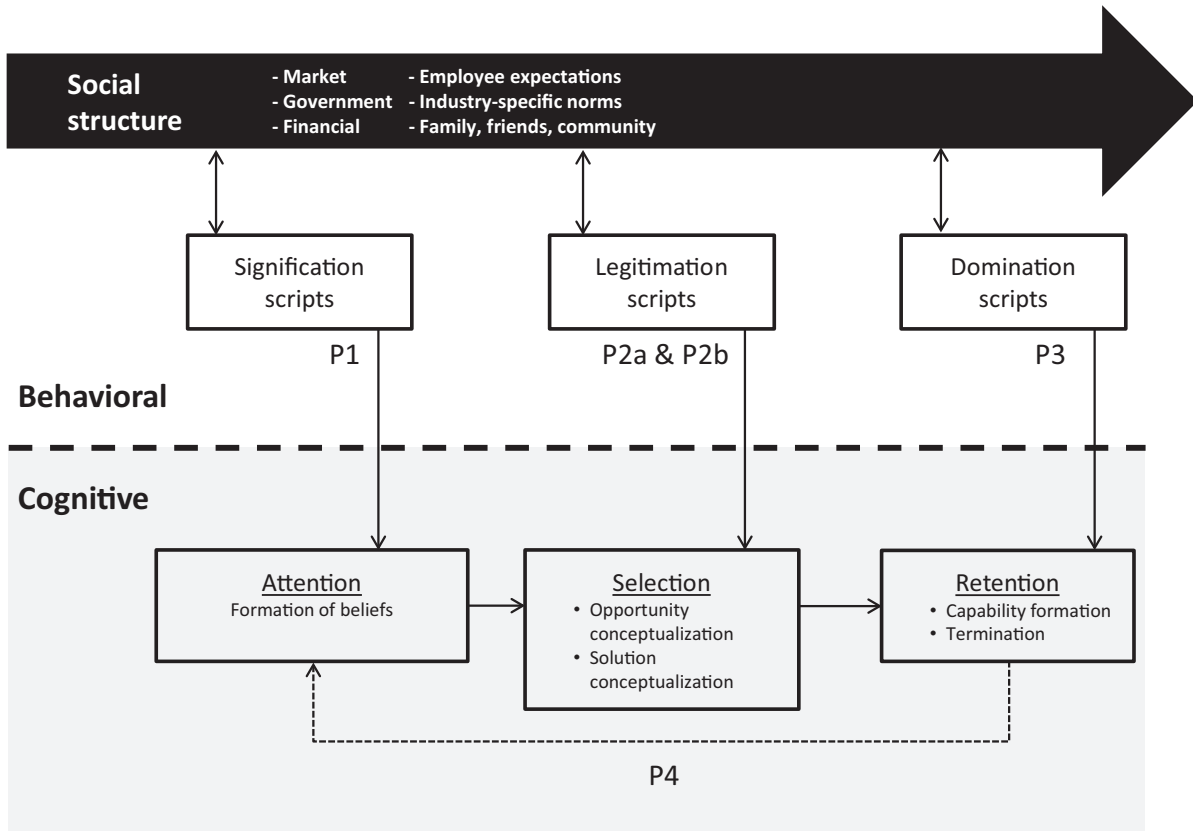


Figure 1. Integrated model of the cognitive and behavioral influences on the entrepreneurship process

neurs reject the meaning of their initial beliefs and abandon their venture activities (i.e., venture termination).

Attention: belief formation


The earliest stage of conceptualization starts with a belief held by entrepreneurs that an opportunity or a solution exists with the potential for value creation (Wiklund, Davidsson, and Delmar, 2003). Entrepreneurs may form new beliefs in several ways. First, through experience, entrepreneurs may form convictions about the nature of the past experience and come to hold expectations regarding the future (Zollo and Winter, 2002). Second, observation and communication can be important sources of information that enable entrepreneurs to develop beliefs about the environment without acquiring first-hand experience (Dyer, Gregersen, and Christensen, 2009; Ozgen and Baron, 2007). Third, entrepreneurs have been described as individuals who are motivated to imagine futures (Kirzner, 1985), which are a type of

belief. While these imagined futures are partly related to an entrepreneur’s past experience, they may also be an outcome of imagination and perceiving new associations across existing information (Felin and Zenger, 2009).

Signification scripts facilitate belief formation by enabling entrepreneurs to become attentive to new information. Specifically, entrepreneurs deploy signification scripts to observe the environment, communicate with others, and shape their own idea-generation processes. Information becomes the raw material with which entrepreneurs brainstorm and imagine new possibilities. Signification scripts provide behavioral support for entrepreneurs’ brainstorming and imaginative efforts, which can result in new information associations.

Through their experiences, entrepreneurs acquire signification scripts that enable them to more effectively form new beliefs regarding opportunities and solutions. Experienced entrepreneurs tend to possess a wider and more complex array of signification scripts than do novice entrepreneurs, and

Table 1. Examples of script differences between novice and experienced entrepreneurs

	Signification scripts	Legitimation scripts	Domination scripts
Definition	Signification scripts enable individuals to search and perceive.	Legitimation scripts enable individuals to interpret environmental conditions.	Domination scripts enable individuals to acquire and control resources.
Novice	Read a newspaper regularly.	Discuss the usefulness of a new product with a family member or friend.	Hire friends to fill positions.
	Actively solicit new information from the environment by speaking with knowledgeable industry figures.	Conduct beta tests of a product with community of users.	Determine principal job requirements and begin to hire people based on fit.
	Experienced	Conduct customer focus groups to gather information related to unmet market needs.	Use test marketing to determine the viability of a product on a mass scale.

experienced entrepreneurs may also use scripts differently than novice entrepreneurs (e.g., Baron, 2006). For instance, novice entrepreneurs tend to seek information that would support beliefs that disruptive, novel opportunities exist, while experienced entrepreneurs seek information that support beliefs that more strongly feature profitability or low risk (Baron and Ensley, 2006). Table 1 further illustrates how entrepreneurs may possess and use more or less complex signification, legitimation, and domination scripts. In this and the next sections, we describe how novice and experienced entrepreneurs differ in terms of the scripts they use and the complexity of such scripts.

