



The Dynamics of New Venture Development: Scaling and Entrepreneurial Teams

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**The Dynamics of New Venture Development:
Scaling and Entrepreneurial Teams**

A dissertation presented

by

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to

the Committee for the Ph.D. in Business Studies

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in the subject of

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Abstract

This dissertation seeks to enhance our understanding of entrepreneurial ventures as dynamic social organizations, focusing on topics related to scaling and entrepreneurial teams. It is motivated by two contemporaneous movements within scholarship at the nexus of organization theory, strategy, and entrepreneurship. First, while scholars have increasingly called attention to the dynamism of entrepreneurial ventures, limited work has systematically explored how they evolve over time. Second, while entrepreneurship has increasingly been framed as a team-based endeavor, limited work has examined the groups of actors who are central to entrepreneurial processes other than founders. Across three essays, this dissertation takes steps to bridge these gaps in the study of new venture development while also enriching our understanding of theory. The first essay reviews and synthesizes fragmented research perspectives on the relationship between internal organizing and growth in entrepreneurial ventures. Building on this review, the second and third essays offer empirical examinations of scaling and entrepreneurial team composition. The second essay explores how early joiners with prior entrepreneurial work experience influence likelihood of progression as ventures seek to scale. It contributes to our theoretical understanding of entrepreneurial resources and suggests the importance of early endowments of knowledge resources and knowledge resource variety for growth-oriented ventures. The third essay explores longitudinal changes in entrepreneurial board composition through the lens of gender. It enhances our understanding of the limits of homophily, advancing a role-contingent perspective on when spillover effects from the presence

of other women might be anticipated to promote the addition of women to leadership groups such as entrepreneurial boards.

Overall, the essays are united by their common focus on boundary expansion. Through growth, the boundaries of a venture expand, exposing it to increased complexity which becomes mirrored in how it organizes. Growth also push the boundaries of the circle of actors in a position to shape the venture beyond its founders to encompass multiple groups of constituent actors such as joiners and board members. Finally, the study of entrepreneurial ventures raises questions about implicit societal boundaries that limit who participates in entrepreneurial processes, asking us to consider ways such boundaries may be overcome.

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CHAPTER 1.

INTRODUCTION AND OVERVIEW

Although the domain of management research traces its roots to the study of mature organizations— chiefly administrative bureaucracies and large corporations (Barnard, 1938; Merton, 1940; Selznick, 1957; Weber, 1946)— for decades scholars have recognized that young, entrepreneurial ventures face a unique set of constraints and opportunities (Aldrich & Fiol, 1994; Eisenhardt & Schoonhoven, 1990; Stinchcombe, 1965). Inspired by burgeoning public celebration of entrepreneurship as an engine for innovation and societal change, in recent years a surge of scholarly work has focused on elucidating the motors that drive and the structures that undergird entrepreneurial phenomena (Aldrich & Ruef, 2006; Lounsbury & Glynn, 2001; McDonald & Eisenhardt, In press; Zott & Huy, 2007). Through this focused work, a view of entrepreneurship has emerged as a fundamentally social process (Sørensen & Fassiotta, 2011; Tolbert, David, & Sine, 2011). In contrast to the image of entrepreneurial ventures as forged in isolation from the genius of singular individuals, such work has highlighted the manifold ways that entrepreneurial ventures are socially embedded— carrying the legacy of past affiliations (Beckman, 2006), influenced by network ties (Gulati & Higgins, 2003; Hallen, 2008), subject to social cues and signals (Higgins & Gulati, 2003, 2006; Lee & Huang, 2018), and co-constructed by teams of individuals (Beckman & Burton, 2008). In tandem, recent work has called attention to the inherent dynamism of entrepreneurial ventures, revealing how the journey from fledging enterprise to mature firm is marked by reorientation and change (Marx & Hsu, 2015; McDonald & Gao, In press).

However, these advances have opened up new questions related to our understanding of entrepreneurial ventures as dynamic social organizations. In particular, increasing

acknowledgement of the dynamism of entrepreneurial ventures has not been matched by a comprehensive scholarly investigation of how ventures adapt their modes of organizing as they navigate their organizational adolescence and seek to scale up through growth. Instead, scholarly inquiry has predominantly remained focused on actors and processes that operate at just a few punctuated moments in organizational life. Chief amongst these is the time of firm founding (Baron, Hannan, & Burton, 1999; Stinchcombe, 1965). Modes of organizing set in motion during founding periods, while surprisingly persistent (Eisenhardt & Schoonhoven, 1990; Marquis & Tilcsik, 2013), are also likely subject to contestation as ventures encounter forces associated with growth and aging, suggesting a need for additional scholarly inquiry on how newly-constituted ventures evolve as they develop throughout their early life.

Moreover, despite increasing scholarly recognition of entrepreneurship as a social process, work to date has predominantly focused on a single set of actors: Founding team members (Beckman, 2006; Kacperczyk, 2013; Hsu, Roberts, & Eesley, 2007). While founders play an undeniably central role in the ventures that they establish, the emphasis on founding teams in extant work has largely eclipsed other groups of actors such as joiners and board members who are also well-positioned to shape organizational behavior and outcomes (see Roach & Sauermann, 2015 and Garg, 2013 for discussions of entrepreneurial joiners and board members, respectively). Focusing exclusively on firm founders risks an incomplete understanding of the antecedents and consequences of how multiple groups of actors, who may not have uniform objectives, team together to co-construct entrepreneurial ventures over time.

Drawing on the theoretical lenses of organizational theory, strategy, and entrepreneurship, the chapters of this dissertation seek to help bridge these gaps in our understanding of the dynamics of new venture development. In doing so, they home in on topics

related to scaling and entrepreneurial teams. Chapter 2 reviews and synthesizes diverse research perspectives on the interplay between growth and internal organizational dynamics in entrepreneurial ventures, focusing specifically on literature related to organizational design, team composition, and organizational culture. Chapter 3 and 4 empirically investigate themes of scaling and entrepreneurial team composition raised in Chapter 2. Chapter 3 explores how early joiners (e.g. non-founders who “join” the venture in its early years) with prior work experience in the entrepreneurial context influence outcomes as new ventures begin the process of “scaling up.” Chapter 4 explores the evolution of entrepreneurial boards from the perspective of gender, offering a role-contingent perspective on when we should expect spillover effects from the presence of women in the entrepreneurial ecosystem on the addition of female board members.

The topics covered in this dissertation are woven together through their shared emphasis on boundary expansion. As it grows, a venture undergoes a process of boundary expansion and must concomitantly contend with increased complexity in its external environment and internal organization. The study of new venture development also asks us to expand our understanding of the circle of actors in a position to influence outcomes for the venture beyond the founding team alone. As a venture progresses beyond the time of its formation, it is exposed to multiple groups of constituent actors such as joiners and board members that may rightfully claim membership in the venture’s “inner circle” (Thompson, 1967). More broadly, examining entrepreneurial ventures as a field challenges us to evaluate implicit societal boundaries that may shape who takes part in the entrepreneurial ecosystem. In particular, it elevates concerns about the role that ascriptive characteristics, such as gender, play in constructing such boundaries.

The inclination of researchers to concentrate their inquiry more narrowly—predominantly focusing their attention on topics related to “founders” and “founding”—is

symptomatic of fragmentation amongst theoretical perspectives within management research related to new venture development. In Chapter 2, my coauthor Ranjay Gulati and I endeavor to alleviate these constraints by conducting a review and synthesis that brings conceptual order to research relevant to “scaling up.”¹ We argue that entrepreneurial ventures face unique challenges related to growth, particularly in managing their internal organizations. Chapter 2 clarifies and describes two narratives that have emerged within past and current research on organizing and growth. The first narrative draws attention to the surprising endurance of organizational features during growth; the second, their dramatic change. The chapter juxtaposes the two narratives to reveal ongoing gaps in the study of growing ventures along three dimensions: organizational design, team composition, and organizational culture. It concludes with recommendations on how future research can be enriched through a systematic examination of how entrepreneurial ventures navigate the organizational dilemmas growth presents. In particular, we suggest a path forward for research on scaling involves accounting for how forces of structure (the traditional emphasis of organization studies) and agency (the traditional emphasis of entrepreneurship research) work in concert during growth.

Along with other insights, a clear research gap that emerges from the Chapter 2 review is the need to develop a greater understanding of the backgrounds of non-founding members of the entrepreneurial team and how they influence growth processes. Chapter 3 directly addresses this gap through a multi-method empirical study of early joiners of entrepreneurial ventures. Specifically, the chapter explores the relationship between new ventures’ progression towards scale after their first institutionally-led financing round and their decisions to hire early joiners

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with prior work experience in the entrepreneurial ecosystem. In this chapter, I posit that tacit knowledge of early-stage entrepreneurial domains constitutes an important type of entrepreneurial resource and that new ventures can acquire this resource via early joiners. However, overweighting this resource in teams that already possess an ample stock of such experience can have diminishing and even negative returns. For growth-oriented ventures, overweighting entrepreneurial experience in early hiring may carry the downside of imprinting the organization with routines, assumptions, and practices that become outmoded as the venture transitions towards more structure as it grows. Analyses from qualitative and quantitative data offer empirical support for these predictions. The study's data suggest that ventures' founding and growth stages are less distinct than is conventionally acknowledged in organizational scholarship and that growth-oriented ventures may need to take pains to anticipate their more structured future configurations, even while they are still assembling their early-stage teams. The chapter advances a more expansive conceptualization of entrepreneurial teams that views early joiners as members of the "inner circle" that shapes downstream outcomes. Chapter 3 also furthers our theoretical understanding of *entrepreneurial resources*, drawing attention to the role of joiners in acting as conduits of entrepreneurial resources. It suggests that experience in early stage entrepreneurial domains constitutes a potentially valuable yet evanescent type of knowledge resource: Given built-in decay in the utility of developmental-stage specific knowledge, the benefits of resource variety in this category of knowledge resource may be elevated such that ventures that possess a mix of knowledge resources encompassing familiarity with both early and later company developmental stages experience an enhanced likelihood of progression.

Chapter 4 (coauthored with Lakshmi Ramarajan and Julie Battilana) continues with this empirical focus on expanding our understanding of other influential groups of entrepreneurial actors, but orients its attention towards entrepreneurial boards and gender diversity. Here, we focus our attention not on the consequences of team composition but on the antecedent conditions that shape who is represented on those teams. Women in leadership roles, such as founders, investors, and board members, are rare in the entrepreneurial ecosystem, raising questions about factors that may spur or deter their participation in entrepreneurial processes. Chapter 4 investigates how the presence of other women in the entrepreneurial ecosystem may have both positive and negative spillover effects on the addition of female board members to growing ventures, based on the specific nature of the roles they play. Drawing on theories of *homophily*, some scholars have suggested that the path to greater female representation starts with a snowball effect from initial female representation such that women operate as “agents of change” (Cohen & Huffman, 2007, p. 682). Yet, paradoxically, research on gender-based categorization suggests precisely the opposite— that the presence of women may in fact have inhibitory effects in contexts such as entrepreneurship where women are rare. This chapter seeks to resolve this puzzle and to contribute to our understanding of the limits of homophily. Specifically, we advance a role-contingent perspective on when we expect homophily to operate— distinguishing between the effects of women occupying complementary roles, conceptualized as adjacent work roles that have distinct but interacting activities and expectations, versus the same work role as one another. Examining U.S. based entrepreneurial ventures over the time period of 2002-2014, we find that the presence of women in complementary roles, namely founder-CEOs, increases the likelihood that women are added to entrepreneurial boards. In contrast, women in the same role, namely board members, decrease

the likelihood that future women are added to these boards. Furthermore, the data show how the presence of women in the can limit not just the operation of homophily, but also the otherwise positive effects of other institutional mechanisms like visibility—operationalized as the time of the IPO— that are theorized to reduce gender disparities. Chapter 4’s findings suggest a complex interplay among forces that enable and constrain women in leadership roles in the entrepreneurial ecosystem: homophily can operate as a positive force for gender equality when women occupy complementary roles, but is constrained when women occupy the same role. Moreover, visibility can help advance women to entrepreneurial boards, but only when there are no women in this board member role already.

Together, the three core chapters of this dissertation offer a nuanced view of new venture development as a negotiated process of change— shaped by technical exigencies, the terrain of social structure, and the jockeying of various groups of actors to influence the ventures to which they claim organizational membership. Individual and organizational attributes that facilitate success while a venture is still small and new can transform into liabilities as it attempts to grow and scale due to inertial and institutional forces. Spillovers from the composition of entrepreneurial teams are subject to social forces such as homophily and categorization that are themselves structurally and temporally bound. Beyond such observations, this dissertation also enriches our theoretical understanding of entrepreneurial resources by highlighting the underappreciated role of joiners in acting as conduits of knowledge resources and suggesting that one type of entrepreneurial resource— familiarity with early-stage, entrepreneurial domains— may be a double-edged sword. Furthermore, it enhances our theoretical understanding of the limits of homophily by advancing a role-contingent perspective on the activation of homophily vs. interceding forces associated with gender-based categorization. The findings of this

dissertation illustrate the complexities underlying the relationships between actors, organizational processes, and growth that I hope will stimulate future research to continue to expand the boundaries of our understanding of entrepreneurial phenomena.

CHAPTER 2.

SCALING: ORGANIZING AND GROWTH IN ENTREPRENEURIAL VENTURES²

INTRODUCTION

“[W]ith increasing size both the managerial function and the basic administrative structure have undergone fundamental changes which profoundly affect the nature of the ‘organism’ itself. The differences in the administrative structure of the very small and the very large firms are so great that in many ways it is hard to see that the two species are of the same genus...we cannot define a caterpillar and then use the same definition for a butterfly.” —Edith Penrose (1959, p. 19)

Growth is embedded in scholarly interest in entrepreneurship so deeply that it is sometimes even incorporated into distinctions made between entrepreneurial ventures and small businesses. Entrepreneurial ventures have been conceptualized as young, growth-oriented firms that engage in innovative behaviors (Carland, Hoy, Boulton, & Carland, 1984),³ a conceptualization which has classically involved goals of profitability but more recently has been expanded to include social (Battilana & Dorado, 2010; Battilana & Lee, 2014) and other non-pecuniary goals (Hamilton, 2000; Wasserman, 2017). Consistent with this conceptualization, research building on Schumpeter’s (1942) seminal theory of creative destruction has suggested that entrepreneurial ventures, as engines for innovation, can experience growth rates surpassing those of mature firms (Kirchhoff, 1994). Growth in size manifests itself in many forms including number of users, customers or communities served, funds raised, physical capacity, geographic footprint, and revenue, which may (albeit not always) be accompanied by a concomitant

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³ There is much pluralism in definitions of entrepreneurship and entrepreneurial ventures (c.f. Gartner, 1990; Shane & Venkataraman, 2000). We highlight this particular conceptualization not to exclude others, but rather as a device for illustrating the prominent role that growth has played in scholarly discussion about entrepreneurial ventures.

expansion in organizational headcount (Josefy, Kuban, Ireland, & Hitt, 2015; Kimberly, 1976). Scholarly attention to entrepreneurial phenomena has burgeoned—as evidenced by the last decade’s over 40% increase in membership of the Entrepreneurship Division of the Academy of Management versus the 11% rise in Academy membership overall, as well as the birth of the *Strategic Entrepreneurship Journal*. Yet, the study of growth has conceptually lagged behind the study of new venture formation and processes that operate at founding. This imbalance has gated progress on one research area in particular: the dynamics of how young, entrepreneurial ventures are organized internally throughout their growth and development.

Growth presents unique challenges to entrepreneurial ventures compared to large or mature businesses (Bhidé, 2000). Entrepreneurial ventures, typically small in size and privately held, face severe constraints in mobilizing the financial and social resources needed to fuel and sustain the organization through periods of growth (Baker & Nelson, 2005; Katila, Rosenberger, & Eisenhardt, 2008). Given that a substantial proportion of ventures die within five years of founding (Åstebro, Herz, Nanda, & Weber, 2014; Dahl & Sorenson, 2012; Romanelli, 1989), failure to grow often reciprocally translates into failure to survive. When growth does occur, it may be unexpected in onset and rapid in pace: Entrepreneurial ventures frequently operate in nascent or fast-moving domains (Garg, 2013; Santos & Eisenhardt, 2009), many of which are characterized by large product, technological, and market uncertainties (Knight, 1921; Ozcan & Eisenhardt, 2009). Layered onto this are growth challenges stemming from organizational newness and inexperience (Aldrich & Auster, 1986; Stinchcombe, 1965), lack of legitimacy (Aldrich & Fiol, 1994; Zimmerman & Zeitz, 2002), demanding funders (Wasserman, 2017), and the still-prominent role of the founding team (Baron, Hannan, & Burton, 1999).

A bevy of practitioner-oriented books and articles published in recent years unmask the anxieties entrepreneurs experience about the “black art” (Horowitz, 2010, para. 2) of managing their internal organizations through growth (Flamholtz & Randle, 2015; Furr & Ahlstrom, 2011; Harnish, 2014; Sutton & Rao, 2014). The challenge of how to synchronize internal organizing and growth is often called the problem of “scaling” (Eisenmann & Wagonfeld, 2012, p. 1). While colloquially referred to as scaling, considerations for the internal organization involve not only how to achieve replication at scale but also how to attend to the increased scope of activities that typically accompany growth (Chandler, 1990). Within management scholarship and related disciplines, attention to the dynamics of how growth considerations play out in the internal organizations of entrepreneurial ventures has manifested in the form of two contrasting narratives. The two narratives alternatively emphasize *endurance* versus *change* of the constitutive elements of the internal organization.

The first and most cohesively argued narrative that appears in recent literature focuses on enduring organizational features from the time of founding. It has proven a fruitful line of inquiry. The endurance narrative highlights myriad ways that initial conditions are embedded in how ventures organize and therefore continue to influence its developmental path (Beckman & Burton, 2008; Eisenhardt & Schoonhoven, 1990; Schein, 2004). This narrative draws on theories of imprinting (e.g., Stinchcombe, 1965), homophily (e.g., McPherson, Smith-Lovin, & Cook, 2001; Kossinets & Watts, 2009), and path dependence (e.g., Arthur, 1989; Mahoney, 2000) to show how the backgrounds and decisions of initial management teams can exert a lasting effect on organizational behavior, structures, and practices (Baron, Hannan, & Burton, 1999, 2001; Burton & Beckman, 2007). Such research calls attention to the intriguing paradox of how kernels of organizational stability persist even in the face of pressures to change during growth (Baron,

Burton, & Hannan, 1999). The implicit assumption here is that agency and influence are greatest at the time of founding. On the whole, the conceptual focus of the endurance narrative has been on antecedents rather than consequences of growth and constraint rather than change during growth.

A second narrative, however, focuses on how the internal organizations of entrepreneurial ventures change as a consequence of growth (Aldrich & Ruef, 2006; Greiner, 1972; Gulati & DeSantola, 2016; Kazanjian, 1988). The change narrative suggests that ventures increase in complexity as they grow, which is mirrored in the way they are organized. As connoted in Penrose's (1959, p. 19) metaphor of the metamorphosis of a caterpillar into a butterfly that opens this review, the organizational transformations that accompany growth can be dramatic for entrepreneurial ventures. Along these lines, research has documented shifts in the internal organizations of entrepreneurial ventures as varied as founder departures (Boeker & Karichalil, 2002; Wasserman, 2003), top management team turnover, (Boeker & Wiltbank, 2005), professionalization (Hellmann & Puri, 2002), cultural change (Martin, Sitkin, & Boehm, 1985) and the shifting use of cultural and formal controls (Cardinal, Sitkin, & Long, 2004), among others. The change narrative resonates with one of entrepreneurs' primary concerns, which is omnipresent in books on scaling written for management practice: In the process of pursuing growth, will their organizations become unrecognizable, slipping away from their original vision?

Unlike the endurance narrative, the change narrative on the internal organization has been articulated in a fragmented manner within contemporary entrepreneurship research. Work exploring activities such as "pivoting" (McDonald & Gao, In press), "switchbacks" (Marx & Hsu, 2015, p. 1815) and "experimentation" (Kerr, Nanda, & Rhodes-Kropf, 2014, p. 28; Murray

& Tripsas, 2004, p. 45) highlights the interest of contemporary scholars in the topic of business model, technological, and strategic change in entrepreneurial ventures, but this has not been matched by attention to the internal organization. By itself, recent research tells a scattered and incomplete story on how constitutive elements of the internal organizations of entrepreneurial ventures shift as they develop. However, we can draw on older organization studies to enhance our understanding of the role of growth in internal organizational change (Blau, Heydebrand, & Stauffer, 1966; Blau & Schoenherr, 1971; Chandler, 1962; Kimberly & Miles, 1980; Miller & Friesen, 1984; Quinn & Cameron, 1983; Starbuck, 1965; Swidler, 1986; Weber, 1946).

The objectives of this review are three-fold. First, we review and synthesize how the endurance and change narratives describe growth as it relates to the internal organization. We structure our review across three organizational dimensions: (1) organizational design (2) team composition and (3) organizational culture. Foundational organizational studies distinguished between informal and formal organizational forms (Barnard, 1938; Blau & Scott, 1952; Merton, 1949), an analytical distinction that was later refined to separate the design of formal organizational structures from the individuals who occupy it (Beckman & Burton, 2008, 2011; Nadler & Tushman, 1980) and its cultural values, beliefs and practices (Kotter & Heskett, 1992; Kunda, 1992; O'Reilly, Chatman, & Caldwell, 1991; Schein, 2004). We follow the distinctions made by prior work and discuss formal organizational design, team composition, and culture separately. For each of the three dimensions, we briefly summarize research consistent with the endurance narrative and then conduct a deeper review of research consistent with the change narrative.