In observing the environment for new information, novice entrepreneurs may use signification scripts that favor passive behavior, such as reading trade journals and newspapers (Hambrick, 1982). However, entrepreneurs who possess more sophisticated signification scripts, largely through experience, may require nuanced information, which is not commonly available in mass media. Entrepreneurs can then communicate with others as means to form new beliefs and to bracket their attention around specific concerns. For example, rather than simply take statements of 'the way things are' for granted, signification scripts may lead entrepreneurs to ask questions. Entrepreneurs with more advanced signification scripts ask 'what if' and seek to ask questions to which individuals do not likely know the answer (Dyer *et al.*, 2009). In doing so, entrepreneurs focus attention on inconsistencies that might form the basis for new beliefs.

Similarly supporting the formation of new beliefs are signification scripts that lead entrepreneurs to explore new intellectual terrain by meeting and conversing with new and different people or by tinkering with and taking apart existing products (Dyer *et al.*, 2009). At the most developed level, entrepreneurs acquire scripts that enable them to link specific types of information sought to specific sources, such as (1) leveraging new social media forms to talk with customers about new ideas or environmental conditions (e.g., Fischer and Reuber, 2011) or (2) distinguishing the value of involving different types of customers, such as lead users versus followers, in generating new beliefs (Coviello and Joseph, 2012).

Entrepreneurs with advanced scripts may emphasize engaging with generalized information sources. Instead of seeking substantive information to support a specific opportunity idea, they use these sources to increase the breadth of information, which may lead to more useful imagination efforts (e.g., Dyer *et al.*, 2009). Imagination is the 'creative and generative act for supposing, conceiving, and considering various new possibilities . . . for courses of entrepreneurial action' (Felin and Zenger, 2009: 134). Through imagination, entrepreneurs effectively open virtual lab spaces, where they can develop and test new ideas, conceive new markets, products and services, and consider alternative courses of action without the risk of error or expense of tangible resource investments (e.g., Wood and McKinley, 2010). With imagination, entrepreneurs perceive new associations within existing information and seek to form an image of what the future

might be like (Gaglio and Katz, 2001). Although these are cognitive activities, entrepreneurs may possess signification scripts that guide and facilitate their imagination activities. These scripts can be as basic as scheduling time each day away from other activities for the purpose of thinking about new ideas. As scripts develop to improve imagination efforts, entrepreneurs may acquire specific creative thinking techniques, such as metaphorical thinking or thinking out loud to themselves (e.g., Gaglio, 2004). More sophisticated signification scripts might guide the use of group-based approaches, such as creating regular intra- and interdepartmental brainstorming sessions, fostering a sense of openness that welcomes others to share ideas, or setting aside money to incentivize the generation of novel ideas (Hansen and Birkinshaw, 2007).

In sum, signification scripts guide entrepreneurs' behaviors to access and attend to new information and to facilitate the cognitive activities that enable entrepreneurs to perceive patterns, thereby forming new beliefs. Consistent with this logic, we propose:

Proposition 1: Entrepreneurs' use of signification scripts is positively related to the formation of new beliefs.

Selection: conceptualizing the opportunity and solution

In selection, entrepreneurs work to more fully conceptualize their beliefs. At this stage, the new beliefs, whether exogenously or endogenously motivated, remain internalized by entrepreneurs, and the beliefs may have little in common with objective market conditions (i.e., they could be completely 'right' or 'wrong'). At this point, actions taken to exploit the opportunity are uncertain, as the entrepreneur is unaware of both the possible outcomes of his/her actions or the chances of success (Knight, 1921). Selection provides at least some resolution of uncertainty for entrepreneurs, who piece together *ex ante* meaningless data in the environment to create meaningful patterns of information (Mills, 2003). In this way, selection involves entrepreneurs seeking additional evidence to enhance and support their initial beliefs. Importantly, selection leads to the understanding of two key aspects related to opportunity exploitation: (1) the extent to which environmental conditions exist as an opportunity to create value (versus as situational conditions that are threatening or nonrelevant); and (2) how entrepreneurs can

create value via innovation and venture creation (i.e., entrepreneurs' solution to the conceptualized opportunity) (Hsieh *et al.*, 2007; Shane, 2012).

Legitimation scripts enable the conceptualization of opportunities and solutions by defining feedback-seeking and evaluation behaviors. To understand the environment, entrepreneurs may seek out information regarding the presence of a market, funding access, availability of raw materials, dynamism of relevant technologies, presence of existing or future competitors, and other factors influencing their ability to create market value. Examples of legitimation scripts entrepreneurs use to discern these factors include surveying and analyzing prospective markets, engaging in discussions with suppliers and other vendors regarding potential contract terms, resource availability, and costs, and observing and experiencing competitors' products (Hill and Levenhagen, 1995).

In terms of surveying and analyzing the market, various legitimation scripts are relevant. Novice entrepreneurs' legitimation scripts may guide them to favor family and friends as 'customers' in interpreting their new beliefs (Shah and Tripsas, 2007). These interactions provide an initial comfortable setting: entrepreneurs use these stronger, trusting relationships with family and friends to solicit feedback without potentially alienating actual customers (Hite, 2005). While recognizing the value family and friends can provide as initial indicators of potential for value creation, entrepreneurs who are more experienced and/or possess additional levels of education related to understanding market needs may have more well-developed legitimation scripts that allow them to recognize that focusing on family and friends alone provides a potentially biased and incomplete assessment of the market (Hite and Hesterly, 2001). As such, these entrepreneurs' legitimation scripts may lead them to undertake broader market surveys to gain more detailed understandings of customers' needs and the specific attributes of customers that define the market niche.

When determining the viability of a perceived opportunity, entrepreneurs may also examine various aspects of competition to determine the extent to which they can appropriate value from their activities and behaviors. Some entrepreneurs may lack developed legitimation scripts in this regard and not fully realize the importance of thoroughly understanding the competitive landscape. In other cases, entrepreneurs with more developed legitimation scripts may intentionally observe competitors'

products in use to gain an understanding of these products' strengths and weaknesses. Entrepreneurs with even more developed legitimization scripts may go further and analyze competitors' strategies to understand their marketing tactics, market segments, and supplier strategies, which are central to understanding how competitors appropriate value and how the entrepreneurs, as new competitors, can effectively enter the market (Morgan, Vorhies, and Mason, 2009).

Legitimation scripts guide entrepreneurs' behaviors to interpret the meaning of their initial beliefs. The interpretation that occurs during selection shapes entrepreneurs' understanding of the various aspects of their environment that have the potential to build upon and inform their initial beliefs. As such, entrepreneurs' conceptualizations develop in terms of whether an attractive opportunity exists. Accordingly, we propose:

Proposition 2a: Entrepreneurs' use of legitimization scripts is positively related to opportunity conceptualization.