Second, we bring coherence to the largely fragmented change narrative. In order to do so, we draw on insights from foundational studies that examined organizations across a variety of

different contexts. These studies were not without limitations. Many early studies tried to uncover a universal pathway through which *all* growing organizations evolve, an effort that was ultimately discarded as scholars recognized that developmental trajectories are contextually contingent. Indeed, the endurance narrative's conceptual focus on continuity from the time of founding can be attributed, at least in part, to a reaction against these universalistic tendencies. Even so, early scholarship on organizational change during growth has ideas that entrepreneurship research can learn from and build upon.

Third, we close by highlighting areas in which existing work has been underdeveloped and identify potential areas for future research. We suggest that a path forward for research on growing ventures involves reinvigorating the study of organizational change and integrating it with the study of organizational endurance.

ORGANIZATIONAL DESIGN

The first internal dimension along which the endurance and change narratives have assessed the growth of entrepreneurial ventures is their organizational design. This dimension focuses on the organization's formal structure; specifically, the roles, rights, and rules that shape and constrain the actions of the organization's members and specify how the organization should operate (Galbraith, 1973; Thompson, 1967). Growth is attended by several organizational design considerations related to the decomposition of tasks into roles and the integration of effort. Although expansion creates opportunities to enhance productivity through the division of labor, it also creates challenges in addressing the mechanics of connecting the actions of a larger body of members (Blau, 1970; Blau et al., 1966; Pugh et al., 1969). The two narratives alternatively draw attention to the enduring legacy of organizational design blueprints from the time of

founding versus the ways that forces of growth can intercede to shape organizational design within the venture.

Endurance Narrative on Organizational Design

Conventional wisdom on the design of entrepreneurial ventures suggests that near the time of founding, they default to simple organizational structures characterized by little role specialization, formalization, or managerial personnel. In effect, the founder-CEO plays a centralized coordination and decision-making function (Mintzberg, 1979). However, some of the first studies to compare the internal organizations of new ventures across hundreds of companies discovered a surprising heterogeneity in the organizational design of startups (Baron, Burton, & Hannan, 1996, 1999; Hannan, Burton, & Baron, 1996) attributable to different “logics of organizing” that founders bring to their ventures at inception (Baron et al., 1999b, p. 530). As new venture creation has become increasingly studied as a team endeavor (c.f. Ruef, Aldrich, & Carter, 2003; Beckman, 2006), related research has shown how role and decision-making structures embodied in the founding team can constrain and enable subsequent outcomes (Beckman & Burton, 2008; Sine, Mitsuhashi, & Kirsch, 2006). This research suggests that early design templates may have an enduring influence on subsequent patterns of organizational development.

Several research traditions underpin the endurance narrative on the organizational design of entrepreneurial ventures. Chief among these is the imprinting tradition, which proposes that the time of founding constitutes a sensitive period that can leave a lasting mark on the organization (Stinchcombe, 1965). According to this tradition, founders imprint their organizations with characteristics that can endure even when the organization later experiences

environmental changes (Johnson, 2007; Marquis & Tilcsik, 2013). Further support for the endurance narrative is found in research on path dependence, which suggests that design characteristics can “lock-in” (e.g., Arthur, 1989, p. 116) through increasing returns, positive feedback, and other forces of history; this lock-in may be difficult to override at later points in time (Mahoney, 2000; Sydow, Schreyögg, & Koch, 2009). Finally, a third tradition emphasizes inertia in organizational design, drawing attention to forces that promote consistency over time in internal organizational structures (Gresov, Haveman, & Oliva, 1993; Hannan & Freeman, 1984). Although analytically distinct (c.f. Marquis & Tilcsik, 2013), in composite research on imprinting, path dependence, and inertia highlight forces that may perpetuate initial organizational structures even as the venture grows.

Building on these composite traditions, research by the Stanford Project on Emerging Companies (SPEC) showed how models for employment relations founders selected can exert an enduring influence on organizational design (Baron et al., 1996, 1999a). The SPEC studies were among the earliest to employ longitudinal data on the internal organization from a wide sample of technology ventures. Collectively, they suggested that founders can endow their growing ventures with employment blueprints, the effects of which may endure after the founders’ tenure ends. The authors proposed that these blueprints differ along three dimensions: (1) basis for employee attachment, (2) criteria for selection and retention, and (3) basis for coordination and control (Baron et al., 1999b). Although many permutations of these dimensions are possible, they typically coalesce around a few archetypical models with internal coherence and consistency (Baron et al., 1999a). At one extreme is the bureaucratic model, defined by organizational attachment through challenging work, selection based on skills, and coordination through formalized systems and procedures. At the other end is the commitment model, defined

by attachment through a personal sense of belonging, selection based on values and cultural fit, and informal control through peers and organizational culture. Although ventures are not conventionally considered bureaucratic at their inception, 6.6% of all founders adopted bureaucratic-type employment models (Baron & Hannan, 2002).

Specifically, the SPEC studies linked initial employment models that founders selected to later levels of managerial intensity in the organization (Baron et al., 1999a, 1999b). Here, managerial intensity is defined as the percentage of the labor force comprised of full-time managerial and administrative personnel (Baron et al., 1999a). The SPEC authors found that downstream levels of managerial intensity were more strongly related to the employment blueprint the founders selected than to organizational models that later CEOs embraced. The constraint these early employment models generate is further evidenced by the disruptive nature of attempts to subsequently alter them. Moving to a different employment model leads to employee disenchantment and high turnover rates, particularly among the old guard of early hires (Baron et al., 2001). For most of the basic model types, this turnover is especially associated with a shift from a commitment to a bureaucratic model. By contrast, stable bureaucratic ventures experience the lowest level of turnover of any employment model type. These observations lead the authors to speculate that bureaucracy might have been embraced by founders who anticipated long-term growth and modeled their ventures with the considerations of a mature firm in mind.

An additional way that initial organizational design templates can have an enduring effect is through the role structure of the founding team. The early role structure, defined as the type and number of functional positions in the founding team, can place substantial constraints on elaborating functional roles later within the venture in the sense that roles are unlikely to be

altered unless the venture achieves developmental milestones that the early role structure itself may help to precondition (Beckman & Burton, 2008; Ferguson et al., 2016). Founding team role structures significantly predict later top management team role structures, even when controlling for the professional backgrounds of those who occupy these roles (Beckman & Burton, 2008). Moreover, there is evidence that ventures beginning with a broader array of specialized roles at the time of founding are more likely to speed to their public offerings quickly, regardless of the later top management role structures in place at the time of the IPO event (Beckman & Burton, 2008). Consistent with these findings, other research has linked the design components of the founding team, such as role specialization, formalization, and administrative intensity, to performance outcomes such as revenue (Sine et al., 2006). Together, these findings suggest that the design of role and authority structures in the founding team can have a durable legacy.

To summarize, the endurance narrative emphasizes how organizational design templates originating at founding can be a persistent source of constraint for the venture. Several of the most comprehensive recent longitudinal studies on the internal organizations of entrepreneurial ventures have cohesively argued this narrative. The endurance narrative draws attention to organizational processes that lead to longitudinal stability in organizational structures. It also suggests that actors who follow the founders may sometimes have constrained agency in effecting change in the venture's internal organizational design. In doing so, the research exposes the potential for organizational friction when ventures undergo an organizational redesign during growth.

Despite its theoretical and analytical emphasis, the endurance narrative can be integrated with a story of change. For example, in highlighting how initial employment blueprints shape subsequent patterns of managerial intensity, Baron, Burton, and Hannan (1999, p. 1) suggested

that other facets of organizational design such as role specialization and formalization tend to converge across ventures as they develop. As such, they “appear to be shaped by the need to satisfy external gatekeepers (venture capitalists and the constituents of public corporations), as well as by exigencies of organizational scale, growth, and aging.” Thus, although the endurance narrative highlights bridges between the past and the present, it does not preclude the potential for organizational change during growth.

Change Narrative on Organizational Design

Loosely defined, the change narrative on organizational design emphasizes processes that elaborate role and authority structures in entrepreneurial ventures. The change narrative often begins with the presumption that early task systems in entrepreneurial ventures are informal, emergent, and fluid, in effect relying on founders as powerful central mechanisms for direction (Mintzberg, 1979). Along these lines, roles while the organization is small are still amorphous, communication is frequent and informal (Galbraith, 1982; Leavitt, 2005), and the division of labor has yet to crystallize from its elementary form (Blau et al., 1966; Blau, 1970; Pugh et al., 1969). As ventures navigate greater complexity during growth, however, the change narrative suggests that they move away from these informal systems. Observing tensions created by growth, albeit in established firms, Chandler (1962, p. 16) suggested that “unless new structures are developed to meet new administrative needs which result from an expansion of a firm’s activities...the technological, financial, and personnel economies of growth and size cannot be realized.”

Support for the change narrative on organizational design comes from a composite of intellectual traditions. Early thinkers such as Weber, Durkheim, and Spencer saw the challenges

inherent in governing group behavior when time and size erode the group's ability to be held together through a system of informal ties (Weber, 1946; Durkheim, 1947; Spencer, 1898). Building on these early thinkers, varied research traditions have offered insights into the mechanisms and processes that may lead to transitions in organizational design during growth. Taken together, these varied traditions suggest that ventures will experience pressures as they grow, transitioning away from a fluid organizational structure to one with more precisely articulated roles and decision rights. We outline these traditions below.

Classic studies examining size and structure across a variety of organizational settings generated early support for a narrative emphasizing change (Blau, 1970; Blau et al., 1966; Blau & Schoenherr, 1971; Pugh, Hickson, Hinings, & Turner, 1968, 1969; Rushing, 1967). Several of these classic studies took a Weberian approach, focusing on how growth pushes the organization toward bureaucracy. Broadly, these studies posited that certain designs can equip the organization to deal with the mechanics of managing the complex tasks and interdependencies that accompany scale. At its height, this stream of research was prolific. At least 80 studies comparing organizational size and structure were published in leading management and sociological journals from the 1950s through the 1970s (Kimberly, 1976).

The predominant emphasis of these classic studies was on efficiency in organizational design. They suggested that as organizations become larger, they formalize and divide complex tasks into functional roles, but must also find ways to integrate effort across functions (Blau, 1970; Blau et al., 1966; Blau & Schoenherr, 1971; Chandler, 1962). These studies emphasized how organizations specialize and narrow the boundaries of functional roles as they expand (Tsouderos, 1955). Concomitantly, expectations associated with these functional roles are formalized and standardized through written protocols and procedures. According to classic

studies, the size of the administrative apparatus needed to bridge functions depends on the complexity of tasks being performed. When task complexity is high, organizations tend to become more functionally divided and therefore need more administrative support (Blau, 1970; Blau & Schoenherr, 1971). In drawing these conclusions, many classic studies relied on linear regression analysis and time-invariant cross-sectional data. Consequently, the causal links that this work makes between growth and organizational design should be treated with caution, because the analyses provide correlates of size but offer only limited understanding of underlying processes as they unfold over time.

The goal of classic studies was to identify universal, or at least similar, processes of structural elaboration that all organizations followed. Given small sample sizes and disparities across studies in type, industry, and maturity of organizations surveyed, over time the quest for universalism in this line of work gave way to an exhausting list of contingencies. Not surprisingly, this search was eventually abandoned. The central and most abiding influence of these classic studies, however, is the suggestion that growth almost ubiquitously requires organizational designers to attend carefully to technical considerations surrounding the division of labor, regardless of the basis by which roles eventually become partitioned. The limited empirical research on the design of entrepreneurial ventures has not shown them to be entirely immune to these considerations (see Colombo, Rossi-Lamastra, & Matassini, 2016 for a recent review of entrepreneurial organizational design).

Another perspective on change in organizational design during growth is commonly referred to as the *life-cycle* perspective (Downs, 1967; Kimberly & Miles, 1980; Lippitt & Schmidt, 1967; Lynden, 1975; Quinn & Cameron, 1983; Torbert, 1974). The life-cycle perspective delved deeper into the dynamics of when and how organizational design changes.

Compared to classic work, this perspective shifted emphasis from size to developmental stages and frequently focused specifically on the context of entrepreneurial ventures (Galbraith, 1982; Greiner, 1972; Kazanjian, 1988). Life-cycle studies disputed that organizational role and decision-making structures evolved gradually with size, proposing instead that structural changes cluster at punctuated moments in the venture's development. They generally suggested that ventures conform to a relatively stable organizing pattern within any particular stage, which can be a source of internal pressure during growth. When this pressure boils over enough to constitute a crisis, ventures modify their internal organizational designs and move on to the next stage. Although life-cycle and stage models abounded with differing descriptions, sequences, and numbers of stages, they commonly included early crises arising from ventures' inability to continue coordinating tasks through face-to-face and informal methods due to growth (Greiner, 1972; Kazanjian, 1988; Kazanjian & Drazin, 1990). In response to these crises, life-cycle studies posited that ventures formalize roles, specialize functions, decentralize decision rights, and add administrative personnel (Adizes, 1979; Galbraith, 1982; Greiner, 1972).

As with classic studies, life-cycle studies were not without limitations. Generally, life-cycle studies relied on small-sample, qualitative case studies. From these, researchers tried to create models with broad applications. Similar to classic studies, life-cycle models frequently looked for universal patterns that organizations follow as they adapt to growth. Many contemporary authors objected to stage models, particularly those derived from biological analogies, on the basis that they were either too simplistic or too deterministic (c.f. Whetten, 1987). Despite these limitations, a lasting contribution of life-cycle studies was the insight that new, small ventures are not just miniature versions of large, mature companies. Thus, life-cycle

studies elevated the importance of considering the unique design constraints of new enterprises during growth.

An additional, and perhaps surprising, source of support for the change narrative on organizational design can be found in *institutional theory* (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). This perspective has suggested that the institutional environment in which firms operate can wield a potent influence on internal organizational structures (Scott, 2001), imposing expectations for accountability and legitimacy that may serve as barriers during growth. The institutional perspective has proposed that organizations can create structural legitimacy by following practices that are socially-constructed to indicate competency in performing certain kinds of activities (Suchman, 1995). A more recent body of work has bridged the study of institutions with the study of entrepreneurship to demonstrate how pressures to gain legitimacy and garner the resources needed for growth may lead entrepreneurial ventures to conform to commonly-accepted design templates (Tolbert, David, & Sine, 2011; Zimmerman & Zeitz, 2002). For example, some research has shown that mimicking the titular and other professional structures of prominent players in their field can endow ventures with much-needed legitimacy (Khair, 2010; Zott & Huy, 2007). Broadly speaking, the institutional perspective would suggest that growth could inspire entrepreneurial ventures to reconfigure organizational design templates to conform to expectations embedded in the institutional environment. Growing ventures must also contend with institutionalized expectations based on the experiences of customers with other firms, the experiences of new hires with prior employers, as well as state and federal regulations.

The institutional perspective has also pointed to how specific classes of resource holders, upon whom ventures may depend significantly during growth, can have their own expectations, which may lead to organizational design changes. For example, developing an organization chart

can reassure investors about where authority and accountability sit in the organization; as such, formal roles and specialized titles may arise to appease gatekeepers (Baron & Bielby, 1986; Magee & Galinsky, 2008). Some researchers have provided evidence that investors (and especially venture capital investors) may have assumptions about how potential portfolio companies should be structured and act at different developmental stages (Byers, Dorf, & Nelson, 2018; Pahnke, Katila, & Eisenhardt, 2015). Along these lines, others have observed that ventures may redesign their functional role structures after interacting with venture capitalists, suggesting they may be a source of influence on organizational design (Hellmann & Puri, 2002). As the study of institutional entrepreneurship moves forward, it promises opportunities to examine the social significance of organizational design decisions and to explore how changes in role structures during growth may be grounded in the institutional environment in which the venture operates.

Building on Miner's (1987, 1990, 1991) research, another perspective in the change narrative has drawn attention to the role of early *idiosyncratic jobs* in shaping the evolutionary trajectory of organizational architecture (Aldrich & Ruef, 2006; Baker & Aldrich, 1994). The evolutionary perspective on idiosyncratic jobs— defined as “jobs created around particular people rather than in the abstract” (Miner, 1990, p. 195)— has suggested that organizational roles can be negotiated based on individual attributes and local conditions (Miner, 1987). Research consistent with this perspective has proposed that processes of defining, allocating, and bundling tasks can be tailored to match the skills and abilities of individual founders or employees rather than predefined positions (Aldrich & Ruef, 2006; Baker & Aldrich, 1994). Within the entrepreneurial venture context, examples of distinctive jobs titles are positions such

as “chief evangelist” or “director of happiness.” Idiosyncratic jobs can develop around existing organizational members or be designed to opportunistically attract hires (Miner, 1987).

The evolutionary perspective has proposed that early idiosyncratic jobs can work with processes of formalization to define emergent organizational structures (Miner, 1990). From this perspective, shifting role structures during growth are not just the result of pre-planning, but are influenced by the birth and death of idiosyncratic jobs. Idiosyncratic jobs can introduce useful but unplanned variation into the organizational structure. As the venture grows, some jobs are selected out and others retained by forces such as environmental change and employee turnover. Over time, some idiosyncratic jobs may be diffused and become part of the routine stock of jobs (Miner, 1990). Through these evolutionary processes, the organizational structure may change over time. The evolutionary perspective has stressed, however, that the process by which idiosyncratic jobs facilitate organizational adaptation is complex, nonlinear, and highly affected by situational factors that cause idiosyncratic jobs to come to life and die (Miner, 1990). Thus, while the evolutionary perspective has provided an account for changing role structures during growth, the account it has given is one in which change can be embedded in the past. As such, it can be readily integrated with research emphasizing the enduring influence of initial organizational positions (e.g., Burton & Beckman, 2007).

A final perspective, *information processing*, has emphasized how growth can change the degree to which decision rights are centralized. Mainstream portrayals of founders within organization studies have depicted them as operating through “one man rule,” (Quinn & Cameron, 1983, p. 35) with early decision-making authority tightly centralized around them (Kazanjian & Drazin, 1990; Mintzberg, 1979; Wasserman, 2017). The information processing perspective has suggested that growth can push founders to cede these decision rights.

The information processing perspective builds on the writings of Austrian economist Friedrich Hayek, who proposed that decision rights are best collocated with the knowledge needed to make those decisions (Hayek, 1945). Founders, like all human beings, have a finite capacity for acquiring, processing, and storing information (March & Simon, 1958; Simon, 1947). As growth increases the number and complexity of decisions, founders are unable to retain all the intricate details to make all decisions effectively. The information processing view has pointed out how centralizing decision rights creates the potential for loss and delays in the flow of information up and down reporting chains (Dessein, 2002; Keren & Levhari, 1979; Radner, 1993), problems exacerbated as individual span of control increases. Thus, centralizing decision-making around the founding team (especially the founder-CEO) during growth presents mounting bottlenecks to effective action. To avoid such bottlenecks, the information processing perspective has suggested that organizational designers must pursue one of two strategies: either information must be moved up to those who have decision rights or decision rights must be moved down to those who have information (Jensen & Meckling, 1995). Hayek (1945, p. 524) posited that the latter strategy was more pragmatic given information transfer costs, writing:

...decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them. We cannot expect that this problem will be solved by first communicating all this knowledge to a central board which, *after* integrating all knowledge, issues its orders. We must solve it by some form of decentralization.

Through this conceptual lens, ventures may become progressively more decentralized during growth to avoid duplication and leaks in information processing and to facilitate quicker decision-making. Thus, as growth proceeds in the venture, decisions on firm activities may increasingly be made at lower levels in the organization. As decision rights become decentralized, a managerial reporting chain starts to take shape as some team members are

endowed with authority and others not (Penrose, 1959). Given that nascent ventures are small and seldom have a middle management team at inception (Mintzberg, 1979), one of the prominent manifestations of a shift in decision-rights during growth is the move from a two-layer to a three-layer hierarchy. Indeed, some of the only large-sample econometric evidence on the introduction of middle managers in entrepreneurial ventures has linked the emergence of three-layer hierarchies to problems of information overload (Colombo & Grilli, 2013).

Collectively, the varied research traditions that constitute the change narrative highlight how growth can lead organizations to formalize and elaborate role and authority structures. These themes have ongoing relevance to entrepreneurial ventures, even as millennial-era founders increasingly espouse policies renouncing formal roles and hierarchical authority structures (Gulati & DeSantola, 2016). For example, recent field research suggests that even when founders believe they can transcend bureaucratic structures, in practice these goals can prove difficult to fully realize as their ventures grow (Turco, 2016). The change narrative points to mechanisms that may underlie these patterns of convergence.

TEAM COMPOSITION

The second dimension of organizing along which researchers have assessed the growth of entrepreneurial ventures is their team composition. This dimension focuses on the backgrounds and experiences of the *people* who occupy the roles rather than the structure of the roles themselves (Beckman & Burton, 2008, 2011; Nadler & Tushman, 1980). The people working in the organization intertwine with other considerations such as the product, market, risk, and uncertainty to mold its trajectory. In 1959, Edith Penrose proposed that managerial ability is a crucial determinant of a firm's ability to grow, imposing "fundamental and inescapable limits to

the amount of expansion a firm can undertake at a given time when there is no rigid external barrier to its expansion,” (Penrose 1959, p. 43).

A broad array of studies has examined how the characteristics of organizational members relate to patterns of growth and development in the venture. As new venture leadership has increasingly been recognized as a team rather than an individual endeavor (Jung, Vissa, & Pich, 2017; Klotz, Hmieleski, Bradley, & Busenitz, 2014), the composition of the venture’s upper echelons has been given particular attention. Both the endurance and change narratives allow for turnover of existing members and the entry of new members into the upper echelons team during growth. Yet, the narratives have two principal points of departure.