Entrepreneurs can also use legitimization scripts to conceptualize a solution in relation to their conceptualized opportunity. Entrepreneurs' solutions refer to their innovations and how they organize their ventures to leverage their innovations in addressing market wants and needs (Hsieh et al., 2007). In supporting the conceptualization of their solutions, legitimization scripts may lead entrepreneurs to circulate prototypes of new products or services, write and circulate business plans, and talk to others in the industry to develop operations plans, among other considerations. Business planning represents an important legitimization script through which entrepreneurs interact with important stakeholders. Interestingly, research shows that there is significant variance in the nature of entrepreneurs' legitimization scripts concerning the value of formal business planning. Some entrepreneurs have developed legitimization scripts that strongly disfavor formal planning, based on the logic that such planning takes too much time from the venture and that the environment changes so quickly that a plan is almost immediately obsolete (Brinckmann, Grichnik, and Kapsa, 2010).

Other entrepreneurs' legitimization scripts uphold the value of business planning. These scripts are based on the notion that writing business plans helps entrepreneurs establish the logic underlying not only the perceived environmental change but also the new

means-ends solution proposed to exploit these perceptions (Amit and Zott, 2001). Business planning forces entrepreneurs to consider important factors regarding their ventures, such as operational, marketing, and administrative considerations as well as the linkages among them. While aspects of plans are often proven inaccurate after start-up, the process of planning can nevertheless help entrepreneurs more clearly articulate objectives, identify and compensate for potential challenges, and respond more effectively to unforeseen events (Delmar and Shane, 2003).

Entrepreneurs also obtain market feedback regarding the specific products or services they intend to sell. Concept testing and beta testing are among several types of legitimization scripts that allow entrepreneurs to capture important information about product or service efficacy. Each behavior involves presenting customers with a version of a product or service to determine whether it performs in the expected way and meets target customers' needs (Dolan and Matthews, 1993). Written, described, or virtual (e.g., computer simulations) descriptions of products or services characterize concept testing (e.g., Dahan and Srinivasan, 2000). Beta testing involves releasing upcoming products early in prefinished development despite flaws. Users are encouraged to identify the features they like and those they do not like as well as problems they discover (Dolan and Matthews, 1993). More broadly, each form of product testing facilitates further conceptualization at different costs and levels of customer involvement.

Separate yet complementary legitimization scripts then guide entrepreneurs in conceptualizing their solutions to their opportunities. Through various legitimization scripts, entrepreneurs can interpret whether their innovations and venture activities are likely to effectively solve customers' needs or not. Therefore, we propose:

Proposition 2b: Entrepreneurs' use of legitimization scripts is positively related to the conceptualization of solutions to opportunities.

Retention: capability formation

In retention, entrepreneurs use domination scripts to acquire, bundle, and leverage resources to organize around the conceptualized solution. Retention results in the development of capabilities, which are specialized routines directly related to creating value

from entrepreneurs' conceptualized opportunities (Weick *et al.*, 2005). Retention describes entrepreneurs' behaviors to transform their individual-level scripts into organizational-level routines and capabilities of a new venture. These behaviors manifest as the conceptualized solution, as the solution includes not only the new products and services developed by entrepreneurs, but also their ability to continually produce customer value by creating a new organization.

New ventures are often launched with little or no resources beyond what entrepreneurs possess (Ruef, Aldrich, and Carter, 2003). Moreover, the resources entrepreneurs need are in the hands of other more powerful actors who may be disinclined to provide support to a start-up (Villanueva, Van de Ven, and Sapienza, 2012). Therefore, entrepreneurs use domination scripts involving the exchange of valuable social assets as a means of obtaining resources essential to launching the venture. The social assets that entrepreneurs possess can range from the non-obligatory (e.g., entrepreneurs may exchange kindness or friendship for someone's knowledge) to the obligatory (e.g., entrepreneurs exchange a guarantee of a monetary return for someone's financial investment) (Starr and MacMillan, 1990). Such social exchanges are particularly useful for entrepreneurs at start-up, since they may have little to provide resource providers other than a promise of some future return, monetary or otherwise (Larson, 1992).

As we noted earlier, entrepreneurs tend to initially interact with family and friends through the use of signification and legitimation scripts. Entrepreneurs also may initially use domination scripts with friends and family to attract small investments. In doing so, entrepreneurs may appeal to family to allow them to pursue their dreams or may use some other emotionally tinged request for funding (Chen, Yao, and Kotha, 2009). Online calls for funding on Web sites such as Kickstarter, as well as other crowdfunding sources, are becoming more commonplace platforms to which entrepreneurs may be guided (by domination scripts) in securing initial sources of funding. To some extent, the crowdfunding Web sites help define the parameters and formats of these domination scripts when entrepreneurs upload information into provided templates. Entrepreneurs may also draw upon informal ties to mobilize other resources, such as office space, equipment, and labor, through norms-based domination scripts in bootstrapping arrangements (Winborg and Landstrom, 2001).

As entrepreneurs persist in opportunity exploitation behaviors, resource requirements grow. Therefore, entrepreneurs expand their use of domination scripts to acquire other resources, such as human capital (e.g., Leung *et al.*, 2006), knowledge specifically related to the production of new products and services (e.g., Yli-Renko, Autio, and Sapienza, 2001), and financing (e.g., Martens, Jennings, and Jennings, 2007). In terms of funding, entrepreneurs may need to accommodate formal investors' idiosyncratic preferences. For example, bankers favor funding requests that signal the potential for stable growth, whereas venture capitalists favor funding requests that offer much higher potential for growth despite perhaps heightened risks (Mason and Stark, 2004). As a second example, as ventures develop and become more complex, entrepreneurs seek to hire employees who are appropriate matches for open positions (Chatman, 1989). The domination scripts in this instance might include entrepreneurs participating in formal job fairs, relying on newspaper advertisements, and using recruiting services to find appropriate job candidates. Entrepreneurs may even establish increasingly complex hiring practices, including criteria for evaluation, promotion, and termination, and incorporate a human resources department within the venture to manage these complex processes (Cardon and Stevens, 2004).

As with signification and legitimation scripts, entrepreneurs can differ in terms of the extent to which their domination scripts are developed. For example, in deciding upon an outsourcing vendor, entrepreneurs who lack well-developed domination scripts may simply look online for a few vendors and request estimates on delivery timing and costs. Experienced entrepreneurs with more developed domination scripts, however, are likely to delve deeper, requesting information from multiple vendors on their previous projects, ongoing projects, and clients, as well as seek referrals from previous clients, resumes of the vendors' employees that will be dedicated to the entrepreneurs' projects, a description of the vendors' equipment that will be dedicated to the projects, and detailed schedules of delivery and explanations of the ramifications if schedules are unmet, among numerous other considerations (Brown and Wilson, 2005).

Domination scripts guide not only the acquisition of resources, but also how they can be bundled and leveraged to exploit an opportunity. As entrepreneurs organize activities around key functions, such as hiring employees, contracting with suppliers and

other partners, and performing operational functions, entrepreneurs' scripts may themselves become important resources in the ventures they create, defining the formation of routines. As described earlier, organizations contain routines, which are defined as patterns of behavior shared across members of a venture (Feldman and Pentland, 2003). In the entrepreneurship context, individuals are involved in creating new organizations and routines. As entrepreneurs acquire, bundle, and leverage resources, they may rely on their own set of scripts to guide this behavior. For example, as entrepreneurs hire employees, the tasks and roles given to the employees are defined by the entrepreneurs, who rely on their own scripts to create and communicate these tasks and roles.

Although routines have been referred to as 'truces' among all organizational members about how certain tasks should be performed (Eggers and Kaplan, 2013), in the new venture, the entrepreneur's scripts likely dominate this process. Intraorganizational meaning emerges as entrepreneurs share their scripts with others within the venture who adopt roles and appropriate behaviors accordingly (Crossan, Lane, and White, 1999; Simons, 1991). Just as retained meaningful perceptions leave imprints on entrepreneurs' minds, intraorganizational meaning exists as an imprint on the 'collective mind' of entrepreneurs' ventures (Nelson, 2003). Entrepreneurs can reinforce the shared meaning within their ventures through incentivizing certain behaviors, which they deem helpful to the ventures. An example of such a domination script includes offering outcome-based financial rewards to employees, which stimulates employees' performance (e.g., Jenkins *et al.*, 1998). Another example might include the practice of hiring employees who already possess many of the scripts that are valued in the venture as shared routines (e.g., Kristof-Brown, Zimmerman, and Johnson, 2005). Once these organizational patterns are established, they guide and maintain routines within the venture and become difficult to alter (Crossan *et al.*, 1999).

Routines can be important resources for a new venture by acting as knowledge repositories and reducing uncertainty. Successful behavior patterns are retained while unsuccessful ones are rejected (Winter, 1995). Useful routines constitute a venture's tacit knowledge, thereby serving as a potential source of competitive advantage (Becker, 2004). Also, routines serve an important role in resolving

uncertainty, with the routinization of behavior providing clarity in the face of ambiguous stimuli. Over time, some routines may form the basis of capabilities within ventures. A capability is a 'high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type' (Winter, 2003: 991). Capabilities derive from routines when entrepreneurs employ domination scripts to shape their ventures in ways that more effectively or efficiently address customer needs in inimitable ways (Salvato and Rerup, 2011). Capabilities are similar to routines in that they are composed of the shared activities and behaviors performed by individuals in a venture, and they take time, repetition, and feedback to establish (Helfat and Peteraf, 2003).

For instance, an entrepreneur at an Internet start-up may require programmers to take customer service calls rather than hiring customer service employees. This new routine may not initially improve the venture's ability to create value for customers. However, as the programmers acquire more experience answering these calls, receive constructive feedback from customers, and learn how the existing solution fails to address customer needs, the programmers can incorporate this technical feedback directly into enhancing the solution. The routine of having programmers act as customer service representatives may enable a competitive advantage by having technicians interact more closely with customers and more directly diagnose the exact cause of customer problems (as opposed to more general customer support staff who lack the technical background and, hence, may be more likely to provide ambiguous and unintentionally incorrect information to the programmers). In turn, using programmers as customer service representatives can provide a value-creating solution conceptualization that will be difficult for competitors to imitate. At that point, a capability exists.

Just as the different domination scripts that entrepreneurs use can affect the types of routines developed in a venture, they can also influence the type of capabilities that are developed (Helfat and Peteraf, 2015). For example, scripts that emphasize the need for reducing transaction costs may lead ventures to invest in contracting activities with key suppliers or partners to more efficiently address potential holdups or unforeseen events *ex ante* (e.g., Argyres and Mayer, 2007). Entrepreneurs with technical or engineering scripts may influence their ventures'

development of lean manufacturing capabilities (e.g., Corbett and Campbell-Hunt, 2002). Additionally, entrepreneurs who possess domination scripts that, on the one hand, support intentionality of routines yet, on the other hand, support improvisation during product design, may establish ventures that create value through the capability to design products that meet market needs in new ways (e.g., Salvato, 2009).

In summary, domination scripts guide entrepreneurs' acquisition, bundling, and leveraging of resources to organize around their conceptualized solution. The behaviors that surface based on entrepreneurs' domination scripts lead to venture outcomes (i.e., new products developed/failed, sales, market growth/decline, customer (dis)satisfaction, etc.). To the extent that these outcomes reinforce entrepreneurs' opportunity and solution conceptualizations, the meaning and the resulting routines/capabilities are retained. If these outcomes are inconsistent with the entrepreneurs' conceptualizations, then entrepreneurs may terminate their ventures. Therefore, we propose:

Proposition 3: Entrepreneurs' use of domination scripts is positively related to the formation of capabilities.

Feedback

Capabilities develop over time through routinized patterns of interaction (Nelson and Winter, 1982). Supporting this assertion, research on the liabilities of newness suggest that entrepreneurs organizing ventures around newly recognized opportunities generally face challenges associated with lack of legitimacy, stakeholder relationships, and well-established routines that support efficiency and effectiveness (Bruderl and Schussler, 1990). In new ventures, entrepreneurs expend additional resources to experiment with new routines, develop relationships, and secure legitimacy. Consistent with this research, the conceptualization of an opportunity/solution, eventually resulting in retention or rejection of domination scripts as capabilities, occurs over an extended period as entrepreneurs continuously incorporate feedback regarding the opportunity and how to effectively exploit the opportunity via a solution (Chiasson and Saunders, 2005; Sarason, Dean, and Dillard, 2006).