The first point of departure concerns how easily the venture can alter the characteristics and types of people represented in the upper echelons team. The change narrative focuses on how and why the venture decides to bring in team members with professional credentials, leaving the impression that outside experience can be readily acquired. The endurance narrative, by contrast, underscores how and why it might be difficult for the venture to attract such team members.

The second point concerns the extent to which the characteristics of founding team members continue to influence the venture and its prospects, even if their tenure at the enterprise has ended. The change narrative does not address the role of team members after they exit the venture, and thus by implication assumes that their influence is overridden if the composition of the team is altered. In contrast, the endurance narrative calls attention to the potential for the ongoing influence of the backgrounds and characteristics of early team members.

Thus, the two narratives are distinguished by the extent to which they stress the constraint generated for the venture by the initial team composition. The change narrative emphasizes

forces that work to enable and spur team transitions; the endurance narrative draws attention to the potential for difficulties and friction in making those transitions.

Endurance Narrative on Team Composition

The endurance narrative highlights the constraints generated by compositional features embodied in the venture's founding team. Broadly, the endurance narrative calls attention to the influence of the characteristics founding team members on later team composition and other growth outcomes. Although the body of empirical evidence exemplifying endurance in team composition is still incipient (and therefore somewhat limited), there are a few studies that have drawn on theories of imprinting (Stinchcombe, 1965; Marquis & Tilcsik, 2013), homophily (McPherson et al., 2001), and path dependence (Powell, 1991) to make three points that resonate with the endurance narrative. The first is that the characteristics of founding team members are central to the venture's ongoing development. The second, that ventures may face resource, network, and preference-based barriers to filling gaps in the composition of their management teams through external hires. Finally, that even if these hires are made, they may face difficulties in overriding the influence of the initial characteristics of the founders.

The endurance narrative would suggest that the composition and characteristics of the founding team can be an ongoing source of influence on the venture's development. Along these lines, research has called attention to the importance of the bundle of prior experiences that the founding team brings to the venture. Specifically, the founding team's education and work experience can serve as a source of credibility and knowledge that helps the venture attract attention and access crucial information (Dencker, Gruber, & Shah, 2009; Petkova, Rindova, & Gupta, 2013). Consequently, new ventures are shaped by their founders' past company

affiliations, functional role backgrounds, training, educational pedigree, and history of past successes (Audia & Rider, 2005; Eesley, Hsu, & Roberts, 2014; Eesley & Roberts, 2012).

Consistent with the endurance narrative, there is some evidence to suggest that the effects of a strong founding team composition may amplify over time, rather than recede, to constitute a continuing fount of influence. In their study of semiconductor ventures, Eisenhardt and Schoonhoven (1990) found evidence of a positive feedback spiral in which initial advantages conferred by the founding team compound over time to spur company growth.

While not precluding new team member entry and turnover, the endurance narrative calls attention to hurdles to recruiting new team members whose backgrounds and characteristics differ from founding team members. There are some findings indicating that entrepreneurial ventures may face difficulties in adding, through external hires, functional expertise to their top management teams not already embodied in the backgrounds of founding team members, even when it seems like they might benefit from doing so (Beckman & Burton, 2008). One mechanism that may underlie this constraint is homophily. Entrepreneurs have a propensity to form teams with trusted alters and individuals with whom they have strong personal relationships (Ruef et al., 2003). Given the structural and interpersonal factors that work to induce homophily (e.g. Kossinets & Watts, 2009), these individuals are likely to resemble the founding team members in terms of achieved and ascriptive characteristics. Moreover, the lack of resources, legitimacy and uncertainty that surrounds new ventures' prospects (Bhidé, 2000; Brush, Greene, & Hart, 2001; Stuart, Hoang, & Hybels, 1999) may erect additional obstacles to recruiting outside of founders' own networks, where a basis for trust and local knowledge has already been established (Aldrich & von Glinow, 1992). This creates a potential "professionalization paradox" (Ferguson et al., 2016, p. 1431), wherein ventures that try to fill gaps in the composition of their

top management teams to send positive signals to equity investors, other key stakeholders, or the public market (Chen, Hambrick, & Pollock, 2008; Higgins & Gulati, 2006) are unable to do so because they lack the resources that they hope to attract.

Finally, the endurance narrative suggests that even when new upper echelons hires are made, they may face challenges in overriding the influence of initial characteristics of the founding team. This may be particularly true if external hires are brought in to assume positions once occupied by founders. For example, Burton and Beckman (2007) developed the idea of a position imprint to describe how individuals who first inhabit a role define it based on their own backgrounds and experiences. Subsequent executives that hold the position whose backgrounds do not match the role imprint are likely to exit the firm. Thus, founders with atypical professional backgrounds for their roles may make it difficult for executives with more conventional backgrounds to follow. These findings point to the complications associated with attempts to replace original team members with professional executives whose backgrounds are more typical.

Taken together, the studies that form the endurance narrative emphasize the ongoing influence of founding team members' backgrounds and experiences. They also point to the constraints embedded in the composition of the founding team that may present challenges to handing off the venture to outside professionals during growth.

Change Narrative on Team Composition

In contrast to the endurance narrative, the change narrative emphasizes the forces that *catalyze* changes to the upper echelon team and the workforce that supports them (Boeker & Wiltbank, 2005; Galbraith, 1982; Greiner, 1972; Pollock, Fund, & Baker, 2009). Many have focused

specifically on how and why founders and other upper echelon members are displaced by experienced managers, a process that is often referred to as professionalization (Boeker & Karichalil, 2002; Hellmann & Puri, 2002; Wasserman, 2003). This trend toward professionalization is mirrored in lower levels of the organization, as processes of hiring and turnover reshape the workforce from an old guard to a new guard of functional specialists (Aldrich & Ruef, 2006; Galbraith, 1982; Wasserman, 2012). The change narrative does not address the role played by early team members after they exit, leaving the impression that their influence ends once their tenure at the venture is over. Although the change narrative unites to focus on forces that work to enable and motivate compositional shifts in the team, the studies that comprise it have drawn from divergent theoretical perspectives. We discuss each in turn.

The studies loosely known as the *life-cycle* perspective support the change narrative by suggesting that leadership handoffs from founders to professional managers are an inevitable consequence of changing internal needs that accompany the transition from one organizational life stage to the next (Greiner, 1972; Kimberly & Miles, 1980; Miller & Friesen, 1984). According to the life-cycle perspective, the problems that surface during each stage of development require unique solutions; as such, each stage calls for a different leadership style and constitutive organizational membership (Kazanjian & Drazin, 1990). Sofer (1961, p. 163–164) represented the typical view of life-cycle researchers of his time when he suggested that the people who help get the organization off the ground can be “dramatically unsuited” to its later life: “Just as different procedures are appropriate to different phases of an organization’s affairs, so are different sorts of people.”

Embedded in the life-cycle perspective is a sense that role expectations in rapidly growing ventures can quickly outgrow the skills and interests of the people who occupy those

roles. Furthermore, the life-cycle perspective anticipates that if this is not addressed, it can lead to a leadership crisis in which founders, whose creativity and pioneering product vision energized the venture in its early days, find themselves unwilling or unable to assume the managerial responsibilities required for a larger firm (Adizes, 1979; Greiner, 1972). This leadership crisis typically culminates when a capable and professionally experienced manager is hired. Those further down in the organization can also find themselves supplanted as shifting tasks and narrower role scopes displace early generalist “jack-of-all-trades” with specialized experts (Galbraith, 1982). Given that the old guard is often conferred titles at the venture’s onset that outstrip their experience, the technical exigencies of their roles can grow at a pace that exceeds their ability to learn (Strauss, 1974). Although many life-cycle researchers seemingly endorsed the mantra that “in order to grow, the founder [and original team] must go,”⁴ their evidence for these claims was drawn largely from small sample case studies (see Quinn & Cameron, 1983 for a review). As aforementioned, for these reasons and others, the approach of life-cycle studies to examining management turnover has been disputed by some as being oversimplified (Whetten, 1987).

Another perspective, rooted in *institutional theory* (Scott, 2001; Suchman, 1995), highlights the ways that management change in entrepreneurial ventures during growth may be rooted in taken-for-granted assumptions emanating from the institutional environment in which the venture operates. This perspective accentuates how attempts to overcome deficiencies in legitimacy (Aldrich & Fiol, 1994; Sine & David, 2010; Zimmerman & Zeitz, 2002) might lead to change and turnover in the upper echelons. As the venture grows and its actions become more visible, conformity pressures build that push the venture to follow institutionalized practices

⁴ We credit Willard, Krueger, and Feeser (1992) for using a variant of this clever phrase to describe life-cycle research.

(Dobrev & Barnett, 2005). The venture's leaders, board, or investors resolve these pressures by bringing in individuals with legitimated professional backgrounds. This process is recursive; once inside the firm, experienced professionals reinforce institutional logics of professionalization that undermine the standing of early team members, further increasing the old guard's likelihood of departure.

Specifically, recent work has underscored the influence of the institutional logics of financial investors (Pahnke et al., 2015) on the team composition of entrepreneurial ventures. This work has called attention to the role venture capitalists (VCs) play. Ventures may significantly depend on their VCs for the resources they need to grow, but VCs are far from detached financial partners (Gompers & Lerner, 2004). Just as studies have shown that VCs can influence the organizational design of their portfolio companies, substantial research has proposed they play an active role in professionalizing ventures by replacing the founder as CEO and introducing other compositional changes to the upper echelons team (Boeker & Wiltbank, 2005; Hellmann & Puri, 2002; Wasserman, 2003). Many VCs share common heuristics to assess the progress of ventures (Ruhnka & Young, 1987), including institutionalized assumptions about who is fit to lead the venture at various stages of development. Under conditions of uncertainty, investors may initiate changes in the upper echelon. Indeed, removing a founder from an executive role is perceived as legitimate and constitutes a concrete action that shows the venture is moving in a new direction (Pollock et al., 2009).

Further support for the change narrative on team composition is found in research on *signaling*. The signaling perspective, like other research traditions, spotlights the need for growing ventures to attract favorable attention to garner resources and fuel growth (Pollock & Gulati, 2007). This perspective follows Spence (1973, 1974) in emphasizing how audiences may

attend closely to observable characteristics when information about actual quality is unavailable or costly to obtain. Specifically, it highlights how the composition of the upper echelon team can provide signals of quality to external constituents that attract attention from resource holders and redress uncertainty about future prospects (Higgins & Gulati, 2003). Signals embedded in the upper echelon's composition include prestige of educational background (Lester, Certo, Dalton, Dalton, & Cannella, 2006), professional ties to prominent industry players (Higgins & Gulati, 2003), prior functional roles held, and role legitimacy (e.g., a match between professional background and role occupied within the organization) (Higgins & Gulati, 2006). Spence (1973) originally conceived of signals as open to manipulation, suggesting that they are the result of conscious and voluntary actions on the part of the signaler. Consequently, the signaling perspective points to how growing ventures may attempt to send more favorable signals to resource holders by changing the composition of the upper echelon team as they grow.

Research in the signaling perspective has suggested that evaluators particularly look to signals manifested in the backgrounds and experiences of the team at important junctures, such as fundraising or the IPO (Gulati & Higgins, 2003; Higgins & Gulati, 2006). Thus, signaling research has suggested that entrepreneurial ventures may deliberately try to enhance the professional credibility of their leadership teams by changing them in anticipation of these critical milestones. Consistent with this premise, research has shown that ventures approaching key milestones such as the IPO may engage in remedial "dressing up" processes of aggressively hiring prestigious executives and directors (Chen et al., 2008, p. 954).

Different research traditions unite to spotlight the forces that work to spur change and turnover in the composition of entrepreneurial teams. In particular, the change narrative calls attention to how and why ventures bring on professional managers and credentialed hires during

growth, sometimes at the expense of displacing founders and early joiners. However, the change narrative largely omits a discussion of the potential for difficulty and friction in enacting these changes, leaving the impression that they happen seamlessly. Moreover, it typically does not account for the role of departing team members, implicitly indicating that their influence may be overridden once they exit. Thus, it draws emphasis to factors that promote team change, proposing that shifting role expectations, institutionalized practices, and resource constraints may lead to alterations in team composition during growth.

ORGANIZATIONAL CULTURE

The third internal dimension along which the endurance and change narratives have evaluated the growth of entrepreneurial ventures is their organizational culture. Patterson (2014) describes culture as a conjugate of two reciprocal processes: (1) cultural knowledge or meanings and (2) the pragmatics of how those meanings are produced, transmitted, reproduced, and changed through patterns of interaction. Entrepreneurial ventures represent a fascinating context to study cultural processes precisely because culture is sometimes described as taken-for-granted assumptions and practices (Meyerson & Martin, 1987; Schein, 2004; Selznick, 1957). This conceptualization implies that culture is established at the point of study. Focusing on entrepreneurial ventures opens unique opportunities to study the genesis and crystallization of organizational cultures.

Despite this, there is a paucity of empirical and field work that has examined cultural processes within growing ventures (see Martin et al., 1985 and Turco, 2016 for exceptions). Thus, much of the support we draw on to describe the endurance and change narratives is based

on retrospective accounts of surviving organizations and importing research assumptions from other contexts.

As applied to the context of entrepreneurial ventures, the two narratives alternatively call attention to the stability of cultural systems from the time of founding versus their potential dissipation because of growth. The endurance narrative suggests founders can create self-perpetuating cultural systems that live on through later periods of growth. By contrast, the change narrative calls attention to the fragility of early cultural systems, suggesting that cultural meanings may drift and become differentiated through growth.

Endurance Narrative on Organizational Culture

Although little work has directly examined organizational culture in growing ventures, several researchers have advanced the general perspective that founders and early leaders can infuse their nascent organizations with lasting cultural assumptions, beliefs, and values. Founders shape many of the contours of their organization that influence culture, choosing not only the stated purpose and the environmental context in which the organization operates, but also its constituent members (Schein, 2004). This emphasis on founders as chief architects of organizational culture is broadly consistent with the premise that culture can be considered a coherent system of shared meanings (Ashkanasy, Wilderom, & Peterson, 2000; Peters & Waterman, 1982). Although it does not go so far as to presume stasis, the endurance narrative suggests that organizational cultures can be relatively stable once established, particularly if buoyed by organizational success (Kotter & Heskett, 1992). In its purest form, the endurance narrative would assume that founders can seed durable and self-reinforcing organizational

cultures that can withstand erosion or competition from other meaning systems that may arise through growth.

Early organizational theorists such as Barnard (1938) and Selznick (1957) generated the conceptual antecedents to the endurance narrative by emphasizing the role that leaders play in crafting systems of meaning. These early theorists described actions that leaders can take to put in place systems of values and meaning that can persist after their tenure. According to Barnard (1938), one of the central functions of an executive is to create codes that guide the organization's constituents, thereby facilitating group cohesiveness and collective purpose. This task involves "inculcating points of view, fundamental attitudes, loyalties, to the organization or cooperative system, and to the system of objective authority, that will result in subordinating individual interest and the minor dictates of personal codes to the good of the cooperative whole" (Barnard, 1938, p. 279). Selznick (1957) similarly tasked leaders with defining the purpose and values of their enterprises and creating social structures that reinforce and embody them. These themes presaged later studies of organizational culture, which ascribed founders and other early leaders with the role of shaping the cultures of the organizations they directed (Peters & Waterman, 1982).

As the study of organizational culture burgeoned in the 1980s and 1990s, research that emphasized consistency and integration in systems of meaning often suggested that culture originated with the organization's founders (Deal & Kennedy, 1982; Donaldson & Lorsch, 1983; Kotter & Heskett, 1992). Although this work was primarily conducted in large companies, it frequently indicated that the antecedents of culture dated to the time of founding. This work sometimes emphasized how historical forces can preserve founders' initial cultural models, even if they have become disconnected from the organization. Once established, organizational

cultures perpetuate themselves through the selection of newcomers, socialization and role-modeling, organizational folklore, and bases for promotion and rewards (Kotter & Heskett, 1992). For example, case research has revealed that senior managers often attribute Cisco's cultural focus on customer advocacy to the company's founders, suggesting that their cultural legacy lived on decades later (Gulati, 2010). From this perspective, founders' ideas and values can become institutionalized, serving as a sustained source of meaning that can prove disruptive to alter during later periods of growth (Baron & Hannan, 2002).

To elaborate these processes, Schein (1983, 2004) offered one of the most cogent accounts of the mechanisms by which aspects of cultural models might endure after the time of founding. Although Schein recognized the adaptive and dynamic properties of cultural systems, he also emphasized continuity in at least some elements of cultural assumptions generated by founders if those assumptions become embedded into the fabric of the organization. Schein put business leaders on center stage, suggesting that the choices they make can transform their own beliefs and values into organizational assumptions. Schein offered several examples of the primary mechanisms through which founders can embed their own assumptions into the core of cultural systems. These include: how founders focus their attention; how they react to critical organizational incidents; whether they engage in deliberate role modeling and coaching; how they allocate rewards and status; and the choices they make in who to recruit, select, promote, and dismiss from the organization (Schein 2004, p. 246). Schein saw the more highly visible aspects of culture, such as rites, rituals, or formal statements about the organization's philosophy (Bass, 1985; Clark, 1972; Trice & Beyer, 1984) as secondary mechanisms, providing reinforcement when consistent with founders' behavior and potentially causing cultural conflict when inconsistent (Schein, 2004).

Emphasizing cultural continuity from the time of founding also broadly resonates with studies that have treated organizational cultures as relatively stable and unified systems of values (Geertz, 1973; Harrison & Carroll, 2006; Smircich, 1983). For example, research that explores processes of cultural fit between individuals and organizations (O'Reilly et al., 1991; Rivera, 2012) tends to examine organizational culture as a unitary construct, often out of measurement necessity (Srivastava, Goldberg, Manian, & Potts, 2017). From this perspective, organizations endowed with cultural systems that promote adaptability (Gordon & DiTomaso, 1992; O'Reilly & Chatman, 1996) or scalability (Baron & Hannan, 2002) are more likely to achieve success in navigating periods of growth.

In summary, the endurance narrative highlights forces that promote continuity in organizational culture, indicating that founders may be able to generate systems of meaning that outlast their tenure. Research broadly consistent with the endurance narrative tends to emphasize how culture, once established, can perpetuate itself. Still, research supporting the endurance narrative has typically relied on ethnographic traditions, retrospective case studies, and self-reported surveys. Given that such methods sometimes preclude the researchers' ability to follow organizations over extended periods of time, some of these studies are the result of backward induction in that researchers looked at large companies and then induced the roots of their organizational cultures. Not surprisingly, then, the premise of the endurance narrative that a unitary culture can be created purposefully, or even maintained, has been subjected to both study and debate (Cameron & Quinn, 2011; Frost, Moore, Louis, Lundberg, & Martin, 1985; Martin & Siehl, 1983; Meyerson & Martin, 1987). Next, we discuss the alternative narrative, which emphasizes how growth can erode and fragment organizational cultures.

Change Narrative on Organizational Culture

The change narrative on organizational culture, while not well-developed in existing literature, highlights the potential for cultural drift and differentiation in entrepreneurial ventures during growth. In this section, we draw attention to descriptions of early cultural systems as being cohesive and founder-based in order to reveal the ways that those systems may be transformed by growth. Research has pointed to several ways that cultural systems may change through growth: (1) Founders may no longer play a central role in transmitting organizational culture (2) The nature of cultural meanings may evolve such that they are no longer used in a unified manner (3) Differentiated interpretations of organizational culture may arise as growth drives the formation of subgroups (4) Leaders may have a constrained ability to use conventional tools for managing culture, leading to further drift and differentiation.

Like the endurance narrative, the change narrative begins with the premise that early cultural systems may be anchored in the values, ideas, and beliefs of the founder.⁵ To understand how they may change, it is useful to consider how cultural systems are typically described at the time of founding. Researchers have characterized founders of entrepreneurial ventures as “prime movers” (Quinn & Cameron, 1983, p. 35) and suggested that their identities are “tightly linked” to the early organization (Dobrev & Barnett, 2005, p. 435). They have also suggested that founders may take on a central role in articulating cultural meanings to internal and external audiences. Successful entrepreneurs have been described as being skilled narrators, using language and other symbolic devices to construct identities for their nascent ventures that marshal resources, legitimacy, and support from new audiences (Lounsbury & Glynn, 2001; Martens, Jennings, & Jennings, 2007). To gain commitment from prospective members, they

⁵ Founders’ cultural systems have their own antecedents: for example, founders may draw on prior work experiences (Phillips, 2005) or institutionalized practices (Sine & David, 2010).

may deftly communicate their visions, going beyond “stated purposes” to offer “the system of beliefs and language which give the organization texture and coherence” (Pettigrew, 1979, p. 577). Given that entrepreneurial joiners may forgo pecuniary benefits to join nascent ventures (Roach & Sauermann, 2015), they are likely committed to the founders’ stated mission, which facilitates early consensus around cultural meanings.

Where the change narrative departs from the endurance narrative is in the extent to which it would predict the stability of those early systems of meaning. Portrayals of early meanings in entrepreneurial ventures as anchored in the founders raise an important question: What happens to cultural meanings when ventures grow and links between founders and the organization become attenuated? The change narrative highlights how growth can strain early founder-based cultural systems. Unfortunately, focused work on how cultural systems change in growing ventures is sparse, leading us to turn to cultural studies more broadly to piece together this puzzle. Seminal work by Weber emphasized the transient nature of meaning systems anchored in the charismatic authority of leaders (Weber, 1946), a contemplation that can be extended to founders and their businesses (Trice & Beyer, 1991). Along these lines, other work calls attention to the inherent instability of cultural systems that depend on members feeling a sense of personal draw, attraction to, and identification with their leaders (Kelman, 1961; Wiener, 1988).⁶ This work broadly suggests the fragility of founder-based systems of meaning and predicts that at some point they may dissipate.

The precise nature of how cultural systems change from the time of founding, however, is underspecified in existing literature. Within the cultural studies field, Swidler’s (1986) description of the evolution of systems of meaning from “unsettled” to “settled” social periods

⁶ Certainly, not all founders are charismatic leaders. We draw attention to Weber (1946) here to point to the potential fragility of leader-generated systems of meaning.

may have theoretical relevance to the context of entrepreneurial ventures. Swidler (1986, p. 278-282) used the label “unsettled” to describe periods during which social movements are born and “settled” to describe periods of relative social stability. Although Swidler focused on transformative social and religious movements, the leaders of these movements are not unlike entrepreneurs, who use their vision to rally followers and resources to their cause. Like unsettled periods, at the birth of entrepreneurial ventures, “people are learning new ways of organizing individual and collective action” and “practicing unfamiliar habits until they become familiar” (Swidler 1986, p. 278). Swidler suggested that in this phase of development, cultural meanings take the form of ideology—“highly-articulated, self-conscious” belief systems aspiring to offer unified answers for how people should act. A movement’s founders (or in our case, a company) may take a central role in forging, articulating, and reshaping this ideology to their joiners (Swidler 1986, p. 279). As the group moves further away from the unsettled period, meanings may evolve from ideology into taken-for-granted traditions that seem inevitable, but ones that members may not always enthusiastically endorse. Eventually, cultural meanings may morph into common sense assumptions, providing the material from which individuals construct varying “strategies of action” (Swidler 1986, p. 279-281).

Swidler’s (1986) description offers insight into how cultural systems may change within growing ventures. Specifically, it suggests an evolution from a highly cohesive system of meanings tightly linked to the founders to a system comprised of a diffuse stock of ideas. It also suggests that, through this process, how people use dominant cultural meanings may also transform. Instead of prompting singular, unified patterns of belief and behavior, cultural meanings may be interpreted and used varyingly by organizational members.

Approached from a different angle, the change narrative also connects to cultural research suggesting that norms, values, and ideas do not evolve uniformly across the organization and that different subgroups can house contradictory cultural meanings (Martin, 1992; Meyerson & Martin, 1987). This work would seemingly indicate there is an increased potential for drift and differentiation in systems of meaning as entrepreneurial ventures grow. Broadly, this work suggests the potential for multiple cultural meanings to arise in the venture if growth drives the formation of subgroups with different tenure lengths, functional experiences, functional roles, and professional expectations (Gregory, 1983; Van Maanen & Barley, 1984). Supporting this, Martin, Sitkin, and Boehm's (1985) study of an electronics manufacturing venture found that the founder's perspective was not fully reproduced or transformed into a shared cultural legacy as the organization grew. Instead, differing interpretations of culture arose between employees separated by hierarchical rank and functional division membership (Martin et al., 1985).

This example can be extended to contemplate the many ways that differentiated cultural meanings may arise in growing ventures. To illustrate, high growth can produce tenure-related cohort effects: understanding, solidarity, and mutual trust are more likely to be shared within cohorts than across them (Pfeffer, 1983). As aforementioned, hiring and turnover can also reshape the workforce from an old guard of founders and their joiners to a new guard of experienced professionals (Boeker & Wiltbank, 2005; Galbraith, 1982; Hellmann & Puri, 2002). These hires may have expectations based on their professional training or experiences with prior employers (Baker & Aldrich, 1994), which further differentiate cultural meanings within the venture. Moreover, as the organizational role structure becomes increasingly differentiated through growth, specialized functional groups such as engineering, marketing and sales may drift

apart in terms of constituent members' attitudes and behaviors (Gregory, 1983; Lawrence & Lorsch, 1967).

Consistent with the change narrative, other work has emphasized potential difficulties in employing traditional mechanisms of cultural reinforcement during growth, making cultural fragmentation probable. Researchers focusing on established corporations have suggested that leaders may be able to purposively manage cultural systems (Kunda, 1992; O'Reilly, 1989). However, the mechanisms for engineering and maintaining culture proposed by this work may be thwarted by the exigencies of growth. For example, the leaders of entrepreneurial ventures may attend less carefully to selection of new members when they are under pressures to double in size in a short period (Harrison & Carroll, 1991). Similarly, if the venture is growing aggressively, there may be fewer incumbent employees who can help transmit cultural meanings to the many newcomers who need to be socialized (Kotter & Sathe, 1978). Rapid turnover during growth, especially in the original team, may signal to an organization's members that loyalty and cultural continuity are not valued (Wasserman, 2012). Moreover, when leaders attempt to formally codify and manage the growing venture's culture, these efforts may be met with discontent by employees who note inconsistencies in their experiences of the company's culture (Turco, 2016). For these and other reasons, leaders may have only a constrained ability to shape unfolding cultural systems (Martin et al., 1985). Thus, drift and differentiation are likely (Lodahl & Mitchell, 1980).

To summarize, the change narrative draws attention to the ways that cultural systems may evolve as the venture develops. It suggests the potential fragility of early founder-based systems of meaning. The cultural studies field points to several possible ways that cultural meanings may change over time. Founders may lose their central role in meaning-making, cultural systems may

become less unified, and differentiated interpretations of cultural meanings may arise. These processes may be accelerated if growth constrains leaders' ability to manage culture through conventional means. Still, the insights that undergird the change narrative are, for the most part, not derived from the explicit study of cultural processes in entrepreneurial ventures. Consequently, there is fertile ground for future longitudinal research to refine our understanding of how cultural systems in entrepreneurial ventures change as they grow.

A PATH FORWARD

Across past and present research, two narratives on the relationship between organizing and growth in entrepreneurial ventures have emerged. The first emphasizes how constitutive elements of the internal organization are relatively stable and difficult to change, even when they become a source of friction. The second emphasizes how these elements may shift, adapt, and transform as a consequence of growth. While the first narrative has gained traction within recent research on the internal organizations of entrepreneurial ventures, the second has become increasingly scattered.

In the last decade, a variety of research traditions have attempted to account for change in theoretical frameworks that have traditionally stressed continuity in social systems. Consider the movement to elevate the role of change in institutional theory, which has in the past predominantly emphasized how institutions constrain actors and organizations (Greenwood & Suddaby, 2006; Suddaby, Elsbach, Greenwood, Meyer, & Zilber, 2010). In the field of network research, examining the dynamics of network development and change has increasingly complemented work emphasizing network embeddedness and constraint (Ahuja, Soda, & Zaheer, 2012; Gulati, Sytch, & Tatarynowicz, 2012; Zhelyazkov & Gulati, 2016). Even in the

imprinting tradition, researchers have suggested that multiple sensitive periods occur in a company's existence when templates for organizing may be redrawn and redefined after the time of founding (Marquis & Tilcsik, 2013).

Concurrently, many research traditions have sought to understand the role of agency within existing models of social structure (Battilana, Leca, & Boxenbaum, 2009; Gulati & Srivastava, 2014). Across research traditions, structure appears in many forms. It encompasses institutionalized practices, social positions, resources, history, and other forces that place constraints on individuals and organizations. In their own way, the forces that work to promote endurance in organizational features from the time of founding, as presently framed, constitute a form of structure. They impose constraint on the internal organization of the venture as it grows. By contrast, models of change contain human agency, either implicitly or explicitly.

These broader movements provide occasion for bringing the two narratives on growth and the internal organization together to account for both structure and agency. The entrepreneurial venture context offers researchers unique opportunities to examine the interplay of these two forces. Many of the theoretical frameworks used within organization studies are anchored in research on established companies. Such firms may be deeply embedded within existing social structures, posing considerable limits to the agency of actors to change them. By contrast, entrepreneurship research has typically ascribed a great deal of agency to the leaders of entrepreneurial ventures in recognizing and exploiting new ideas and opportunities (Hitt, Ireland, Camp, & Sexton, 2001; Shane & Venkataraman, 2000). With this in mind, the approach that researchers use to examine the internal organizations of entrepreneurial ventures during growth cannot emphasize constraint alone. Instead, it must also allow for agency. Approaching the study of growth in this manner invites researchers to examine the full range of stakeholders who

jockey to shape the venture during growth and how the outcomes of such contests are situated within the terrain of social structure. These actors include founders and executives, but also board members, investors, key resource holders, and other members of the entrepreneurial team (Garg & Eisenhardt, 2017; Wasserman, 2017). Doing so opens up room to consider how even organizational endurance may stem (at least in part) from the ongoing actions of founders and other early team members who work to promote continuity within the venture.

The study of growing ventures thus presents researchers with opportunities to revisit paradigmatic debates and update theoretical frameworks to account for the considerations of entrepreneurial ventures. A path forward asks researchers to consider how forces of endurance and change jointly shape the internal organization of the venture during growth. This path invites researchers to integrate the endurance and change narratives, and by doing so account for both structure and agency during growth.

Integrating Endurance and Change

Just as we have suggested that structure and agency can co-exist, endurance and change can exist simultaneously. Models of change must incorporate themes of endurance and models of endurance must account for the possibility of organizational change. Failure to do so risks perpetuating a continuous dialectic between paradigms of continuity and change. Bringing the two narratives together will allow researchers to arrive at a more complete understanding of organizational dynamics during growth. We suggest several potential approaches to integrating the two narratives, each raising new questions about the relationship between growth and the internal organization.

Grounding: One potential approach to integrating the two narratives assumes that growth elicits changes in the venture's internal organization, but the nature of these changes is *grounded* in heterogeneous patterns set at founding. From this vantage point, researchers may observe differences *across* ventures related to the embedding of enduring characteristics from founding, even as changes unfold *within* the venture. An emphasis on endurance may also be reframed as an emphasis on convergent change, e.g. change that does not break with the status quo (Battilana et al., 2009; Greenwood & Hinings, 1996). This integration, however, suggests a limited degree of agency after the time founding, which provokes numerous questions. For example, under what conditions do new actors and entrants to the venture during growth have agency to enact changes that diverge from initial templates? How are contestations between local histories and exigencies of growth resolved? When and by whom might organizational blueprints be redrawn?

Varying: A second approach to integrating the two narratives assumes that whether things endure or change *varies* by organizational feature. Put differently, some aspects of the internal organization endure and some aspects change during growth. This invites comparisons of what endures and what changes as the venture develops. Along these lines, Baron, Burton, and Hannan (1999) observed that although organizational design blueprints influence later managerial intensity, they do not appear to influence later organizational formalization or the proliferation of specialized job titles. Another way to perform this integration is to assume that most organizational features do change, but the *pace* at which they change may vary sharply, such that some features appear to have staying power. There may also be variation in the *degree* to which change occurs, with some features experiencing only minor, incremental change (and thereby appearing relatively stable), some features undergoing transformational change, and others falling somewhere on the spectrum in between (Furr, Cavarretta, & Garg, 2012). This

integration prompts several questions concerning why certain facets of the organization endure and others change during growth. Does the extent to which organizational features change vary based on temporal drift, technical exigencies, resource needs, episodic events, institutional expectations, or some other factor? Who are the agents who enact these changes? What must endure and what must evolve in the internal organization lest the venture face the possibility of negative performance outcomes during growth?

Switching: A final approach to integrating the two narratives assumes that entrepreneurial ventures *switch* between periods of continuity and change. For example, growing ventures may pass through long periods of continuity interspersed with periods of transformation and upheaval, as a punctuated equilibrium model might suggest (Gersick, 1991; Romanelli & Tushman, 1994). Taking a snapshot in time could support either narrative, depending on the duration of the time window observed. This integration suggests some mechanisms may trigger change. To what extent are these triggers regular versus episodic? Are they activated by internal or external agents during growth? What happens to ventures that fail to change when typical triggers are activated?

A Need for Longitudinal Studies

As these potential paths towards integration reveal, there are numerous evidentiary holes in our understanding of how growth shapes the internal organization of entrepreneurial ventures. These gaps represent opportunities to engage in thoughtful empirical research that examines how forces promoting endurance and change jointly operate during growth. They also create a pressing need for more longitudinal studies that track the internal development of entrepreneurial ventures. Given the degree of uncharted territory in studying entrepreneurial ventures, research on their

organizations has always benefited from employing grounded, inductive, and qualitative methods (Eisenhardt, 1989; Glaser & Strauss, 1967; Strauss & Corbin, 1998; Yin, 1994). The moment is ripe to complement this work with new large-sample quantitative studies.

Until very recently, limited data restricted researchers' abilities to longitudinally analyze patterns of internal organizing during growth. When the organizational study of entrepreneurial ventures first commenced, large-scale archival datasets were few and far between (Eisenhardt, 2010). The limited availability of archival data pushed researchers to handcraft datasets through time-intensive field research and surveys that demanded painstaking follow-up with respondents. The fact that researchers still use several of these meticulously hand-collected datasets from the 1990s on companies today is a testament to the richness of the content and its ability to power theoretical and empirical insights. Although these datasets have helped pioneer scholarly knowledge on the internal organizations of entrepreneurial ventures, they are not without limitations. These include small sample sizes from restricted geographic and industry contexts; limited observation windows and time horizons; invitation response rates in the range of 20% to 30%; and a constrained ability to penetrate below the top management level to examine the operation of structures and processes among the rank-and-file.

The emergence of new archival data sources on the web and through licensed data packages, however, offers promising opportunities to refine our understanding of the internal organizations of entrepreneurial ventures. Founders, joiners, investors, board members, and other entrepreneurial team members are sharing rich information about themselves and their companies through online biographies, blogs, career networking websites, and other platforms. Concurrently, there has been greater transparency surrounding the outcomes of entrepreneurial ventures. This composite information is increasingly being indexed and archived by public and

licensed data sources such as Crunchbase, Thomson's VentureXpert, BoardEx, Mattermark, Glassdoor, and others. The improved accessibility of fine-grained, longitudinal data should allow a closer examination of the causal mechanisms underlying observed patterns of organizing. Given that the characteristics of being small and privately held define entrepreneurial ventures, archival information on their internal organizations will almost always be less available than information on publicly traded companies. This should not deter researchers from embracing opportunities to seek and use new data sources.

Together with longitudinal qualitative work and field studies, these new data sources may help refine our understanding of causal mechanisms underlying patterns of endurance and change during growth. Particularly important is to move beyond description to identify how organizing patterns influence new venture outcomes. Examples of meaningful outcomes in this context include: survival; patenting and other behaviors associated with innovation; number and types of customers or users attracted; communities served; the achievement of developmental milestones such as fundraising or undertaking an IPO; and financial measures of performance such as revenue, profitability, and valuation. To stimulate future research, we present several ways that our knowledge of growing ventures' internal organizations could be advanced.

Organizational Design: The dominant paradigm in management scholarship is to assume that entrepreneurial ventures have simple structures (e.g., Mintzberg, 1979). As such, future research could explore heterogeneity in organizational design templates at the time of founding and how changing these templates relates to outcomes along the growth pathway. Unfortunately, no design panacea exists that ensures organizational effectiveness: critical internal and external contingencies influence appropriate organizational designs (Burns & Stalker, 1961; Galbraith, 1977; Thompson, 1967). In instituting design choices, entrepreneurial ventures face challenges to

be flexible in reacting to new opportunities as they arise, while also being efficient in executing existing operations. With too much structure in its design, the organization risks stagnation; with too little, it risks endless improvisation and riffing (Davis, Eisenhardt, & Bingham, 2009). Striking the right balance between design flexibility and organizational efficiency can be difficult.

Growth, particularly the potentially unstable and unpredictable growth of an entrepreneurial venture, can make achieving this balance more difficult. Finding the right pace to introduce design changes to initial blueprints may be a struggle for growing ventures. Researchers portray growing ventures that are caught between opposing demands for flexibility and efficiency as likely to fall prey to one of two traps: either they delay updating their early role and decision structures (Chandler, 1962, p. 15), or they update them too quickly (Greiner, 1972). The first scenario seems to be more common (Gulati & DeSantola, 2016), but also potentially more perilous for entrepreneurial ventures that begin with little structure (Davis et al., 2009).

Investigating how ventures cope with oppositional pulls toward structure and flexibility remains a key area of inquiry for scholars moving forward. Specifically, our understanding of entrepreneurial organizational design could benefit from a nuanced examination of the process by which growing ventures elaborate their internal structures, including intermediate organizational scaffolds they use to smooth transitions. Additional large-sample studies are needed to track the dynamics of how the structure of roles and responsibilities over time relate to performance outcomes during growth. Such research could build on prior studies that have explored the elaboration of role structures within ventures, and expand the scope of such studies beyond the ventures' upper echelon to lower levels of the organization (Beckman & Burton, 2008; Ferguson et al., 2016).

Team Composition: A path forward for research on team composition includes a deeper understanding of the backgrounds and motivations of the entrepreneurial joiners who flow in and out of ventures as they grow (Roach & Sauermann, 2015). Research has deepened our knowledge of the upper echelons of growing ventures (Beckman & Burton, 2008; Boeker & Karichalil, 2002; Boeker & Wiltbank, 2005; Ferguson et al., 2016), but much remains unknown about the employees who comprise the organization's lower levels. Additional work could focus on the backgrounds of junior employees as ventures develop and the outcomes of these employees after they leave the venture. Of particular importance is developing a richer understanding of early hires, who may possess valuable firm-specific knowledge. The absence of basic data on their origins or outcomes after they leave the venture creates difficulties in framing effective questions about how early employees might remain engaged or how their institutional knowledge could be preserved. Extending research to the organization's lower ranks will help clarify and focus discussions about issues related to cohort management within growing ventures.

Organizational Culture: There is a paucity of empirical work examining cultural processes within growing ventures, offering researchers many opportunities to investigate the genesis and development of organizational cultures. As new individuals enter the venture during growth, the literature has suggested that substantial tension may be placed on the organization's cultural system. The change narrative highlights the challenges inherent to building an enduring organizational culture as time and size fray personal connections between founders and joiners. An important area for further research is to examine the extent to which cultural meanings survive after the founders and original standard bearers of the organization's culture have left the firm.

The present review exposes many unanswered questions related to whether the leaders of growing ventures can create, spread, and reinforce shared meanings. Longitudinal studies exploring if and how early cultural meanings morph into taken-for-granted assumptions could begin to redress these gaps. Such research could also serve to refine our understanding of mechanisms that sustain or fracture cultural meanings. Studying how these mechanisms work in concert during growth could help scholars account for why some cultural meanings endure and others do not.

IMPLICATIONS FOR ENTREPRENEURS AND EARLY TEAM MEMBERS

The academic focus of the present review raises an important question. What does all of this mean for entrepreneurs and their team members who experience the challenges of growth firsthand? There are many reasons why the oppositional pulls toward endurance and change during growth may generate friction for the venture as a social organism. As Child (1973, p. 170) noted, “it is people who are organized,” and thus the ways that growth affects the people who reside within the venture are worth elaborating. Founders and their early hires may especially feel growing pains (Flamholtz & Randle, 2015; Gulati & DeSantola, 2016).

The simultaneous drive to pursue growth yet preserve original modes of organizing represents a key challenge for entrepreneurs. As founders push their businesses toward growth, they commonly resist modifying its organizational form. Inertia on the part of leaders has many potential roots: a focus on day-to-day tactical activities, perceived (and actual) drawbacks of the move toward a more formalized organization, limited management training and education, and even personal feelings of threat and insecurity (Chandler, 1962, p. 15).

Consequently, growth can engender many contradictions in the behavior of founders, which manifest along each dimension of the internal organization. Founders may aspire for the organization to stay flat and flexible, but find themselves imposing more rigid roles and reporting chains in their organizational design. They may desire to keep the business an affair among friends, but find themselves supplanting the old guard with professional hires in composing their organizational teams. They may expect their company culture to continue to emerge naturally from their own values and beliefs, but find employees drifting away. They may try to remain in command, but find themselves ceding control.

Oppositional pulls between endurance and change during growth also create friction throughout the rest of the team, where members may have even less agency than the founders in responding to growth. As such, growth can create intergenerational fault lines between the old and the new guard of the venture. The former may look longingly to the time of founding, while the latter may welcome the changes that come with growth. Underlying these fault lines are changing role structures (Wasserman, 2012), skill gaps (Kotter & Sathe, 1978; Strauss, 1974), shifting logics of organizing (Baron, Burton, & Hannan, 2001), and assumptions about the skills and experiences the team should embody (Higgins & Gulati, 2003, 2006).

One fault line centers on transitions toward more formal organizational structures during growth. These changes can have pathological effects on the behavior of individuals within the venture. Greater emphasis on technical efficiency, speed, and control can corrode interpersonal relationships within the organization (Adler & Borys, 1996; Merton, 1940). As role boundaries become narrow and more standardized, the old guard may chafe against new limits imposed on their scope of authority and responsibility (Gulati & DeSantola, 2016). At a point, formal controls become counterproductive, as members who feel alienated from common meaning may

lose their motivation to work toward the organization's goals (Deci & Ryan, 1985, 2000). This raises age-old questions about how organizations can enhance the coordination of work without simultaneously undermining systems of meaning (Grant & Parker, 2009; Hackman & Oldham, 1976, 1980; McGregor, 1960).