We have previously distinguished between novice and experienced entrepreneurs. We suggest that

experienced entrepreneurs are able to rely on well-established scripts to fully conceptualize an opportunity and more quickly move to exploiting it. Experienced entrepreneurs may need minimal iterations of sensemaking to resolve uncertainty. In comparison, novice entrepreneurs lack relevant scripts (or their scripts are not fully developed). These entrepreneurs undertake lengthier processes of resolving uncertainty and conceptualizing their opportunities/solutions. Iterating through the sensemaking process and continuously incorporating feedback allows entrepreneurs to resolve different sources of uncertainty. For example, a start-up bank may perceive an opportunity to pursue a rapid-growth model. Given the recent economic conditions, including higher levels of bank failures, the bank may face regulatory hurdles regarding the extent to which and how the bank can be allowed to achieve its desired growth. Communication with regulatory institutions, such as the FDIC, may help provide transparency and satisfy requirements. In other cases, regulatory institutions may require the bank to adopt certain standards, such as a prespecified proportion of deposits to loans or a certain level of diversification in the loan portfolio. To the extent that the entrepreneurs founding the bank lack scripts for communicating with regulatory institutions and addressing relevant demands, the bank may face a much slower path to growth and/or fines or some other form of punishment that disrupts the bank's overall effectiveness. Over time, given the regulatory institution's responses, the entrepreneurs are likely to acquire scripts for addressing regulatory demands. While entrepreneurs develop such 'regulatory' scripts, they may also develop scripts regarding how to market the bank, deal with technology and security concerns, handle internal coordination, and address other issues.

For novice entrepreneurs, iterating through the sensemaking process can help refine routines and lead to the development of capabilities. For example, entrepreneurs may develop initial products based on a cursory analysis of market needs. Upon this initial product offering, entrepreneurs may solicit customer feedback (e.g., Chan, Yim, and Lam, 2010) to gain insights into how the market has accepted their products. These initial insights may lead to valuable adjustments of product attributes that more effectively attract customers. For novice entrepreneurs, minimal iteration may not be sufficient to deeply conceptualize opportunities and solutions in forming effective capabilities. At the same time, excessive

iterations might lead other entrepreneurs to believe that they inaccurately assessed an opportunity as valuable or their venture as a viable solution to the opportunity. In doing so, the entrepreneurs can reject their opportunity/solution conceptualizations and terminate their ventures. Therefore, we suggest that there is an optimal level of iteration that balances efficiency (i.e., refining the routines and capabilities) with effectiveness (i.e., focusing on developing capabilities that are most closely related to market value creation). We propose:

Proposition 4: The number of iterations entrepreneurs undertake in conceptualizing opportunities has a curvilinear, inverted U-shaped relationship with the development of capabilities.

THE EFFECTS OF INDIVIDUAL AND CONTEXTUAL DIFFERENCES ON SCRIPT USE

Our framework describes how entrepreneurs deploy cognitive activities and behaviors to exploit an opportunity, from the formation of new beliefs to the formation of capabilities in a new venture. As this process is dependent upon individuals' scripts, which are both cognitively and socially derived, a number of important questions surface related to the role that individual and contextual differences may play in the process. For instance, why might two entrepreneurs who possess similar caches of scripts still arrive at different opportunity and solution conceptualizations? In the next few sections, we briefly discuss a number of individual-level characteristics and contexts that can influence the process by moderating how individuals deploy scripts. Specifically, we examine the role of traits (i.e., goal orientation, locus of control, and tolerance of ambiguity) and cognitive biases. We then discuss the possible effects that different contexts may have on script use. Our exposition provides examples of how individual and contextual differences can lead to different approaches to and outcomes of the entrepreneurship process.

Individual differences

Goal orientation

Individuals may differ in their goal orientation, which are quasi-traits influencing how they set goals

in achievement situations. Some individuals display a learning goal orientation. When these people are confronted with a task, they prefer to seek feedback to master the skills required to perform the task, and they are not deterred by the possibility of failure (VandeWalle *et al.*, 2000). An entrepreneur who exhibits a learning goal orientation may more frequently deploy legitimation scripts to gather diagnostic feedback regarding his/her understanding of environmental conditions and more thoroughly conceptualize an opportunity (cf. VandeWalle, 2003). However, a learning goal orientation may compel entrepreneurs to pursue lengthier, more iterative paths, possibly leading to higher termination rates. Other individuals may possess a performance goal orientation, which means they are more likely to desire task completion, to display competence, and to acquire positive feedback, all while avoiding failure and criticism (Payne, Youngcourt, and Beaubien, 2007). Entrepreneurs who exhibit a performance goal orientation may prefer to gather feedback related to the outcomes of their behavior, rather than the behavior itself. While such feedback can potentially confirm their conceptualizations of opportunities and solutions, these conceptualizations may be shallow, and uncertainty can cloud the relationship between cause and effect (Miller, 2007). While these entrepreneurs may develop only shallow conceptualizations of opportunities and solutions, their bias toward receiving positive feedback, together with their shorter iterative paths, suggest that a performance goal orientation may lead to lower rates of termination.

Personality

Scholars have examined a number of personality traits in regard to entrepreneurs, including internal locus of control and tolerance of ambiguity (Miller, 2014). Entrepreneurs with internal loci of control believe they—not the environment—control the outcomes of their efforts; consequently, they may have a greater propensity to initiate action (Mueller and Thomas, 2001). An internal locus of control may have varied effects on script use. While the tendency for proactivity may lead entrepreneurs to more extensively deploy scripts, an internal locus of control might also lead entrepreneurs to underestimate the importance of feedback-seeking behaviors from external stakeholders, especially those directed at understanding market and competitive conditions, which could curtail their use of legitimation scripts.

Individuals also differ in their tolerance for ambiguity, which is a personality variable capturing individuals' preference for ambiguous situations (Furnham and Marks, 2013). Entrepreneurs with stronger tolerances for ambiguity will likely possess more extensive and varied script sets than individuals without this personality characteristic. Scripts are acquired, in part, through experiencing uncertain situations and social interactions. As a tolerance for ambiguity drives entrepreneurs to seek out such situations, these entrepreneurs are well positioned to enhance their sets of scripts, which means they are equipped with scripts enabling them to more fully conceptualize opportunities and solutions (cf. Teoh and Foo, 1997).

Cognitive biases

Cognitive biases are defined as '[decision making] strategies that ignore part of the information [available to an individual] with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods' (Gigerenzer and Gaissmaier, 2011: 454). Cognitive biases, which are also known as heuristics, consist of a wide range of information processing shortcuts, which reduce the time and effort individuals have to expend when evaluating information and making decisions (Shah and Oppenheimer, 2008). Cognitive biases are distinct from scripts: whereas scripts are a type of knowledge, specifically related to guiding individuals in their behaviors and social interactions, cognitive biases are not a type of knowledge, rather a means for processing information. Research increasingly suggests that cognitive biases may even be hardwired into the brain's architecture and are the outcome of species-spanning evolutionary processes (Haselton, Nettle, and Andrews, 2005; Santos and Rosati, 2015). Biases may influence how entrepreneurs make decisions related to script use, and some biases may be more relevant to certain phases of the entrepreneurship process than to others. Perception biases affect how entrepreneurs seek and perceive new information and moderate the use of signification scripts in the attention phase. Inference biases affect how entrepreneurs evaluate information and moderate the use of legitimation scripts during the selection phase. Attribution biases affect how entrepreneurs attribute outcomes and events to their own behaviors or how they orient toward routines and moderate the use of domination scripts during the retention phase. Individuals may be subject to a wide

range of biases; the examples we use are illustrative of the applicability of the framework developed here.

Attention

A counterfactual thinking bias leads individuals to more regularly consider the 'what if?' possibilities of prior actions and behaviors they have undertaken. Entrepreneurs susceptible to the counterfactual thinking bias would be wary of missing out on potential future opportunities (e.g., Gaglio, 2004; Baron, 1998). A counterfactual thinking bias may, therefore, impel entrepreneurs to more frequently use signification scripts and to attempt to acquire a more diverse set of such scripts in order to avoid feelings of regret related to missing opportunities. A representative bias leads individuals to draw conclusions from a small sample of information (De Carolis and Saporito, 2006). For the entrepreneur in the attention phase of the process, a representative bias would lead them to truncate the use of signification scripts earlier, such as at the moment of the initial perception of a new belief. This bias may lead entrepreneurs to become focused on a smaller subset of new beliefs and also undermine their potential to form new beliefs about other potentially more valuable opportunities.

Selection

A confirmation bias leads entrepreneurs to ignore information that contradicts their current beliefs and to seek out information that validates their beliefs (Hmieleski and Baron, 2009; McGrath, 1999). The legitimation scripts used by entrepreneurs exhibiting this bias might be focused more heavily on interacting with comfortable sources of information (e.g., family and friends), where any new information acquired is more likely to be in line with what the entrepreneur already believes or knows. Entrepreneurs with a confirmation bias may also be more likely to avoid seeking negative information, such as that related to the competitive environment. Another cognitive bias relevant to the use of legitimation scripts, especially as entrepreneurs more extensively iterate, is known as the framing effect. The common example of framing concerns individuals who frame a situation in terms of potential gains and losses: in the face of potential gains, individuals become risk averse, while in the face of potential losses, individuals become more risk seeking (Tversky and Kahneman, 1981). Entrepreneurs who frame opportunities as the potential for gain and, hence, are more

risk averse may more comprehensively deploy legitimation scripts to facilitate their opportunity and solution conceptualizations.

Retention

Where entrepreneurs misidentify the outcomes of their efforts, whether attributing outcomes to their use of scripts or not, they may be more or less likely to retain scripts, which influences the types of capabilities that may eventually emerge. One type of attribution bias—egocentric bias (Lant, Milliken, and Batra, 1992)—may lead entrepreneurs to attribute positive, successful behavioral outcomes to their own scripts. Allowing this bias to surface can influence which scripts are retained, which, in turn, can influence capability development. Conversely, negative outcomes are more likely to be attributed to environmental factors outside entrepreneurs' control. In this instance, entrepreneurs with an egocentric bias may persist in their current activities and behaviors, leading to the development of underperforming venture routines and a higher likelihood of eventual venture termination. Finally, a status quo bias can have an effect on the types of scripts that entrepreneurs use, especially as fully developed capabilities come into shape. A status quo bias manifests as a reluctance to try new things (Burmeister and Schade, 2007). As a venture takes shape and some of an entrepreneur's scripts become the foundation for routines and capabilities within the organization, the entrepreneur with a stronger status quo bias may hesitate using scripts other than those inculcated widely in the organization. For these entrepreneurs, maintaining existing organizational capabilities becomes the priority. However, allowing this to happen has the potential to undermine necessary internal changes (i.e., to their solution) to accommodate future changes in their environment (i.e., revised opportunity conceptualizations).

Contexts of entrepreneurship

Entrepreneurs acquire scripts from the social structures in which they are embedded (Barley and Tolbert, 1997), so differences between social contexts may lead to differences among entrepreneurs' sets of acquired scripts. Even when two social contexts appear similar, they may still contain nuanced differences that may lead to wide discrepancies between entrepreneurs' script stocks. Therefore, we next examine social entrepreneurship, entrepreneur-

ship within family businesses, and public policy entrepreneurship as contexts that might contain sets of scripts that are different from those generally encountered by entrepreneurs in the private venture-creation context. We also discuss the importance of understanding cultural context on entrepreneurs' scripts.

Social entrepreneurship, which is entrepreneurship that is related to fulfilling social objectives (Austin, Stevenson, and Wei-Skillern, 2006), requires entrepreneurs to balance the needs of an underserved market with the necessity of financing the venture. The dual logics needed to support the delivery of social benefits while maintaining financial solvency can create conflict within organizations (Battilana and Dorado, 2010). Maintaining this balance may require a number of scripts unique to this context. As such, social entrepreneurs may need to develop specific types of domination scripts to balance the competing demands of their employees. For example, social entrepreneurs may establish communication routines through which they can inform their employees of their venture decisions, allow a voice, offer a forum for feedback, and otherwise ensure that decisions are made in procedurally fair ways that balance social and financial considerations.

Family businesses are ventures that are controlled by one family or a small number of families and that are operated out of concern for both family and nonfamily interests (Chua, Chrisman, and Sharma, 1999). These contexts are characterized by a high interrelatedness between family and business outcomes (Aldrich and Cliff, 2003). As we described earlier, entrepreneurs may initially acquire scripts from family members but eventually turn to other entrepreneurs or business experts for scripts. In the family business context, entrepreneurs may rely more heavily on family-based scripts throughout their lives; these scripts have been used repeatedly in past generations and have taken on the aura of tradition. One such script may include the practice of passing control of a family business on to the first-born son during business succession. Additionally, if business control is expected to remain in the hands of the family, another supporting script used in family businesses would be the practice of hiring family members for positions in the venture, perhaps even when there are more qualified external candidates (e.g., Miller and Le Breton-Miller, 2006). However, as the family business passes through generations, family dynamics change and the influence

of nonfamily interests enter in decision-making processes, changing the nature of these scripts. For example, signification scripts might change from emphasizing opportunities that support the family reputation to opportunities that are riskier to the family reputation but offer greater potential for wealth creation.