Another point of tension is the unmet career expectations of the early team, who may find themselves ceding roles that they helped define to outsiders who may be hired over them (Strauss, 1974). As hiring and promotion practices increasingly favor outside specialists, the early team may feel their contributions are not sufficiently valued. Human resource systems thus can exacerbate underlying frictions related to professionalization. These observations tap into the broader literatures on demographic change and divides, which have suggested that heterogeneity in tenure or functional background can raise barriers against team effectiveness, as members struggle to create shared understandings (Ancona & Caldwell, 1992; Lawrence, 1997; Pfeffer, 1983; Wagner, Pfeffer, & O'Reilly, 1984; Zenger & Lawrence, 1989).

Turnover of the old guard, both voluntary and involuntary, as a result of these tensions presents real challenges for growing ventures (Baron et al., 2001). Individuals who have been with the venture since its beginning may have "uniquely valuable" tacit and firm-specific knowledge (Penrose, 1959, p. 46) that is lost if they depart. This is particularly true of the founders, who can act as an ongoing fount of institutional memory (Schein, 1983), provided they can re-envision and accept new boundaries around their roles. Departing founders and early team members across all levels of the organization can also significantly undermine socialization and enculturation processes. Fast growth requires assimilating and training large numbers of people (Kotter & Sathe, 1978), and a key part of that process is socializing entrants to the firm's cultural meanings (Van Maanen & Schein, 1979). Informal mechanisms of socialization, such as on-the-

job learning and social cues, rely on incumbent members to model culturally congruent patterns of behavior (Van Maanen, 1978). When early team members leave, there may be few people left to shoulder this responsibility. This process may be recursive; indeed, as cultural blueprints are altered or eroded, old guard members will be more likely to exit.

The difficulties faced by entrepreneurs in navigating dilemmas presented by growth has fueled demand for guides to scaling in management practice. We suggest that they also constitute fertile ground for management scholarship. With the present review, we have summarized the contours of existing research on growth and the internal organization. The questions asked and answered by extant work lends itself to conducting this exercise in a descriptive fashion—focusing on *what* shifts and *what* persists in the constitutive elements of the internal organization during growth and the mechanisms that may underlie observed patterns. However, vast unexplored territory remains to investigate the process of *how* (e.g., Simon, 1978) entrepreneurial ventures navigate the duality of endurance and change.

Penrose (1959) conceptualized growth not just as an increase in size, but as an internal process. Yet scholarly understanding of how that process unfolds has, to date, remained quite limited. Prior studies of entrepreneurial ventures suggest the potential for complex and nonlinear developmental pathways, including iteration, latency, and even regression (Ambos & Birkinshaw, 2010; Cardinal et al., 2004). Looking at existing research from the perspective of entrepreneurs and their team members will open up new avenues to advance our knowledge of this process. This may involve bridging the study of growing ventures with organizational behavior and human resources literature focused on job design, motivation, and identity (Cardon & Stevens, 2004; Katz, Aldrich, Welbourne, & Williams, 2000).

TOWARDS A HOLISTIC ACCOUNT

The present review has endeavored to offer an integrative account of the internal organizing dilemmas associated with growth for entrepreneurial ventures and has suggested several paths forward to bring unity and coherence to a diverse and fragmented field. Although we have organized our review across three categorizations as an analytical device, the boundaries between these dimensions may be quite porous. Changes (or stasis) in one dimension may reverberate throughout the others.

Future research can further integrate and understand interdependencies among the dimensions. For example, alterations to organizational design that narrow role scope precipitate team changes by shifting the basis of hiring toward specialized roles (Aldrich & Ruef, 2006; Wasserman, 2012). In turn, professionalizing the organization may lead to heterogeneous interpretations of culture and friction between different groups within the team (Galbraith, 1982; Kotter & Sathe, 1978; Martin et al., 1985). Cultural drift and difficulty in reinforcing patterns of behavior through normative controls (Barley & Kunda, 1992; Kunda, 1992) can loop back by encouraging the venture to rework its organizational design (Cardinal et al., 2004; Schein, 2004). A holistic account of growth requires building bridges among studies of design, team composition, and culture. Some of the most intriguing areas for future research on the internal organizations of entrepreneurial ventures lie at the nexus among them.

Just as a caterpillar develops into a butterfly, growth can be a transformative process for entrepreneurial ventures. Organizational studies to date have approached the study of the internal organization of growing ventures from varied angles, leading to considerable heterogeneity in the types of questions asked and the types of theoretical and empirical tools used to answer them.

Table 2.1: Key Themes in Relevant Research

	Organizational Design	Team Composition	Organizational Culture
Endurance Narrative	<p>Influence of design templates of founders on later organizational design:</p> <ul style="list-style-type: none"> ▪ Imprinting and/or path dependence of heterogeneous employment blueprints chosen at time of founding ▪ Replication of founding team role structures in later functional role structures of top management 	<p>Influence of characteristics of founding team members on later team composition:</p> <ul style="list-style-type: none"> ▪ Resource, network, and preference-based hurdles to recruiting new team members whose backgrounds and characteristics differ from founding team members ▪ Distinctive imprints left by founders on the positions they hold that make it challenging for dissimilar individuals to succeed them in those positions 	<p>Establishment of lasting organizational cultures by founders:</p> <ul style="list-style-type: none"> ▪ Founders' values, beliefs, and ideas embedded into the organization ▪ Central role played by founders and other early leaders in meaning-making, modeling, and rewarding culturally-congruent patterns of behavior ▪ Self-reinforcing properties of cultural systems that promote relative stability and continuity over time
Change Narrative	<p>Overarching shift towards specialized roles, formalization, layering, & decentralization:</p> <ul style="list-style-type: none"> ▪ Technical challenges associated with the division of labor and the integration of effort ▪ Developmental stage-related organizational design dilemmas ▪ Institutional pressures to conform to design templates that confer legitimacy ▪ Evolutionary processes related to the selective retention of idiosyncratic roles ▪ Strains on information processing systems relying on centralized decision rights 	<p>Hiring of professionals whose credentials and characteristics differ from founders:</p> <ul style="list-style-type: none"> ▪ Mismatches between the skills, interests, and abilities of early team members and stage of development ▪ Institutionalized expectations of investors and other key stakeholders about appropriate leadership during growth ▪ Heightened pressures to actively manage (or manipulate) signals embedded in the backgrounds and prestige of upper echelon team members 	<p>Drift and differentiation in cultural systems:</p> <ul style="list-style-type: none"> ▪ Attenuation of link between founders and their organizations ▪ Formation of subgroups based on organizational tenure, functional unit, or professional background ▪ Constrained ability of founders and other leaders to actively manage culture during growth

The present review has offered avenues that bring these varied perspectives into conversation, with the aspiration that future research will take up this charge.

CHAPTER 3.

AHEAD OF THE CURVE? NEW VENTURE SCALING AND THE INFLUENCE OF EARLY JOINERS WITH ENTREPRENEURIAL EXPERIENCE

INTRODUCTION

Although many entrepreneurial ventures aspire to growth (Carland, Hoy, Boulton, & Carland, 1984), few advance beyond the initial conceptualization stage and most will eventually fail without ever reaching scale (Åstebro, Herz, Nanda, & Weber, 2014; Fisher, Kotha, & Lahiri, 2016). For new ventures, resources can serve as a buffer against the “liabilities of newness” (Stinchcombe, 1965; Pahnke, Katila, & Eisenhardt, 2015a; Lounsbury & Glynn, 2001). One such vital entrepreneurial resource is tacit knowledge about how to operate effectively within early-stage entrepreneurial domains.

Prior research has identified two paths by which a venture can acquire such knowledge resources: via the founders’ own prior entrepreneurial experience (Dencker et al., 2009; Eesley & Roberts, 2012; Hsu, 2007) and via sponsors such as venture-capital investors, accelerators, incubators, and science parks that are rich in such tacit knowledge (Amezcuca, Grimes, Bradley, & Wiklund, 2013; Cohen, Bingham, & Hallen, 2018; Hellmann & Puri, 2002). However, both paths may be unavailable to a given venture (Hallen, 2008) or costly to access (Pahnke, McDonald, Wang, & Hallen, 2015). This paper investigates an understudied third path to developing this resource: via *joiners* hired soon after a venture’s founding.

Early-stage entrepreneurial domains can be conceptualized as possessing implicit “rules of the game” that differ from those that govern large firms. Such environments expose individuals to a unique set of work conditions (Elfenbein, Hamilton, & Zenger, 2010; Sørensen, 2007): team members must build *de novo* processes and systems while operating flexibly under

conditions of resource constraint (Hannah & Eisenhardt, 2017), uncertainty about future prospects (Ozcan & Eisenhardt, 2009), and ambiguity about the nature of both problems and solutions (Santos & Eisenhardt, 2009). Curiously, even as entrepreneurship is increasingly framed as a team-based endeavor (Beckman, 2006; Jung, Vissa, & Pich, 2017; Klotz et al., 2014), scholarship has largely ignored the role of entrepreneurial joiners (Roach & Sauermann, 2015; Sauermann, 2017) as conduits for the transfer of tacit knowledge resources between ventures. This deficit is surprising given both the ubiquity of the startup career path (Neff, 2012; Sorenson, Dahl, Canales, & Burton, 2018) and joiners' potential for influence due to the blurring of hierarchical and role boundaries in early stage organizational settings (Aldrich & Ruef, 2006; Wasserman, 2012). It stands to reason that ventures will benefit from the presence of joiners with prior experience in early-stage entrepreneurial contexts.

For *growth-oriented* ventures, however, building a resource base on tacit early-stage company knowledge is inherently paradoxical. Research demonstrates that early modes of organizing readily become embedded and difficult to override (Eisenhardt & Schoonhoven, 1990; Marquis & Tilcsik, 2013), even if they prove inappropriate for later stages, and provoke friction when altered (Baron, Hannan, & Burton, 2001; Burton & Beckman, 2007). On the one hand, having prior entrepreneurial experience represented helps a company navigate the unique demands of an early-stage venture; on the other hand, achieving the growth that ventures aspire to makes such early-stage knowledge increasingly irrelevant as the venture acquires more structure and definition (Wasserman, 2003). This paradox creates a unique tension for early-stage entrepreneurial teams: they must pursue creativity and systems-building during the start-up phase (Fisher et al., 2016; Kazanjian, 1988) while anticipating formalization and structure as they scale (Blau, Hyedebrand, & Stauffer, 1966; Mintzberg, 1979).

This study examines the relationship between hiring early joiners with experience in the entrepreneurial ecosystem and outcomes as the venture “scales up” (e.g. DeSantola & Gulati, 2017). Specifically, it asserts that the benefits of such entrepreneurial experience have limits—proposing that there are diminishing, and perhaps even negative, returns to adding joiners with entrepreneurial experience to teams already well supplied with such experience.

I test these predictions using a novel dataset on the internal organization of 1,470 U.S.-based, venture-capital-financed ventures in the technology and life-sciences sectors founded between 2005 and 2012. Specifically, I study hires during ventures’ first two years, examining how such individuals’ backgrounds relate to the likelihood of progression from Series A to Series B financing. I focus on advancement from Series A to Series B financing because this is the period in which the business has been optimizing its product and user base, but must now take the business past its early developmental stage, show a track record, and expand market reach. During this process, the firm typically takes on more organizational structure and focuses on a broader host of skill sets including business development, operations, sales, marketing, and user support to achieve this growth and reach. A Series B round of financing thus signifies that a venture has moved beyond its initial product or service concept (Byers, Dorf, & Nelson, 2018; Pahnke et al., 2015a) toward the concrete “proofpoints”—externally validated, positive signals of concrete progress (Hallen & Eisenhardt, 2012)—that are precursors to scaling up (DeSantola & Gulati, 2017). I supplement quantitative data with 44 semi-structured interviews with founders, joiners, and venture-capital investors who possess first-hand knowledge of the entrepreneurial ecosystem.

In its examination of topics of early entrepreneurial teams, knowledge resources, and imprinting, this study makes three contributions. The first is to advance a theoretical

understanding of entrepreneurial resources (Katila, Rosenberger, & Eisenhardt, 2008; Lounsbury & Glynn, 2001; Zott & Huy, 2007) grounded in the resource based view of the firm (Barney, 1991) by pointing to the underappreciated resource-provision role played by entrepreneurial joiners (Neff, 2012; Roach & Sauermann, 2015; Sauermann, 2017) in contributing to the firm's endowment of knowledge resources. While prior research has highlighted alternative resource channels such as founders and organizational sponsors, this study is amongst the first to draw attention to how entrepreneurial joiners can also act as an important resource-provisioning channel. In particular, this study examines how joiners can act as conduits of tacit knowledge about early-stage entrepreneurial domains. This knowledge constitutes a particularly useful resource in organizations where founders lack such experience. Second, this study demonstrates the importance of resource variety at growth-oriented ventures, and the challenge of constructing early teams characterized by experience in both entrepreneurial and more-structured domains. Finally this study suggests that at growth-oriented entrepreneurial ventures— whose developmental “stage” is still in flux—entrepreneurial experience constitutes a valuable yet fleeting type of knowledge resource. Given built-in decay in the utility of developmental-stage specific knowledge, overweighting on entrepreneurial experience knowledge resources in early-stage hiring may entail dangers. Doing so risks imprinting (Marquis & Tilcsik, 2013; Stinchcombe, 1965) routines, assumptions, and practices that become outmoded as the venture demands more structure. This study's data suggest that the “founding” and “growth” stages are less distinct than is conventionally acknowledged in organizational scholarship (Greiner, 1972; Kazanjian, 1988), and that growth-oriented ventures ought to anticipate more structured future environments even while assembling knowledge resources in their early-stage teams.

EARLY-STAGE KNOWLEDGE AS AN ENTREPRENEURIAL RESOURCE

Entrepreneurial ventures have been conceptualized as newly formed, professionally financed, independently operated firms (Garg, 2013) characterized by innovation in a technological, market, or operational sphere (Carland, Hoy, Boulton, & Carland, 1984). The typical objective of an entrepreneurial venture is to build a scalable business from founders' initial product or business concept (DeSantola & Gulati, 2017), or at least to demonstrate enough progress toward doing so to bring about a liquidity event (Wasserman, 2017). But steep liabilities of newness (Stinchcome, 1965) prevent many ventures from progressing beyond the initial conceptualization stage (Fisher et al., 2016; Kazanjian, 1988); most shut down within five years of founding (Astebro, Herz, Nanda, & Weber, 2014; Dahl & Sorenson, 2012; Romanelli, 1989).

Prior research has highlighted the central role of resources in buffering entrepreneurial ventures against these liabilities of newness (Aldrich & Fiol, 1994; Katila, Rosenberger, & Eisenhardt, 2008; Lounsbury & Glynn, 2001; Zott & Huy, 2007). The resource based view of the firm suggests that such resources consist of "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc." that facilitate the efficient and effective pursuit of organizational objectives (Barney, 1991: 101). Resources that have been shown to positively influence entrepreneurial outcomes include financial and physical assets, such as the amount of funding raised (Hallen & Eisenhardt, 2012); social and reputational capital, such as ties to and endorsements from well-regarded institutions and partners (Stuart, Hoang, & Hybels, 1999; Higgins & Gulati, 2003; Khaire, 2010); and domain competencies, such as a close match between founding-team members' former and current roles (Beckman & Burton, 2008; Higgins & Gulati, 2006).

Tacit knowledge about how to operate effectively in *early-stage* entrepreneurial environments is a key type of entrepreneurial resource. Even given sound strategic decision making about such matters as market selection and timing, new ventures face unique organizational- and operational-level challenges that can inhibit their growth and survival prospects (DeSantola & Gulati, 2017). Research suggests that the initial stage in a firm's life is typically a time of exploration, system generation, and flexibility (Fisher et al., 2016; Wasserman, 2003). The firm encourages exploratory activities, such as rapid prototyping, probing, and experimentation (McDonald & Gao, In press); processes and systems are generated *de novo*; and employees flexibly interchange tasks and roles (Aldrich & Ruef, 2006), which may be idiosyncratic in nature (Burton & Beckman, 2007). Early-stage companies typically pursue these activities against a backdrop of resource constraint (Hallen & Eisenhardt, 2012), questions about legitimacy (Lounsbury & Glynn, 2007), uncertainty about future prospects (Higgins & Gulati, 2006), ambiguity about the nature of opportunities (Santos & Eisenhardt, 2009; Benner & Tripsas, 2012), and rapidly changing competitive landscapes (Garg, 2013).

Given these commonplace challenges, early-stage entrepreneurial companies tend to have their own implicit “rules of the game,” which differ from those that govern large firms.⁷ Tacit knowledge, in both its declarative and procedural forms (Argote & Miron-Spektor, 2011), can specify not just *what* to do to navigate early-stage domains but also *how* to do it. As a serial early joiner put it: “*Just being able to talk to somebody who knows about startups, it's like a different language. It's like going to Comic-Con... you get to go talk about Battlestar Galactica with people that like Battlestar Galactica... It's just like this language that we both have.*”

⁷ Reflecting widespread belief in a difference between the types of knowledge and skill demanded by early- and later-stage companies, a 2018 survey of 120 MBAs that I performed revealed that fully **88%** believed an entrepreneurial team with exclusively large-company backgrounds to have lower odds of success than a team with at least one member with start-up experience.

Yet if tacit knowledge is a resource that benefits entrepreneurial ventures, how can ventures marshal it? A defining feature of tacit knowledge is that it is difficult to transfer (Hinds & Pfeffer, 2003; Nelson & Winter, 1982; Polanyi, 1967; Teece, Pisano, & Shuen, 1997): because knowledge about how to operate effectively in early-stage enterprises is predominantly implicit, it eludes easy codification (Ireland, Hitt, & Sirmon, 2003; McGrath & MacMillan, 2000).

Two strands of literature explore how entrepreneurial ventures acquire tacit knowledge resources about early-stage entrepreneurial domains. The first focuses on embedding the venture in an environment rich in pertinent tacit knowledge. Specifically, research has explored the role of *organizational sponsors*—venture capitalists and other equity investors (Pahnke et al., 2015a; Hellmann & Puri, 2002), accelerators (Cohen, Bingham, & Hallen, 2018), incubators (Amezcuca, Grimes, Bradley, & Wiklund, 2013), and science parks (Armanios, Eesley, Li, & Eisenhardt, 2017)—in helping ventures access tacit knowledge about early-stage entrepreneurial domains. Its key premise is that such sponsors facilitate vicarious learning from peers (Cyert & March, 1963; Levitt & March, 1988), provide advice and strategic guidance (Garg & Eisenhardt, 2017; Hellmann & Puri, 2002), and enable the transfer of routines. But research has also highlighted the drawbacks of the organizational-sponsorship path to early-stage knowledge: sponsors' incentives may be misaligned with those of the focal venture (Pahnke et al., 2015b), inhibiting both provision and absorption of relevant information; competitive threats may prevent reciprocity and vicarious learning (Cohen et al., 2018); and infrequent interaction between ventures and sponsors (Gersick, 1994) may undermine fluid transfer of knowledge. Most saliently, organizational sponsors' external status may expose tacit knowledge to the risk of

being mistranslated or lost as it crosses organizational boundaries (Barley & Kunda, 2011; Argote & Miron-Spektor, 2011; Carlile, 2004).

A second research stream focuses on the *backgrounds of the firm's founders*.

Conceptualizing a founder as a powerful, centrally positioned figure on whom the organization depends (Wasserman, 2017), this work further views the founder as a conduit of knowledge drawn from his or her pre-entry work experience (Beckman, 2006; Dencker, Guber, & Shah, 2009; McKelvey, 1982). Such research is consistent with the organizational genealogical approach (Phillips, 2002; 2005), which explores how founders transfer bundles of routines, knowledge, and social connections from prior employment to the ventures they found (Sørensen & Fassioto, 2011). A central premise is that the imprint of founders' pre-entry experiences can shape organizational behavior and outcomes for years to come (Beckman & Burton, 2008; Marquis & Tilcsik, 2013; Shane & Khurana, 2003). From this perspective, experience at firms during a particular developmental stage can be conceptualized as a form of domain competency akin to functional-role experience (Kacperczyk & Younkin, 2017; Katila, Thatchenkery, Christensen, & Zenios, 2017; Higgins & Gulati, 2006) or industry experience (Eisenhardt & Schoonhoven, 1990; Higgins & Gulati, 2003), in the sense that it can confer organizational-level benefits when it proves applicable to an individual's present-time work environment. Research has linked founders' prior entrepreneurial experience (typically measured as serial entrepreneurship) to such desirable outcomes as survival (Delmar & Shane, 2006; Dencker et al., 2009), greater revenue (Eesley & Roberts, 2012), higher valuations (Hsu, 2007), and a heightened likelihood of undertaking an IPO (Gompers, Kovner, Lerner & Scharfstein, 2010; Beckman, Burton, & O'Reilly, 2007). Curiously, although this line of inquiry assumes that tacit knowledge of early-stage entrepreneurial domains is experientially based (Ireland, Hitt, &

Sirmon, 2003) and primarily transferred via inter-organizational mobility (Dencker et al., 2009), it is largely silent on recourses available to founders without such experience, whose knowledge about early-stage company environments is typically incomplete (Cohen et al., 2018).

There is, however, an understudied third path by which resource-seeking ventures can access tacit knowledge about early-stage entrepreneurial domains: via *joiners* who are hired soon after founding. Entrepreneurship has increasingly been framed as a team-based endeavor (Beckman, 2006; Jung, Vissa, & Pich, 2017; Klotz, Hmieleski, Bradley, & Busenitz, 2014); research offers insights that “human capital may be the most critical resource for new ventures” (Ireland, Hitt, & Sirmon, 2003: 976) and that *team catalyst* is among an entrepreneur’s most essential roles (Agarwal, Campbell, Franco, & Ganco, 2016:1061). Even so, very little work has explored how the pre-entry experiences of early joiners influence organizational-level outcomes. Existing work on entrepreneurial joiners (Kim, 2018; Neff, 2012; Ouimet & Zarutskie, 2014; Roach & Sauermann, 2015; Sauermann, 2017) primarily examines why people join ventures and the implications for their careers of doing so.