Other contexts of entrepreneurship that can lead entrepreneurs to acquire and use idiosyncratic scripts include the public policy entrepreneurship setting, as well as differences in cultural environments. For instance, one challenge faced by public policy entrepreneurs is encouraging legislative decision makers, who tend to be risk averse, to adopt innovative policy changes (Mintrom and Norman, 2009). One legitimation script public policy entrepreneurs might adopt to overcome this problem would be to pilot test a new regulation in small jurisdictions, which can demonstrate the new policy's usefulness as well as its acceptance by the public. These pilot tests may persuade decision makers that supporting the broader implementation of the policy may not be harmful to their careers.

Finally, culture can differ widely on many dimensions, which can influence the degree to which scripts are acquired and deployed. For example, compared to entrepreneurs in individualistic cultures, who may place extra value on acquiring unique scripts not widely known or used, entrepreneurs in more collectivistic cultures may prefer to acquire and use scripts for which a large consensus exists regarding the scripts' usefulness and appropriateness. This difference may have implications on how entrepreneurs innovate in collectivistic cultures, creating value for customers.

DISCUSSION

Only through recognizing and exploiting opportunities are entrepreneurs able to devise new and innovative products and produce broader societal benefits, such as economic growth and improved quality of life. The model presented herein integrates entrepreneurship research with sensemaking and structuration perspectives as a means to provide a unified framework for understanding the concomitant cognitive and behavioral mechanisms that influence entrepreneurs in the individual-opportunity nexus. Next, we consider the theoretical and practical implications of our theorizing and develop ideas for future research.

Theoretical implications

Entrepreneurship is a process that unfolds in a context of uncertainty (Alvarez and Barney, 2005). Entrepreneurs' respective conceptualizations of opportunity represent their idiosyncratic resolution of the uncertainty that defines what the opportunity is and how the opportunity can be exploited. While research suggests that entrepreneurs do not seem to follow a given path of entrepreneurship and instead act randomly to exploit opportunities (Carter, Gartner, and Reynolds, 1996), our model reinforces the notion of a process, though one that focuses on the activities and behaviors of entrepreneurs. Through differences in their educations, life and business experiences, observations, and other events that instill them with scripts, entrepreneurs possess idiosyncratic stocks of scripts that guide their behaviors and facilitate their cognitive activities to more fully conceptualize their beliefs. Other factors, such as idiosyncratic individual-level attributes and unique contextual factors, also influence differences in entrepreneurs' paths. These differences across entrepreneurs can then lead to what seems to be random manifestations of entrepreneurial activities. Despite the seemingly random sequence of events through which entrepreneurs emerge (Lichtenstein *et al.*, 2007), employing the sensemaking and structuration perspectives enables scholars to begin understanding the components that support and guide entrepreneurs' pursuit of opportunity.

We present an entrepreneurship process in which entrepreneurs are inundated with various sources of feedback that influence their perception of new beliefs, their interpretation of beliefs as opportunities with a feasible solution, and their attribution of success or failure to their activities and behaviors. In this way, our model complements research on the microfoundations of capabilities, noting the key roles of individuals and their interactions with others that help shape the formation of capabilities (e.g., Abell, Felin, and Foss, 2008; Salvato, 2009). We extend this research on the microfoundations of capabilities by discussing the attributes that shape individuals' behaviors and interactions. In addition, we recognize that entrepreneurs play a significant role in developing new capabilities, but their actions are not always met with success. Rather, entrepreneurs may discontinue their activities and behaviors at various points, especially when they: (1) perceive change as a threat or as nonrelevant; (2) come to an understanding that their solution as not feasible or

attractive; or (3) recognize they are failing to effectively address market needs. In comparison, entrepreneurs who are aware of the sources of their success are likely to retain their domination scripts, and these scripts may eventually become the underlying structure of their ventures' capabilities.

By distinguishing notions of opportunity conceptualization and solution conceptualization, our model seeks to lay a foundation for understanding how entrepreneurs transition from their initial ideas of opportunities to actual venture creation, innovation, and entrepreneurial behaviors that represent their solutions. Certainly, initial opportunity recognition represents a necessary and extremely important stage of the entrepreneurship process. However, only through the tangible investments of entrepreneurs does their potential to create socioeconomic value actually manifest. It seems, however, that scholars focused on understanding 'opportunities' have emphasized predominantly opportunity recognition and evaluation over opportunity exploitation (Short *et al.*, 2010). This focus has led scholars to overlook the cognitive and behavioral considerations that influence how entrepreneurs transition to opportunity exploitation. While many entrepreneurs can recognize essentially the same opportunity, ultimately only very few actually effectively exploit those opportunities (Dimov, 2011). Therefore, it seems that scholars would benefit significantly from considering the theoretical and practical importance of how entrepreneurs' intentions, motivations, decisions, and other behaviors facilitate their efforts to transition from opportunity recognition to opportunity exploitation.

One concern that has been levied against entrepreneurship as a research domain is that the point at which successful entrepreneurship ends is unclear. Theory should suggest causality, or the effect of certain factors on a dependent variable (Bacharach, 1989). Entrepreneurship theory presents no real endpoints or causal influence on a type of entrepreneurial outcome beyond venture creation or venture growth. Though venture creation and venture growth are frequently used as dependent variables in entrepreneurship research, neither constitutes an ideal endpoint for understanding entrepreneurship. Venture creation is not necessarily connected to the creation of value that is associated with entrepreneurship (e.g., job creation, creation of more efficient products, or societal benefits (DeTienne, Shepherd, and De Castro, 2008)). Growth captures the value-creating potential of entrepreneurship yet

remains vague as to when the entrepreneurship process ends (i.e., when does growth end?). Our model addresses this issue by proposing that capability formation is the endpoint of the entrepreneurship process. An entrepreneur begins with a belief and a set of scripts. Through an iterative and continuous process, he/she is able to transform individual scripts into organizational routines and, ultimately, capabilities.

Our theorizing also provides a complementary framework to the discovery and creation perspectives. In our framework, the entrepreneurship process begins with new beliefs. New beliefs may occur either when exogenous environmental shocks lead to objective environmental changes or when entrepreneurs, who all possess prior knowledge and information, perceive new beliefs through imagination and developing new associations among their knowledge (Alvarez and Barney, 2007; Alvarez *et al.*, 2013). In both instances, new beliefs lead to uncertainty, which must be resolved through the sensemaking process (Weick, 1995). This initial uncertainty may represent the seed of an opportunity. In some instances, entrepreneurs' prior experiences and existing infrastructures may be so thorough that when they detect uncertain environmental conditions caused by exogenous shocks, they are able to deconstruct uncertainty into risk profiles almost instantly, quickly arriving at a discovery opportunity. Other entrepreneurs, who possess opportunity beliefs but may not have either domain experience or extensive scripts, must engage a lengthier, more iterative sensemaking effort to resolve the uncertainty of unexpected environmental conditions, adjusting their conceptualizations of opportunity through repeated actions and behaviors and obtaining feedback from various stakeholders (Alvarez *et al.*, 2013).