Because entrepreneurial joiners often have distinct sets of preferences and unique exposure to opportunities (Roach & Sauermann, 2015), it is not uncommon for them to join a new venture soon after exiting a prior one (Sorenson et al., 2018). I argue that such joiners facilitate inter-organizational transfer of tacit knowledge, thus increasing the likelihood that a venture will progress beyond the initial conceptualization stage. I also posit limitations to such entrepreneurial experience, arguing that for firms that already possess ample experience, increasing this resource base can have diminishing and even negative returns.

JOINERS WITH ENTREPRENEURIAL EXPERIENCE

Organizations often borrow knowledge resources, routines, and practices from the past educational and career affiliations of their earliest constituent members (Agarwal et al., 2016; Phillips, 2005; Waisberg & Nelson, 2018). Imprinting theory posits that the initial phase of an organization's life represents a critical period during which individuals' assumptions, choices, and practices can become embedded in its very fabric (Baron, Hannan, & Burton, 1999; Marquis & Tilcsik, 2013; Stinchcombe, 1965). During this sensitive period, individuals transfer knowledge, assumptions, and social resources acquired at their prior places of employment to the nascent organization (Sørensen & Fassiotto, 2011), where they become deeply enmeshed due to inertial and institutional processes (Phillips, 2005).

Past research has drawn on such theories of imprinting (Stinchcombe, 1965; Marquis & Tilcsik) and on the upper-echelons perspective (Finkelstein, Hambrick, & Cannella, 2008; Hambrick & Mason, 1984) to theorize that the backgrounds and experiences of founding team members leave a lasting mark on the organization (Beckman & Burton, 2008; Burton & Beckman, 2007; Eisenhardt & Schoonhoven, 1990; Klotz et al., 2014). Yet the attributes associated with founders' ability to leave a lasting imprint also characterize early joiners (e.g. Roach & Sauermann, 2015; Sauermann, 2017). Like founders, early joiners arrive while the organization is still small and young, and thus quite sensitive to individual influence (Marquis & Tilcsik, 2013). Hierarchical distinctions between founders and joiners may be minimal, and roles may be fluidly interchanged between members (Åstebro & Thompson, 2011; Aldrich & Ruef, 2006). Early joiners may even take leading roles in core firm initiatives (Gulati & DeSantola, 2016; Wasserman, 2012) and serve as arbiters of their success or failure.

Thus, in order to grasp the full array of actors in a position to influence an entrepreneurial venture, researchers must look beyond those at the very top (e.g. the founding team) to “identify which players are involved and why” (Pettigrew 1992: 178; Carpenter, Geletkanycz, & Sanders, 2004). Interviews with both founders and joiners acknowledge the influential role of early joiners. As a founder of a technology venture noted, *“The first person you hire is **almost a co-founder of the company**, so you’re really looking for a third co-founder.”* An early joiner at a fast-growing online subscription service concurred: *“At that stage, **you really felt almost like a co-founder**. There were five people in the room; we spent all day together. Any decision we made, ... we talked about everything, just because you were in such close quarters.... You really just felt like you were kind of collaboratively building the business together.”*

Building on the conceptualization of early joiners as acting as “conduits of knowledge” (Agarwal et al., 2016: 1061), I posit that joiners with prior experience at other entrepreneurial ventures can transfer tacit knowledge resources to their present venture about how to operate effectively in an early-stage firm. Prior research has advanced the argument that “breeding grounds for entrepreneurial firms are more likely to be other entrepreneurial firms” (Gompers, Lerner, & Scharfstein, 2005:612), and has found evidence of “treatment effects” on individuals’ entrepreneurial propensity, typically measured in terms of subsequent firm founding (Elfenbein, Hamilton, & Zenger, 2010; Politis, 2005; Sørensen, 2007). Like “habitual entrepreneurs” (McGrath & MacMillan, 2000), the entrepreneurial ecosystem also includes habitual joiners, who devote long stretches of their careers to a series of entrepreneurial ventures (Neff, 2012; Sorenson et al., 2018).

My central argument is that experience in entrepreneurial venture environments inculcates both knowledge about how to operate in early-stage firms and domain-relevant skills,

which joiners carry to their next employers. Specifically, joiners transfer knowledge about how to operate in a fluid early-stage environment where processes and systems must be constructed *de novo* (Aldrich & Ruef, 2006) against a backdrop of resource constraint (Baker & Nelson, 2005), uncertainty (Garg, 2013; Ozcan & Eisenhardt, 2009), and ambiguity (Santos & Eisenhardt, 2009). Actors within the entrepreneurial ecosystem tend to be highly attuned to the competencies of early joiners who have worked in startup settings in the past. As a venture-capitalist interviewee commented: “*They have early-stage knowledge, and I would argue that it’s their knowledge that allows them to thrive. I say knowledge not in a Brainiac-knowledge kind of way but **in a tacit-knowledge sort of approach.***” A serial startup joiner characterized his primary contribution to his latest firm this way: “***I could build this core scrappy system—because you have to be scrappy; you can’t build a tuned system at the beginning.***”

Structured work environments—such as large companies characterized by more narrowly defined roles, hierarchical layering, and greater adherence to established technical procedures (Blau et al., 1966; Merton, 1940)—are unlikely to foster competencies that facilitate success in an early-stage company environment. As a joiner at an engineering-systems venture commented: “*When you see someone’s worked at a startup, it’s considered a very positive thing.... When someone is coming from a big company, **one thing that we are always worried about is they’re used to just using the tools they’ve inherited.***”

In short, I theorize that a venture where at least one early joiner has prior work experience at an entrepreneurial venture will be likely to possess tacit operational knowledge that equips it to progress beyond its initial conceptualization phase. At professionally financed entrepreneurial ventures, developmental progress is embodied in financing rounds (Series A, Series B, Series C, etc.), and progression to subsequent rounds is often heuristically contingent

on meeting specific milestones (Pahnke et al., 2015a). Failure to progress to new fundraising rounds within a bounded timeframe usually signals that a venture has ceased to exist as an independent entity or has joined what is colloquially known as “the living dead.” Progression to the second-stage (Series B) funding round within a fixed time frame is typically a sign that a venture has advanced beyond its initial product or service concept (Pahnke et al., 2015a) and achieved “proofpoints,” or concrete markers of early progress (Hallen & Eisenhardt, 2012). As interviewees noted, the Series B round has come to signify that the business is preparing to scale up. For example, one venture-capitalist interview informant commented about the Series B round: “*You look at what the startup has done to try to figure out product-market fit*” because the venture is expected to be positioned to achieve “*repeatability and about consistency,*” e.g. markers of scaling up, in order to receive funding.

Hypothesis 1: Hiring at least one early joiner with entrepreneurial experience will increase a venture’s likelihood of progressing to the Series B fundraising round.

However, I also expect that entrepreneurial experience amongst the early joining team will principally be an asset to firms where the founders themselves lack entrepreneurial experience. One founder of a travel startup whose only prior experience was in a large-corporate setting explained how the joiner she had hired with entrepreneurial experience had benefited her firm: “*There’s context that you learn in an organization that’s highly valuable. So, much like someone coming from a large enterprise environment would know how to navigate bureaucracy and politics and would be comfortable doing things at scale and get used to large impact and stuff like that, someone at a small environment is going know the hacker tips and tricks to do things quickly. They’re going to know the resources [here] that are available to startups. They’re*

going to know tools, whether it's communication or analytics or whatever. That makes their job easier. It's very valuable.”

Yet, while entrepreneurial experience is a resource that early-stage ventures benefit from, but which all actors in the firm need not possess. It can act as a “helping agent” in enabling the venture to get off the ground, but is not a substitute for core functional skillsets needed as the firm approaches the Series B round and is tasked with demonstrating tangible progress in technological, product, and market domains. If founders already possess tacit-knowledge about entrepreneurial domains, they are likely to mobilize that knowledge themselves— embedding it into organizational processes and practices through their own distinctive imprint (Baron, Hannan, & Burton, 1999). Because the organization already has a powerful and highly visible actor with this domain competency, any further tacit knowledge about early stage entrepreneurial domains transferred to the organization via a joiner may be redundant. Thus, I propose:

***Hypothesis 2:** Hiring an early joiner with entrepreneurial experience will be more likely to increase a venture’s likelihood of progressing to the Series B fundraising round when the founders lack entrepreneurial experience themselves.*

THE BENEFITS AND DRAWBACKS OF ENTREPRENEURIAL EXPERIENCE

Despite the advantages conferred by tacit knowledge, overweighting such experience when building an organization is risky. At growth-oriented ventures, a resource base built on tacit early-stage-company knowledge embodies a paradox: such knowledge can help the venture get off the ground, but it becomes increasingly irrelevant as the venture achieves success and transitions toward greater structure (Wasserman, 2003). A company’s infancy is ephemeral; as a firm grows, the ad-hoc and explorative nature of early-stage activities gives way to more structured routines and procedures, formalized tasks, and hierarchical layering (Blau et al., 1966;

Mintzberg, 1979; Pugh, Hickson, Hinings, & Turner, 1968). Because early-stage development is by nature in flux, the domain competencies associated with it decay more rapidly than other forms of domain competency, such as functional role (Higgins & Gulati, 2006; Kacperczyk & Younkin, 2017) and industry experience (Eisenhardt & Schoonhoven, 1990; Higgins & Gulati, 2006). Thus, tacit knowledge pertinent to early-stage ventures becomes obsolete as more structure follows early success (Wasserman, 2003).

Prior research pinpoints to several reasons why preparing for this transition is important even during early hiring. First, research on imprinting demonstrates that early modes of organizing become embedded and difficult to override even if they are inappropriate to later stages (Marquis & Tilcsik, 2013), resulting in organizational friction (Baron, Hannan, & Burton, 2001; Burton & Beckman, 2007). Second, the rapid change that characterizes many entrepreneurial environments (Garg, 2013) can blur the distinction between early-stage and later-stage companies; thus sudden shifts toward more bureaucratic processes may be disruptive to the venture (Baron, Hannan, & Burton, 2001). In keeping with these findings, research on tradeoffs between structure and flexibility has found benefit in incorporating more structure and formalization even into fledging entrepreneurial ventures (Davis, Eisenhardt, & Bingham, 2009; Sine et al., 2006).

Consequently, early-stage entrepreneurial teams face a dual challenge: they must be equipped to build processes and systems from scratch, but also to anticipate the more structured environments to come. A serial joiner, tasked with people operations at his current employer, commented: *“The thematic problem is: how do you build [a team] that is **appropriate for this stage of development but still anticipates** the problems that are probably six months around the corner? Because you can’t rip up everything every six months.... You get so much change fatigue*

that I think you really kill yourself.” Early employees are responsible for co-creating the contours of an organizational infrastructure that is capable of incorporating more structure as the organization grows. In the words of a serial early employee who was his company’s first hire: *“One of the things I realized is that, **while I don’t like bureaucracy, part of my job is to construct one.** I realized this a couple of months ago and it was a very cruel irony.”*

For several reasons, joiners skilled at transmitting tacit knowledge about early-stage companies may be ill-equipped to create processes and systems suited to a more structured organization. Both their intellectual interests and their cognitive shortcuts are apt to be grounded in past experience (Ocasio, 1997; Walsh, 1995), making it likely that their choices and their behavior will adhere to early-stage-company patterns. And, they may simply not know how well the processes and systems they are building will suit a larger company. *“They’ve often never worked at larger companies,”* one interviewee noted. *“So they have **no pattern recognition whatsoever, no muscle memory.**”*

Joiners with entrepreneurial experience may also fall prey to “competency traps” (Levitt & March, 1988; Dencker et al., 2009), overemphasizing modes of operation that they have seen work successfully at fledgling ventures but that do not suit later-stage companies. One risk is steering the organization into an “exploration trap” (Beckman, 2006; March, 1991), wherein new concepts are continuously probed, without ever reaching proofpoints due to failures to shift focus from idea generation to execution. The likelihood of falling into such a trap is increased by the mutually reinforcing nature of competencies and preferences (Levinthal & March, 1993). Specifically, many early-stage joiners prefer informal and creative work environments (Sauermann, 2017), and may discount the future value of more formalized processes and systems or misperceive how soon they will be needed. Prior research indicates that individuals within an

entrepreneurial ecosystem tend to enact distinctive specific role identities: some enact an *inventor* role, characterized by creativity and exploration; others enact a *developer* role, characterized by refinement and expansion (Cardon, Wincent, Singh, & Drnovsek, 2009). Joiners who in the past have elected to work at early-stage entrepreneurial companies are more apt to embrace the inventor role than the developer role.

Consequently, despite the benefits of having entrepreneurial experience embodied in a startup's joiners, overweighting such experience as the venture approaches the Series B financing round is likely to have diminishing and even negative returns. When building their teams, early-stage ventures are thus constrained to seek a balance between the fluid and exploratory activities that typify a nascent enterprise and the more structured work environment to come—a “*very hard threading of the needle*” whose difficulties and rewards surfaced in interviews. As one founder put it:

I like startup experience, but...there's a level of discipline that comes with operating in a large organization that is very valuable. On the other hand, people that have only worked in large organizations tend to think of their job as a box, and only stay within that box—and that's not what you need in a startup. **So we did look for startup experience, but I was also wary of overstartup-ing. That comes with some negative implications.**

Another founder echoed this sentiment:

I think that one of the fundamental tensions in startup hiring is: **how much do you focus on creativity and exploration, and how much do you focus on quality and execution?** A lot of people who are drawn to startups are interested in doing creative exploration and hacking together some project over a weekend or over a week, and seeing how customers respond to it, whereas people who have less startup experience, they're thinking more in terms of planning out a roadmap and executing on that roadmap.

Thus I theorize that teams with both early-stage and later-stage perspectives will be positioned best to get initial systems off the ground and to anticipate the future needs of a more structured company. I propose:

***Hypothesis 3:** The relationship between the proportion of early joiners with entrepreneurial experience and a venture's likelihood of progression to the Series B fundraising round is curvilinear (inverted-U-shaped).*

DATA AND METHODS

Data on the internal organization of entrepreneurial ventures, and particularly on non-members of the firm's founding team (Roach & Sauermann, 2015), has historically been difficult to obtain (Wasserman, 2003; Eisenhardt, 2010). Past studies have typically relied on survey data and small-sample archival studies, which have generated insights but have challenges such as low response rates and limited coverage. To avoid these shortcomings, I constructed a novel dataset. In 2014 I extracted a sample of U.S.-based technology ventures from Crunchbase, a widely used reference site that compiles detailed information on new ventures, their investors, and their outcomes from online and primary sources (Cohen et al., 2018; Piezunka & Dahlander, 2015; Ter Wal, Alexy, Block, & Sandner, 2016). I then collected online résumé data on all individuals who claimed work experience at one or more of these firms from a popular career-networking website: first names, join and exit dates, job titles, and education and career histories before and after working at the focal venture.

The résumé data's coverage is robust. Investigations of the quality of similar online résumé samples have found them to be about 90% accurate and to have vastly lower false-negative rates than other archival sources of employment data, such as patents (Ge, Huang & Png, 2016). The advantages of this archival data are: (a) wide coverage, particularly of skilled technology workers and professionals; (b) information on junior employees; and (c) less

susceptibility to response-rate bias than survey data. By definition, employees of entrepreneurial ventures are recent job switchers; intuition thus suggests that they are apt to maintain up-to-date job information on career-networking websites.

This study focuses on a sample of 1,470 U.S.-based ventures, founded no earlier than 2005 and listed in the Crunchbase database as having raised a Series A round by the close of 2012.⁸ Studying such ventures explicitly restricts my study to firms whose primary objective is to achieve growth and scale (Garg, 2013). The mean number of résumés of founder and early-joiner team members identified per company that raised financing in the sample was 13, with a 25th-to-75th percentile range of 4 to 17.

Following prior research (Katila et al., 2008; Piezunka, Katila, & Eisenhardt, 2018), I supplement archival data with fieldwork: 44 interviews in five U.S. cities, and three full-day site visits to ventures in San Francisco, Austin, and New York (see Table 3.1). Using a semi-structured interview guide, I spoke to founders and joiners at successful and unsuccessful ventures about scaling and building entrepreneurial teams. I also interviewed venture-capital investors at high-status East Coast and West Coast firms for background information on the entrepreneurial ecosystem. The interviews ranged in duration from 0.5 to 2.5 hours (mode of 1 hour) and were transcribed for analysis. I also attended several conferences and pitch competitions, where employees of entrepreneurial ventures network with each other and with investors. This fieldwork focused my theoretical inquiry and bolstered my understanding and interpretation of the mechanisms that underlie the results of the quantitative analysis presented below.

⁸ Crunchbase lists founding dates, but its coverage on this variable is incomplete. I supplement and triangulate these founding dates using the résumé data.

Table 3.1: Interview Respondents

Type	Total Interviewees	Locations	Prior Entrepreneurial Experience	Gender	Example Industries/ Investments
Founders	13	NYC (2); SF (5); Boston (4); Austin (2)	Yes (4); No (9)	Male (9); Female (4)	Online travel; digital health; AI-enabled marketing; subscription retail service; cloud computing; payment technology; new media; personal finance
Joiners	24	NYC (10); SF (5); Boston (4); Austin (4); Other (1)	Yes (6); No (18)	Male (14); Female (10)	
Venture Capitalists	7	NYC (1); SF (2); Boston (4)	N/A	Male (7)	
Total	44	NYC (13); SF (12); Boston (12); Austin (6); Other (1)	Yes (10); No (27); N/A (7)	Male (30); Female (14)	

Notes: Interviews ranged in length from 1/2 hr- 2.5 hrs (mode: 1 hr) and included 3 full-day onsite visits to startups based in New York, San Francisco, and Austin. Interviews drawn from 23 unique organizations.

Dependent Variable: My primary theoretical aim is to understand how the composition of a venture's early-stage team of joiners relates to its probability of progressing beyond the initial conceptualization phase. For VC-backed ventures, a Series B round of financing can be interpreted as a sign of concrete progress toward that goal (Pahnke et al., 2015a), and of the appropriateness of active preparation for scaling and growth. Consequently, my dependent variable is a binary: whether or not a venture raises a Series B round within two years of its Series A round. The two-year time horizon draws on interviewees' observation that 12–18 months is the typical runway time that a venture can sustain before it must raise a Series B round. As a robustness check, I evaluate alternative three-year and four-year time frames.

Independent Variables: The primary independent variables are (a) a binary for whether a member of the founding team had prior entrepreneurial experience; (b) a binary for whether an early joiner had prior entrepreneurial experience; and (c) the percentage of early joiners with prior entrepreneurial experience. Unlike more established organizations, entrepreneurial ventures are characterized by two layer hierarchies (e.g. founders vs. joiners) (Mintzberg, 1979). I identified founders as individuals who either (a) self-identified as a founder or (b) assumed a C-suite position in its first year. As did Eesley & Wang (2017), I identified early joiners as non-founders who entered the venture in the first two calendar years after founding.

I assess whether individuals have entrepreneurial experience based on whether they *ever* had participated in a pre-Series C entrepreneurial venture listed in Crunchbase. Following Higgins & Gulati (2006) and Katila et al. (2017), I elected to use percentages rather than absolute numbers because the absolute number of early joiners with entrepreneurial experience strongly co-varies with the total number of early hires. For the models that include percentage of early joiners as part of the independent variable calculation, I drop all firms that do not hire an early

joiner. For robustness, I also include models measuring this independent variable using absolute numbers so that the full sample can be used.

Control Variables: The study includes multiple controls. I control for the *overall experience* of (a) the founding team and (b) early hires, calculated for each group by averaging the number of years of prior work experience listed on group members' online resumes. I also control for *size of the founding team* and *total number of early joiners*. I control for the *size of the founding team* and the *number of early hires*. I also control for the percentage of joiners in *product-facing* roles (i.e., engineering, product management, and design): these roles were identified using a maximum-entropy model in R that employs natural-language processing techniques to sort self-reported titles into 16 functional role areas after training on a hand-coded dataset of over 3,000 job titles. Note that early-stage ventures tend to be characterized by numerous unconventional job titles that are either generalist or idiosyncratic (Aldrich & Ruef, 2006); these job titles were sorted into a residual group. A second coder then hand-checked the ability of the natural-language processing model to correctly sort the roughly 1,000 unique job titles that accounted for about half of the job titles in the original dataset. This review found that 84% of job titles had been correctly sorted by the model; results were updated to reflect this manual check.

To identify female founders, I matched first names from résumé data to gender probabilities using the API “genderize.io.” This API generates a probabilistic estimate of whether a first name is male or female using profiles from prominent social-networking websites; at the time of the match it contained over 200,000 names in 89 languages—a particularly helpful feature for the U.S. startup ecosystem, where many individuals' names

originate in other cultures or languages. I thus constructed a binary *female-founding team member* variable.

As an important and observable measure of firm quality, I control for having raised Series A funding from a high-status venture-capital investor, measured using eigenvector centrality within technology investment-syndication networks (Katila et al., 2008; Pahnke et al., 2015b). Because fundraising dollars raised can be decoupled from firm valuation due to capital-intensity differences by industry (Wasserman, 2017), and because measures of innovation such as patenting may not be applicable to all firms in the sample, the endorsement of a high-status investor is among the most reliable observable measures of firm quality (Katila et al., 2017; Sorenson & Stuart, 2001). I constructed this variable using all venture-capital co-investments listed in Crunchbase after the collapse of the technology bubble in 2001; I then created a binary variable for “high status,” based on whether any of a venture’s Series A investors was in the top quartile of eigenvector centrality. In several model specifications, I additionally include controls for the amount fundraised in the Series A round, logged to account for skewness. However, capital intensity differences, paired with limited coverage of firm valuation in public datasets, make this an unreliable measure of firm quality. Crunchbase is missing data on this variable for 51 of the firms in the sample. In all models, I control for founders’ educational *pedigree*, using U.S. News & World Report rankings to construct a binary variable indicating whether at least one of the founders attended a top 25 ranked school. All models including founding *year* fixed effects, metropolitan *region* fixed effects, and *market category* fixed effects.

Model Estimation: The main analyses were conducted using a logistic regression model, where the probability of progressing from a Series A to a Series B round within a two year time frame is modeled as:

$$P(t) = L(a + bX_i)$$

where L is the logistic function; a and b are vectors of parameters to be estimated; and X_i is the venture-specific vector of variables. Observations are at the firm unit of analysis. All models include robust standard errors.

RESULTS

Table 3.2 reports descriptive statistics and the univariate correlation matrix linking the variables across the 1,470 firms in the dataset. About 39% of entrepreneurial ventures in the sample progressed from Series A to Series B financing within a two-year time horizon. On average, about 22% of ventures had at least one founder with prior work experience at an entrepreneurial venture; by contrast, 44% had at least one early joiner with entrepreneurial experience. The average size of an early-joining team was 11 members, of whom approximately one individual had startup experience.

In results not displayed, 40% of the sample is located in the San Francisco Bay area, 12% in New York City, 10% in Boston, 5% in Los Angeles and 4% in Seattle. This geographic distribution is consistent with that of venture-capital-financed startups in the Crunchbase database during this time frame, suggesting that it should be representative. The estimated gender composition of joiners at the average firm in the sample is 27% female, unsurprising given that commercially-oriented technology ventures are culturally stereotyped as male-typed (Dimtriadis, Lee, Ramarajan, & Battilana, 2017).

By and large, the correlation matrix shows low correlations among the independent variables. However, there is a high—and expected—correlation (.62) between the number of joiners and the number of joiners with entrepreneurial experience. In my main models, I

Table 3.2: Descriptive Statistics and Correlations

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	
1. Progression to Series B	0.39	1.00														
2. Has founding team startup exp.	0.22	0.06	1.00													
3. Has joiner team startup exp.	0.44	0.16	0.17	1.00												
4. % Joiners, startup exp.	0.08	0.14	0.03	0.20	0.67	1.00										
5. % Joiners, non-founder startup exp.	0.08	0.14	0.02	0.21	0.65	0.97	1.00									
6. Num. of joiners hired	10.95	13.45	0.20	0.09	0.39	0.06	0.07	1.00								
7. Num. of joiners, startup exp.	1.05	1.99	0.15	0.20	0.59	0.51	0.62	1.00								
8. High-status investor	0.16	0.17	0.03	0.12	0.07	0.07	0.18	0.19	1.00							
9. Avg. num. prior work years, joiners	8.63	4.85	0.04	0.02	0.16	0.16	0.15	0.07	0.11	-0.02	1.00					
10. Has joiner in product-facing role	0.81	0.05	0.00	0.16	0.11	0.11	0.05	0.08	0.04	0.20	1.00					
11. % Joiners, product-facing roles	0.40	0.28	0.01	0.01	0.03	0.03	0.04	0.12	0.01	0.02	0.09	-0.19	1.00			
12. Founding team size	2.05	1.20	0.08	0.02	0.05	-0.04	-0.04	0.13	0.04	0.03	-0.04	-0.03	0.04	1.00		
13. Avg. num. prior work years, founders	13.00	6.40	-0.02	0.03	0.02	0.02	0.03	0.06	0.08	-0.06	0.27	0.04	0.03	-0.02	1.00	
14. Founder went to top school	0.49	0.02	0.04	0.07	0.01	-0.00	0.06	0.05	0.06	0.00	0.00	0.04	0.27	-0.01	1.00	
15. Woman on founding team	0.28	0.01	0.05	0.01	-0.01	-0.00	0.05	0.00	0.03	-0.01	-0.06	0.08	0.28	-0.06	0.11	1.00

Note: Across 1,470 observations

followed the examples of Higgins & Gulati (2006) and Katila et al. (2017) by using percentages to calculate proportion of early joiners with entrepreneurial experience. To check for multicollinearity, I obtained variance inflation factors (VIFs) for all non-dummy variables and found them to be substantially below the suggested limit of 10 (Kutner, Nachtsheim, & Neter, 2004). Note that, though some of the firm founding-year fixed-effect dummy variables do have VIFs greater than 10, excluding these control variables from the model does not substantially change any findings.

Table 3.3 presents results testing Hypotheses 1 and 2. Model 1 includes only the control variables. Models 2 and 3 add in the main effects of having at least one founder with entrepreneurial experience and having at least one joiner with entrepreneurial experience, respectively. Model 4 includes the main effects of both the founder and joiner variables; Model 6 displays their interaction. Models 5 and 7 replicate Models 4 and 6, respectively, but include amount fundraised in the Series A round as an additional control.

The results in Table 3.3 show support for Hypothesis 1, which predicts that ventures employing at least one early joiner with prior entrepreneurial experience will be more likely to progress from the Series A to the Series B round. The coefficient on the joiner-with-entrepreneurial-experience variable is positive and significant when modeled independently in Model 3 and when modeled together with the founder with entrepreneurial experience variable in Models 4 and 5.

Table 3.3 also provides support for Hypothesis 2, which predicts that the beneficial effects of hiring an early joiner with entrepreneurial experience will be lessened when a founder already has entrepreneurial experience. The coefficient of the interaction term on the

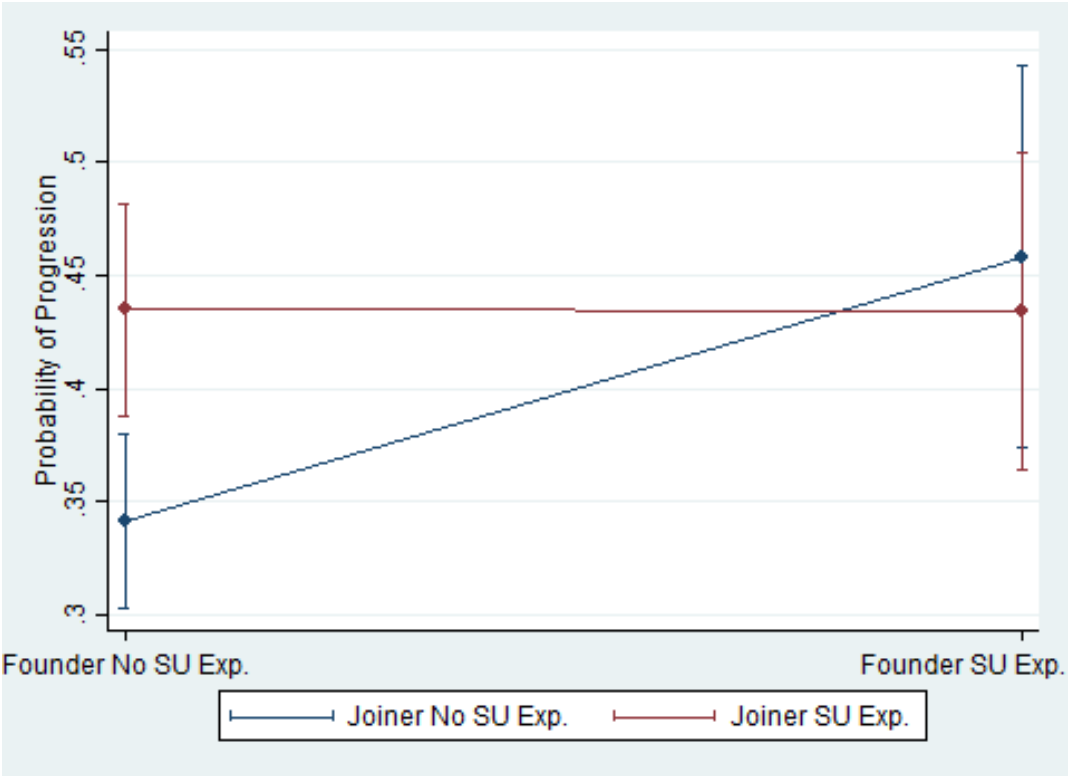
**Table 3.3: Logistic Regression Predicting
Probability of Progression to Series B Financing Round**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.
Founder startup exp. (1=yes)		0.288† (0.151)		0.251 (0.153)	0.303† (0.156)	0.575** (0.219)	0.619** (0.222)
Joiner startup exp. (1=yes)			0.361* (0.151)	0.337* (0.153)	0.336* (0.158)	0.463** (0.166)	0.463** (0.172)
Founder X joiner startup exp.						-0.579* (0.288)	-0.571* (0.292)
High-status investor	0.759*** (0.170)	0.759*** (0.170)	0.758*** (0.170)	0.758*** (0.170)	0.827*** (0.174)	0.732*** (0.170)	0.802*** (0.174)
Log series A fundraising					-0.159* (0.078)		-0.163* (0.079)
Avg. prior work years, joiners	0.020 (0.014)	0.020 (0.014)	0.017 (0.014)	0.018 (0.014)	0.019 (0.014)	0.019 (0.014)	0.020 (0.014)
Joiner product facing (1=yes)	0.258 (0.201)	0.255 (0.201)	0.187 (0.196)	0.189 (0.197)	0.171 (0.202)	0.186 (0.196)	0.166 (0.202)
Num. joiners total	0.038** (0.013)	0.038** (0.013)	0.032* (0.013)	0.033* (0.013)	0.034* (0.014)	0.033* (0.013)	0.034* (0.014)
Founding team size	0.069 (0.056)	0.053 (0.057)	0.072 (0.057)	0.059 (0.058)	0.070 (0.062)	0.057 (0.058)	0.068 (0.062)
Avg. prior work years, founders	0.002 (0.010)	0.000 (0.010)	0.002 (0.010)	0.000 (0.010)	0.003 (0.010)	0.000 (0.010)	0.003 (0.010)
Founder went to top school	0.024 (0.124)	0.026 (0.125)	0.009 (0.125)	0.012 (0.126)	-0.004 (0.128)	0.009 (0.126)	-0.008 (0.128)
Woman on founding team	-0.016 (0.140)	-0.013 (0.140)	-0.018 (0.141)	-0.016 (0.140)	-0.022 (0.142)	-0.013 (0.141)	-0.016 (0.142)
Constant	-1.744 (1.531)	-1.678 (1.526)	-1.789 (1.645)	-1.727 (1.631)	0.434 (1.902)	-1.786 (1.691)	0.427 (1.952)
Pseudo R-square	0.126	0.128	0.129	0.131	0.131	0.133	0.133
Wald chi-square	169.285	170.747	176.069	176.754	172.437	183.338	178.501
Founding Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Market Category Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Regional Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	1,470	1,470	1,470	1,470	1,419	1,470	1,419

†Significant at p<.10 *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.

founder and joiner entrepreneurial experience binary variables is negative and significant in Models 6 and 7. Figure 3.4 illustrates the interaction effects of the founder/joiner-with-entrepreneurial-experience variables in Model 6, with 95% confidence intervals.

Figure 3.4: Predicted Probability of Progression to Series B Financing Round as a Function of Founder and Early Joiner Startup (SU) Experience



At ventures where founders lack startup experience, hiring a joiner with entrepreneurial experience is associated with approximately a 10% marginal increase (34.1% vs. 43.5%) in the

probability of progression to the Series B round. By contrast, at ventures whose founders have prior entrepreneurial experience, no significant incremental increase in the probability of progression is associated with bringing in a joiner with entrepreneurial experience. This pattern suggests that joiners with entrepreneurial experience provide substitutive, but not additive, effects to founder entrepreneurial experience.

Table 3.5 presents the results of testing Hypothesis 3, which posits that the proportion of early joiners with entrepreneurial experience has a curvilinear (inverted-U) relationship with the likelihood of progression to Series B financing. Model 1 in Table 3.5 includes the linear and squared variables for the percentage of early joiners with prior experience. Because the number of joiners with entrepreneurial experience covaries with the size of the entrepreneurial team, I excluded the latter variable from this model, as did Higgins & Gulati (2006) and Katila et al., (2017); this model also excludes the 92 firms that did not hire a joiner at all. Table 3.5, Model 2 replicates Table 3.5, Model 1, but includes the Series A fundraising amount control, reducing the sample size to 1,333. Table 3.5, Model 3 represents an alternative model specification that examines the proportion of joiners with *non-founder* entrepreneurial experience (e.g. pure-type habitual joiners). Note that that very few joiners (<0.5%) had prior founding experience. Models 4 and 5 (Table 3.5) also represent an alternative specification of the joiner entrepreneurial experience variable, using the number rather than the proportion of joiners.

Table 3.5 provides broad support for Hypothesis 3. In Models 1 and 2, the coefficient for the linear term of joiners with startup experience is positive and significant; the coefficient for the squared term of joiners with startup experience is negative and significant, supporting the hypothesis. A similar pattern is evident in Models 3-5, which use the alternative variable

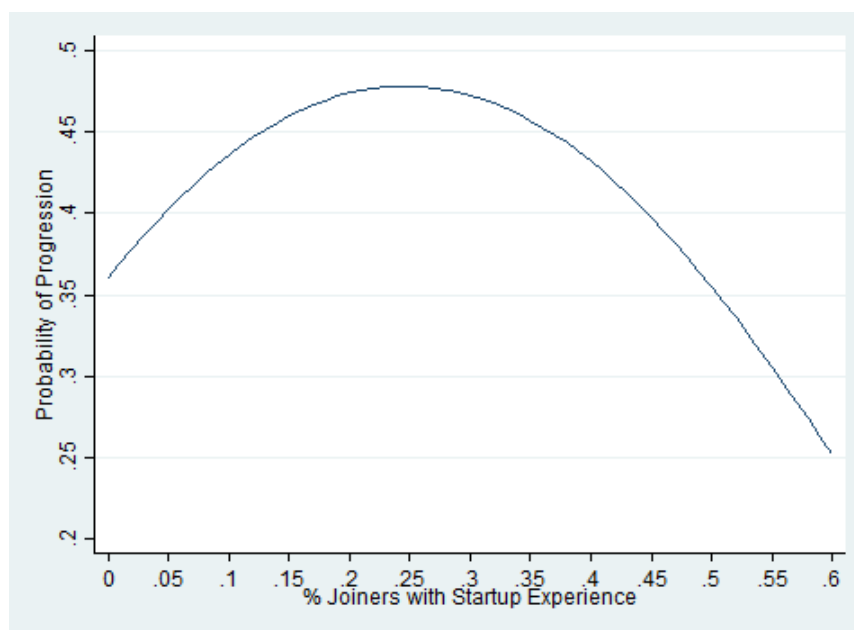
**Table 3.5: Logistic Regression Predicting
Probability of Progression to Series B Financing Round**

	Model 1	Model 2	Model 3	Model 4	Model 5
	b/robust s.e.	b/robust s.e.	b/robust s.e.	b/robust s.e.	b/robust s.e.
Founding team startup exp. (1=yes)	0.294† (0.154)	0.340* (0.157)	0.306* (0.154)	0.292† (0.156)	0.353* (0.159)
% Joiners, startup exp.	4.308*** (1.221)	4.672*** (1.298)			
% Joiners, startup exp. squared	-8.919** (2.774)	-10.355*** (3.079)			
% Joiners, non-founder startup exp.			4.795*** (1.384)		
% Joiners, non-founder startup exp. squared			-11.446*** (3.465)		
Num. Joiners, startup exp.				0.179** (0.059)	0.174** (0.061)
Num. Joiners, startup exp. squared				-0.015*** (0.004)	-0.015*** (0.004)
High-status investor (1=yes)	0.895*** (0.166)	0.921*** (0.171)	0.878*** (0.166)	0.728*** (0.170)	0.806*** (0.175)
Series A financing (log)		-0.063 (0.077)			-0.191* (0.076)
Avg. num. prior work years, joiners	0.014 (0.015)	0.014 (0.015)	0.015 (0.015)	0.019 (0.014)	0.021 (0.014)
% Joiners, product-facing roles	-0.201 (0.227)	-0.187 (0.230)	-0.194 (0.227)		
Num. joiners, product-facing roles				0.083*** (0.022)	0.089*** (0.022)
Num. joiners hired				0.011 (0.010)	0.011 (0.009)
Founding team size	0.099† (0.057)	0.109† (0.061)	0.099† (0.058)	0.049 (0.058)	0.060 (0.063)
Avg. num. prior work years, founders	0.001 (0.010)	0.004 (0.010)	0.001 (0.010)	-0.004 (0.010)	-0.001 (0.010)
Founder went to top school (1=yes)	0.065 (0.127)	0.052 (0.129)	0.053 (0.127)	0.034 (0.127)	0.021 (0.129)
Woman on founding team (1=yes)	-0.045 (0.142)	-0.045 (0.144)	-0.040 (0.143)	-0.014 (0.142)	-0.018 (0.143)
Constant	-0.608 (2.247)	0.132 (2.452)	-0.652 (2.303)	-1.633 (1.613)	0.971 (1.846)
Pseudo R-square	0.105	0.106	0.105	0.143	0.144
Wald chi-square	159.308	156.133	161.389	199.758	197.706
Founding Year Fixed Effects	YES	YES	YES	YES	YES
Market Category Fixed Effects	YES	YES	YES	YES	YES
Regional Fixed Effects	YES	YES	YES	YES	YES
Number of observations	1,378	1,333	1,378	1,470	1,419

†Significant at p<.10 *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.

specifications of percentage of early-joiners with non-founder startup experience and *number* of early-joiners with entrepreneurial experience, respectively. Figure 3.6 illustrates the marginal effects of the proportion of early joiners with entrepreneurial experience (from Table 3.5, Model 1) on a venture's probability of progression to a Series B financing round. Increasing the proportion of joiners with entrepreneurial experience from 0 to 25% raises a venture's probability of progression from 36% to 48%. After that point, each additional percentage increase in early joiners with entrepreneurial experience is associated with a marginal decrease in the probability that the venture progresses to a Series B round.

Figure 3.6: Predicted Probability of Progression to Series B Financing Round as a Function of Proportion of Early Joiners with Startup Experience



Robustness Checks

I performed several robustness checks. Based on the advice of venture-capitalist informants, my main dependent variable examines whether entrepreneurial ventures are able to

progress to a Series B financing round within a two-year time window after raising a Series A round. For robustness, I tested sensitivity on this two-year time horizon. I reran the models using three- and four-year time window horizons, and found the results to mirror earlier reported findings. Using a four-year time horizon increased the average percentage of firms that progressed to Series B to 54%, which closely aligns with externally reported figures (Rowley, 2016). This alternative specification comes at the considerable cost, however, of reducing sample size; only firms that raised Series A financing during the time period 2005–2010 can be included in the sample.

Because my theorizing on Hypothesis 3 suggested that a mix of entrepreneurial and large company backgrounds would be optimal, I also took steps to categorize the prior place of employment of founders and joiners who lacked entrepreneurial experience. Unlike the names of venture-capital financed entrepreneurial ventures, which are readily identifiable via their Crunchbase listings, considerable heterogeneity amongst large companies (e.g. Fortune-500, financial institutions, privately held firms, etc.) precluded their simple identification and grouping. However, hand-coding of the top eleven most common prior employers of early joiners (two companies were tied for the number ten spot) revealed them all to be large incumbent technology firms. Given the typical early needs of entrepreneurial ventures to hire for technical talent, this suggests that the decision-point that entrepreneurs face centers on whether to build a team with experience at other technology ventures, a team with experience at large incumbent technology companies, or a team with a mix of entrepreneurial and large company experiences.

I also modeled progression to Series B using duration (time) models. Specifically, I employed Cox proportional hazard models (reported in the Table 3.7) to evaluate the data, using

time to progression to Series B as the dependent variable. Compared to logistic regression approaches, Cox hazard models can better account for right censoring of data (e.g. events occurring beyond the close of the observation window). Consequently, the Cox models enable the use of additional data collected about ventures that raised their Series A round in 2013 and 2014, which did not meet the two-year observation window criteria of the logistic regression model. This brings the total sample size to 1,902 firms. In these models, a venture was treated as exiting the observation window if it had been acquired. An odds ratio of above 1.0 in the Cox hazard models indicates an increase in likelihood of progression to Series B, while one below 1.0 indicates a decrease in likelihood to progression. The results of the Cox proportional hazard models (reported in Table 3.7) also support Hypotheses 1-3.

Using multinomial logistic regression models, I also assessed the influence of early joiners with entrepreneurial experience on the likelihood that the company is acquired within two years of raising the Series A round. The multinomial logistic regressions contrast firms that progress to the Series B round with those that are acquired and those that fail to achieve either a liquidity event or a fundraising round. In these models, the latter residual category serves as the reference group because, according to venture capitalist informants, companies that fail to progress or be acquired typically have ceased operations. This robustness check (reported in the Table 3.8) did not yield significant main effects on the joiner-entrepreneurial-experience variables in predicting likelihood of acquisition. Nor did excluding acquired companies from analysis substantively alter the findings reported here.