Future directions

Our discussion has emphasized predominantly how entrepreneurs acquire and revise scripts based on their experiences, observations, and vicarious learning. Nevertheless, we believe that a scholarly understanding of network ties can inform our framework in two key ways. First, scripts can inform how entrepreneurs leverage network ties to support their conceptualizations and behavior in light of the conceptualizations. For example, scripts might inform when entrepreneurs would benefit by leveraging strong versus weak ties or how entrepreneurs

might more effectively establish new weak ties (Granovetter, 1973). Second, scholars may seek to inform not only the scripts for how entrepreneurs use network ties but also how network ties can facilitate script development. For example, network ties with industry mentors may provide important feedback that can inform how entrepreneurs discern market needs (Ozgen and Baron, 2007) or inform entrepreneurs about relevant supply chain considerations.

As another consideration for future research, scholars might seek to understand how different starting points for entrepreneurs influence their activities and behaviors. For example, entrepreneurs may possess solutions for opportunities before they perceive new beliefs (e.g., Shah and Tripsas, 2007). In some instances, entrepreneurs who possess preexisting solutions to meet their own needs have a unique script, especially when the solution is service based. In other instances, the solution itself is not a script (i.e., a product innovation); however, the entrepreneur's use of the product could eventually constitute a script. In both instances, these solution-related scripts enable entrepreneurs to detect the potential for their solutions to meet others' needs. While solutions may arise from entrepreneurs' own needs, they may also arise from the interaction between actors engaged in script-based behavior. That is, routines used in different or prior contexts can provide a creative solution to a current need, as entrepreneurs perceive connections across their contexts or the utility of combining or tweaking routines from other contexts (Feldman and Pentland, 2003). More fully conceptualizing the relationships between entrepreneurs' script-based behavior, their social interactions, and the solutions they create may prove a fruitful path of future study.

Although we discuss the differences between novice and experienced entrepreneurs in terms of the scripts they may possess, we do not account for the role that other types of knowledge may play in the entrepreneurship process. Scripts are only one type of knowledge an individual has; others include declarative knowledge (i.e., the knowledge of information, such as data, symbols, figures, etc.) and understanding (i.e., knowing how to problem solve and the awareness of the relationships between pieces of information) (e.g., Anderson, Schallert, and Hare, 1991; Kogut and Zander, 1992). Entrepreneurs' overall knowledge may have important influences on how they deploy scripts, leading to further idiosyncrasies between entrepreneurs. For instance, two entrepreneurs may differ in regard to how they

deploy marketing-related scripts. One entrepreneur might favor the approach of touting a product's advanced technical features, while the other entrepreneur might emphasize how a product solves a customer need. The difference in these entrepreneurs' script use is not necessarily due to complexity, as both scripts may be similarly complex. Rather, the difference may be due to their understanding of how markets work and how customer segments respond to messages. Further elaboration of the roles of both script complexity and entrepreneurs' knowledge is a key step in developing the framework.

Finally, future research may examine the boundaries beyond which our framework may not generalize or may need to be adapted. For instance, we would caution against efforts to generalize our model to the subsistence-oriented nature of entrepreneurship in many developing economy contexts. In these contexts, entrepreneurship may merely be a means through which individuals provide for their daily needs (Webb *et al.*, 2013). In such contexts, entrepreneurial success is based less on interpreting and solving market needs and more on hard work. Our framework may also fail to fully generalize to other domains of activity, which have been labeled as entrepreneurship but which lack core elements—such as capability creation—of the model we present. For example, institutional entrepreneurship, which is the intentional effort made by individuals to change the norms, rules, and values of society to obtain an outcome favorable for themselves (DiMaggio, 1988), shares many elements of the script-based process of entrepreneurship, such as the conceptualization of market needs and a solution. However, it departs from the model in important ways, too. For instance, institutional entrepreneurs do not necessarily create organizations and capabilities. At the same time, institutional entrepreneurs engage in some behaviors not included in the model, such as the prolonged efforts to protect and solidify innovative institutional solutions (Lawrence and Suddaby, 2006; Pacheco *et al.*, 2010). Therefore, we encourage scholars to understand how our model can be adjusted to provide useful explanation of institutional entrepreneurship and other domains of entrepreneurial activity.

Practical implications

Our model also provides important practical implications. Entrepreneurship can be described as a process, or a certain way of acting/behaving

(Rindova, Barry, and Ketchen, 2009). Individuals possess cognitive biases that shape how and the degree to which they act entrepreneurially (Baron, 1998). We extend this line of research by highlighting when certain cognitive biases are most relevant during the entrepreneurship process. Recognizing that certain biases may moderate this process, entrepreneurs can be taught to be aware of the particular biases they are likely to use in certain stages. Being aware of biases can mitigate their influence (Teece, 2007). Similarly, entrepreneurship programs have increasingly emphasized competency-based learning (Hills, 1988). Understanding the types of scripts important to entrepreneurs and when they are important can help professors equip students with these scripts as a means to develop entrepreneurial competencies. For instance, Dew and colleagues (2009) provide a compelling comparison showing that expert, high performing entrepreneurs may possess very different scripts than MBA students acting as novice entrepreneurs. Expert entrepreneurs emphasized wholly different criteria in forming initial beliefs, and scripts may lead them to pursue alliances, minimize loss, and rely on resources at hand. In contrast, novice entrepreneurs, likely through their MBA training, tended to rely on scripts that emphasized planning and predicting. To the extent that scholars can determine which scripts best shape how experienced entrepreneurs form and behave upon new beliefs, these scripts can be more effectively taught to help students and novice entrepreneurs more adeptly engage with the entrepreneurship process.

CONCLUSION

We presented a framework for entrepreneurship that integrates entrepreneurship research with theory about structuration and sensemaking. The assumptions underlying existing process models are loosened, suggesting that opportunity conceptualization may occur alongside opportunity exploitation and that cognitive and behavioral dimensions are important throughout the process. Our theorizing points to the critical role of scripts as shaping how entrepreneurs progress from perceiving new beliefs to molding venture capabilities. We hope that in integrating existing research into a unifying framework, this work will more effectively guide future studies and enhance understanding of how entrepreneurs

perceive and exploit opportunities for the purpose of creating value.

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