Because joiners with entrepreneurial experience are not randomly assigned to entrepreneurial ventures, I sought to account for selection bias by re-running analysis for

**Table 3.7: Cox Proportional Hazard Model for
Time to Progression to Series B Round**

	Model 1	Model 2	Model 3	Model 4
	odds ratio/ robust s.e.	odds ratio/ robust s.e.	odds ratio/ robust s.e.	odds ratio/ robust s.e.
Founding team startup exp. (1=yes)	1.125 (0.113)	1.563** (0.231)	1.216* (0.121)	1.176 (0.119)
Joiner team startup exp. (1=yes)	1.344** (0.123)	1.505*** (0.151)		
Founder X joiner startup exp.		0.590** (0.111)		
% Joiners, startup exp.			31.854*** (25.721)	
% Joiners, startup exp. squared			0.000*** (0.001)	
Num. Joiners, startup exp.				1.142*** (0.044)
Num. Joiners, startup exp. squared				0.990*** (0.003)
High-status investor (1=yes)	1.531*** (0.142)	1.516*** (0.140)	1.673*** (0.156)	1.488*** (0.137)
Avg. num. prior work years, joiners	1.016 (0.010)	1.016† (0.010)	1.016† (0.010)	1.016† (0.009)
Joiner product facing (1=yes)	1.158 (0.146)	1.153 (0.145)		
% Joiners, product-facing roles			0.815 (0.118)	
Num. joiners, product-facing roles				1.052*** (0.010)
Num. joiners total	1.017*** (0.003)	1.018*** (0.003)		1.009* (0.004)
Founding team size	1.044 (0.036)	1.043 (0.036)	1.057 (0.038)	1.019 (0.036)
Avg. prior work years, founders	0.996 (0.007)	0.996 (0.007)	0.997 (0.007)	0.993 (0.007)
Founder went to top school	0.967 (0.079)	0.963 (0.079)	1.036 (0.087)	0.995 (0.081)
Woman on founding team	0.912 (0.085)	0.916 (0.086)	0.926 (0.087)	0.934 (0.086)
Pseudo R-square	0.034	0.035	0.028	0.038
Wald chi-square	1020.905	1071.035	255.293	1104.317
Founding Year Fixed Effects	YES	YES	YES	YES
Market Category Fixed Effects	YES	YES	YES	YES
Regional Fixed Effects	YES	YES	YES	YES
Number of observations	1,902	1,902	1,779	1,902
†Significant at p<.10. *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.				
Notes: Tied failures handled using Efron method. Firms that have been acquired assumed to be no longer at risk of Series B following year of acquisition. Firms founded in 2013 and 2014 included in analysis.				

Table 3.8: Multinomial Logit

	Model 1		Model 2		Model 3		Model 4	
	Series B	Acq.	Series B	Acq.	Series B	Acq.	Series B	Acq.
	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.	b/ robust s.e.
Founding team startup exp. (1=yes)	0.210 (0.154)	0.171 (0.221)	0.598** (0.229)	0.610* (0.307)	0.233 (0.155)	0.165 (0.230)	0.237 (0.157)	0.198 (0.226)
Joiner team startup exp. (1=yes)	0.365* (0.153)	0.077 (0.210)	0.513** (0.166)	0.259 (0.230)				
Founder X joiner startup exp.			-0.697* (0.298)	-0.830† (0.423)				
% Joiners, startup exp.					4.143*** (1.117)	0.519 (1.320)		
% Joiners, startup exp. squared					-7.992*** (2.394)	-0.671 (1.909)		
Num. Joiners, startup exp.							0.175** (0.061)	-0.066 (0.090)
Num. Joiners, startup exp. squared							-0.012** (0.004)	0.005 (0.004)
High-status investor (1=yes)	0.776*** (0.176)	0.485* (0.247)	0.749*** (0.177)	0.456† (0.248)	0.921*** (0.171)	0.525* (0.246)	0.731*** (0.176)	0.482† (0.249)
Avg. num. prior work years, joiners	0.025† (0.014)	0.019 (0.020)	0.026† (0.014)	0.019 (0.020)	0.017 (0.014)	0.007 (0.022)	0.026† (0.013)	0.028 (0.018)
Joiner product facing (1=yes)	0.219 (0.194)	0.466† (0.273)	0.217 (0.194)	0.465† (0.274)				
% Joiners, product-facing roles					-0.093 (0.224)	0.192 (0.335)		
Num. joiners, product-facing roles							0.077*** (0.020)	0.029 (0.031)
Num. joiners total	0.027* (0.012)	-0.004 (0.015)	0.028* (0.012)	-0.003 (0.015)			0.007 (0.008)	-0.007 (0.014)
Founding team size	0.118† (0.061)	0.107 (0.079)	0.118† (0.062)	0.105 (0.079)	0.146* (0.062)	0.096 (0.079)	0.112† (0.061)	0.118 (0.077)
Avg. prior work years, founders	-0.005 (0.010)	-0.061*** (0.015)	-0.005 (0.010)	-0.062*** (0.015)	-0.004 (0.010)	-0.060*** (0.015)	-0.010 (0.010)	-0.064*** (0.015)
Founder went to top school	-0.153 (0.127)	-0.453* (0.181)	-0.162 (0.127)	-0.466* (0.182)	-0.101 (0.128)	-0.408* (0.185)	-0.124 (0.127)	-0.450* (0.182)
Woman on founding team	-0.098 (0.140)	-0.288 (0.213)	-0.099 (0.141)	-0.290 (0.213)	-0.098 (0.143)	-0.279 (0.217)	-0.092 (0.142)	-0.332 (0.212)
Constant	-0.901 (1.234)	-13.710*** (1.035)	-0.981 (1.287)	-13.806*** (1.091)	0.282 (1.671)	-13.124*** (1.534)	-0.783 (1.229)	-13.535*** (1.018)
Pseudo R-square	0.085		0.087		0.065		0.093	
Wald chi-square	888.047		845.594		650.728		854.763	
Founding Year Fixed Effects	YES		YES		YES		YES	
Region & Market Category Controls ^a	YES		YES		YES		YES	
Number of observations	1,470		1,470		1,378		1,470	

†Significant at p<.10 *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.

Notes: The dependent variable consists of three categories: Progression to Series B, Acquisition, and the Residual reference group (failure to progress or be acquired).

a. Because the multinomial logit models would not conform when all region and market category fixed effects were included, coarsened region and market category controls were used. Specifically, controls were included for the top three geographic regions (SF, Boston, and NYC) as well as whether the firm was a biotech vs. technology firm.

Hypothesis 1 using a coarsened exact matching (CEM) modeling approach (Blackwell et al., 2010). An advantage of coarsened exact matching is that it improves the covariate balance between the group of ventures that hired at least one joiner with entrepreneurial experience and the group that did not. Results of the coarsened exact matching models are reported in the Table 3.9, including details about matching criteria. I continue to find support for Hypothesis 1 after matching on select covariates (matched sample of 1,169) and all covariates (matched sample size of 448). CEM techniques are inappropriate for matching beyond two groups, and thus are not suitable for use in testing Hypotheses 2-3.

I also considered the potential influence of joint founder-joiner past entrepreneurial work experience. In at least one venture where I performed interviews, the founder had recruited several of his early joiners from the previous venture where he had worked. This raises the possibility that my findings might be driven by joint work experience rather than startup experience per se. I separated joiners with entrepreneurial experience into two distinct groups: Those whose startup work histories overlapped with the founders and those whose did not. Results of this robustness check are presented in 3.10. Although qualitatively the overlapping and non-overlapping experience variables showed a similar pattern (e.g. a positive coefficient on the linear term and a negative coefficient on the squared term), only non-overlapping experience was significant. From this, we can conclude that the joiner entrepreneurial experience effects reported in this paper are influenced by joiners whose startup-experience was independent and did not overlap with founders.

Perhaps most importantly, I considered the possible effects of data missing from the career-networking website. The first question is one of self-selection: not all individuals create or

Table 3.9: Coarsened Exact Matching Robustness Check (H1); Logistic Regression Predicting Probability of Progression to Series B Financing Round		
	Model 1: Select Covariates	Model 2: All Covariates
	b/ robust s.e.	b/ robust s.e.
Joiner startup exp. (1=yes)	0.380* (0.159)	0.485* (0.232)
Avg. prior work years, joiners	-0.002 (0.018)	
Joiner product facing (1=yes)	0.546* (0.234)	
Founding team size	0.134* (0.068)	
Woman on founding team (1=yes)	0.070 (0.171)	
Avg. prior work years, founders	-0.005 (0.012)	
Constant	-2.023*** (0.427)	-1.787*** (0.489)
Pseudo R-Square	0.085	0.128
Wald Chi-Square	96.313	75.986
Number of matched observations	1,169	448
<u>Matching Procedures</u>		
<p>Model 1 uses CEM procedures (Blackwell et al., 2010) to exactly match firms by the following variables: Founder entrepreneurial experience; high status Series A investor; educational pedigree of founders; and year of founding. Coarsened matching was used on the number of joiners hired, industry (e.g. biotech vs. tech), and geographic (SF, Boston, NYC, vs. Other region) variables. In the logistic regression analysis, all variables not included in the CEM were used as controls, as well as more granular industry and geography fixed effect variables.</p>		
<p>Model 2 uses CEM procedures to match firms on all covariates included in the main analysis of this paper. With two exceptions (industry and geography), all binary variables were exactly matched. Coarsened matching was used on all continuous variables. It was also used on industry (e.g. biotech vs. tech). and geographic (SF, Boston, NYC, vs. Other region) variables. In the logistic regression analysis, more granular industry and geography fixed effect variables were included as controls.</p>		
<p>†Significant at p<.10 *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.</p>		

**Table 3.10: Robustness Checks on Founder-Joiner Joint Experience;
Logistic Regression Predicting Probability of Progression to Series B Financing Round**

	Model 1	Model 2	Model 3	Model 4
	b/robust s.e.	b/robust s.e.	b/robust s.e.	b/robust s.e.
Founder startup exp. (1=yes)	0.280† (0.159)	0.520* (0.212)	0.327* (0.160)	0.302† (0.162)
Joiner startup exp. no overlap with founders (1=yes)	0.373* (0.155)	0.479** (0.167)		
Joiner startup exp. overlap with founders (1=yes)	-0.022 (0.352)	-0.020 (0.344)		
Founder X joiner startup exp. no overlap		-0.482† (0.285)		
% Joiners, startup exp. no overlap with founders			4.126*** (1.221)	
% Joiners, startup exp. no overlap squared			-8.143** (2.829)	
% Joiners, startup exp. overlap with founders			1.902 (3.713)	
% Joiners, startup exp. overlap squared			-7.385 (7.696)	
Num. joiners, startup exp. no overlap with founders				0.184** (0.060)
Num. joiners, startup exp. no overlap squared				-0.015*** (0.004)
Num. joiners, startup exp. overlap with founders				0.207 (0.399)
Num. joiners, startup exp. overlap squared				-0.064 (0.130)
Num. joiners total	0.032* (0.013)	0.033* (0.013)		0.011 (0.010)
Constant	-1.732 (1.639)	-1.782 (1.691)	-0.591 (2.215)	-1.629 (1.611)
Pseudo R-square	0.131	0.133	0.105	0.143
Wald chi-square	178.849	183.004	158.415	201.614
Same Controls as Main Models	YES	YES	YES	YES
Founding Year Fixed Effects	YES	YES	YES	YES
Market Category Fixed Effects	YES	YES	YES	YES
Regional Fixed Effects	YES	YES	YES	YES
Number of observations	1,470	1,470	1,378	1,470

†Significant at p<.10 *Significant at p<.05. **Significant at p<.01. ***Significant at p<.001; significance levels based on two-tailed tests.

maintain active online résumés. After the interviews, I checked whether each of the founder and joiner interviewees maintained an online profile; given that my sample is drawn from sophisticated technology workers, it should not be surprising that all interviewees maintained such a profile, or that the information in these profiles closely aligned with their educational and career histories as described in interviews. For missing data to be a serious empirical issue, moreover, they must not be missing at random; that is, there must be some correlation between missing data and dependent variables. When asked directly, interviewees denied omitting information about past participation in failed companies. This response is unsurprising given that, in the U.S.-based entrepreneurial ecosystem, startup failure is often celebrated as a learning experience rather than stigmatized. The second question about missing data has to do with recency bias in the career information reported on social-networking websites, as well as the names of startups listed in the Crunchbase dataset. To address this question, I reran the analysis excluding ventures founded prior to 2008. As in the case of other robustness checks, all findings remained substantively unaffected.

DISCUSSION

This study explores the influence of joiners with entrepreneurial experience on new-venture outcomes—specifically, on progression to Series B financing. I first hypothesized that such joiners can act as conduits of tacit knowledge resources about how to operate effectively within early-stage entrepreneurial domains, increasing a venture’s likelihood of progression. I also posited that there would be diminishing, and even negative, returns to overweighting on such experience at growth-oriented ventures that must anticipate a more structured organizational environment in the future. Using a novel dataset on the early teams and funding-

progression outcomes of 1,470 U.S.-based entrepreneurial ventures, I tested these predictions and found broad overall support for these hypotheses.

To existing research on *entrepreneurial resources* (Cohen et al., 2018; Hallen & Eisenhardt, 2013; Katila et al., 2008; Zott & Huy, 2007), this study adds a sharp focus on early joiners. Specifically, it looks at how early joiners can help build tacit operational-level competencies in an early-stage business environment replete with functional-role and task fluidity (Aldrich & Ruef, 2006; Elfenbein et al., 2010), lack of incumbent processes and systems (Aldrich & Ruef, 2006), resource constraints (Baker & Nelson, 2005), and uncertainty about products, customers, and competitors (Garg, 2013; Ozcan & Eisenhardt, 2009). This resource appears to be most beneficial to founders who lack entrepreneurial experience themselves. Compared to other paths to this resource described in prior research, mobilization via early joiners appears inexpensive: it does not call for would-be founders to undertake a career spell in the entrepreneurial ecosystem that may be personally costly, or for ventures to affiliate with organizational sponsors that may insist on a significant equity stake (Wasserman, 2017) or board control (Garg & Eisenhardt, 2017), or expose the venture to misaligned incentives (e.g., Pahnke et al., 2015b). By comparison, early joiners' compensation (in cash or equity) is often quite modest (Wasserman, 2012). From a researcher's perspective, studying joiner backgrounds, as opposed to founder backgrounds, also brings with it the advantage of theoretically parsing knowledge resource acquisition from signaling. While there is a large body of work that demonstrates that investors attend closely to signals emanating from the backgrounds of founders and top management teams in lieu of past performance data (Hallen & Eisenhardt, 2012; Higgins & Gulati, 2003, 2006), there is no evidence that they attend to joiner backgrounds. In fact, when directly queried whether joiner backgrounds matter in investment decisions, one venture

capitalist informant directly refuted this suggestion. Consequently, we should expect that links between joiner backgrounds and firm performance should be more tightly coupled with firm operational dynamics than with investor attention to signals.

Yet, this study also highlights the risks of overweighting this resource in teams that already embody ample entrepreneurial experiences. Demonstrating a curvilinear (inverse-U) relationship between the proportion of early joiners with entrepreneurial experience and successful progression to the Series B financing round reveals the value of resource variety in entrepreneurial ventures; it also demonstrates that constructing teams whose joint experience spans early- and later-stage domains can positively influence firm outcomes. Prior research might predict that such experiential variety entails coordination costs (Ancona & Caldwell, 1992), but in this time-compressed setting learning costs (e.g., about entrepreneurial vs. more structured settings) appear to exceed coordination costs. Teams with a mix of early- and later-stage experience appear to be better positioned to face the dual challenges of navigating early-stage entrepreneurial environments while anticipating the formalization and structure apt to be required of them as they grow. Intriguingly, at 25%, the peak of the inverse-U is tilted in such a way that overweighting on hiring from entrepreneurial domains appears riskier than comparable underweighting. These findings dovetail with prior research suggesting that, in entrepreneurial settings, it is better to err on the side of too much structure than on that of too much flexibility (Davis et al., 2009; Sine et al., 2006).

This study also contributes to the literature on *imprinting*, whose focus on founders (Baron, Hannan, & Burton, 1999; Beckman & Burton, 2008; Johnson, 2007; Shane & Khurana, 2003) has largely eclipsed other actors who may play an imprinting role in a young organization. I extend this literature by advancing a more expansive conceptualization that views early joiners

as members of the “inner circle” (e.g., Thompson, 1967) that shapes a firm’s downstream outcomes in years to come. Specifically, I find that the backgrounds of early joiners predict mid-range survival outcomes (e.g., progression to Series B financing) years later, when a venture takes its initial steps toward scaling up. The apparent influence of early joiners suggests that the duration of an organization’s sensitivity to imprinting (Marquis & Tilcsik, 2013) extends beyond its founding, an insight that raises intriguing questions for future research about how long the imprinting period endures and how long an early imprint typically persists before it is overridden or reset. This study also shows that imprints can generate friction for organizations in flux (Baron, Hannan, & Burton, 2001): modes of organizing that conferred advantages at the time of imprinting can become liabilities if they prove inappropriate to an organization’s shifting environment. For growth-seeking entrepreneurial ventures, which are typically in such states of flux, the ongoing stickiness of early imprints makes it imperative to anticipate future structure even during early-stage hiring.

Finally, this study contributes to research that seeks to pry open the black box of organizational processes that foster growth and development (DeSantola & Gulati, 2017; Eisenhardt & Schoonhoven, 1990; Khair, 2010). Its findings elevate the role of early hiring decisions in seeding scaling processes: as one interviewee put it, part of the job of early joiners is “to construct a bureaucracy.” In particular, the finding that joiners’ entrepreneurial experience is curvilinearly associated with progression to Series B financing suggests that new-venture scaling outcomes are not driven exclusively by the identification, selection, and capture of business opportunities (Baron & Ensley, 2006; Eesley & Roberts, 2012; Gruber, MacMillan, & Thompson, 2008), since those strategic choices are primarily the domain of founders. Joiners, by contrast, are most tightly coupled to organizational and operational-level dynamics; thus the

observation that joiners' backgrounds matter suggests that these factors too play a role in new-venture survival and growth. Moreover, by revealing the advantages of entrepreneurial teams with a mix of experience across both entrepreneurial and more structured domains, this study suggests that the founding and scaling stages are less compartmentalized than so-called "life-cycle" models of organizational development sometimes suggest (Greiner, 1972; Kazanjian, 1988).

Limitations and Future Research

Future research can help to address some of the limitations of this study. My first challenge was that joiners with entrepreneurial experience are not assigned to entrepreneurial ventures randomly; thus endogeneity could afflict associations between their backgrounds and new ventures' outcomes. To address this concern, the study took a three-pronged approach. First, it looked at the relationship between early joiners (e.g., those hired during a venture's first two years) and survival to a Series B round of financing, a fundraising stage that occurs years later. Even professional equity investors have difficulty assessing the quality and prospects of ventures during their initial conceptualization stages (Hallen & Eisenhardt, 2012); thus it is unlikely that joiners with entrepreneurial experience can *ex ante* sort themselves appropriately between ventures of higher and lower caliber. Second, this study took a triangulation approach to gathering evidence, drawing on both qualitative and quantitative methodologies. The 44 interviews that I conducted provide strong suggestive evidence that the mechanisms underlying my observed finding are rooted in joiners' knowledge and behavior, not in ex-ante sorting. Third, this study employed multiple analytical techniques to account for heterogeneity between ventures. The main analyses included multiple controls for the most obvious sources of labor-

market endogeneity—including firm region, market-category, and founding-year fixed effects; founder backgrounds; and whether the firm had raised money from a high-status VC investor. In addition, in robustness checks I performed coarsened exact matching that accounted for observable heterogeneity in ventures in the sample, including founders’ own work histories. Nevertheless, questions about how joiners “match” into nascent ventures, and about the processes by which hiring occurs in entrepreneurial settings, remain an intriguing area for future research.

The second challenge involves sample selection. All ventures in the sample had raised a Series A round of venture-capital financing. This sample design enables me to examine equivalent firms, in the sense that they all reached the Series A starting gate; it also generates questions, however, about whether joiners’ prior entrepreneurial experience influences even the likelihood of reaching that first funding milestone. My interviews with venture capitalists indicated that, in practice, Series A financing decisions during the 2005–2012 time frame were grounded in the perceived *promise* of a business idea, whereas Series B decisions were based on more tangible indicators of *progress*.⁹ Thus, given that most business ideas originate with founders, receipt of Series A financing should not be tightly coupled with joiners’ backgrounds; by contrast, tangible progress at executing those ideas is more readily attributable to team-level operational dynamics. However, I envision promising future research that will systematically explore how early joiners’ backgrounds—entrepreneurial or otherwise—influence attainment of Series A fundraising.

Finally, this study has concentrated exclusively on venture-capital-financed, growth-oriented, entrepreneurial ventures that operate principally in the technology and life-sciences

⁹ Interviews also indicated that these timelines have recently accelerated somewhat. Increases in allocations during seed rounds mean that they are taking on portions of the traditional role and filtering criteria of the Series A round.

industries. Future research should examine the generalizability of its findings to other new-firm settings. It may be that entrepreneurial experience has different effects at new companies that adhere to more conventional business-model templates, such as restaurants or retail stores (Aldrich & Ruef, 2017). Entrepreneurial experience may also have different effects at growth-oriented ventures that seek funding from different sources, such as corporate venture-capital groups and governmental agencies (Pahnke et al., 2015a).

Conclusion

Entrepreneurial ventures are often lauded as engines of innovation (Bhidé, 2000), but there remains much to learn about the actors and the processes most centrally influential in their survival and growth (DeSantola & Gulati, 2017). This paper looks at tacit knowledge about early-stage entrepreneurial domains as a resource that can benefit ventures and at early joiners as conduits of such knowledge. It also highlights the potential perils of overweighting on this resource during early-stage hiring at growth-oriented ventures that should anticipate needing more conventional structure as they scale up. Furthermore, it calls attention to nuanced and non-linear processes that operate inside the black box of new-venture growth and scaling. By training a spotlight on early joiners' backgrounds as a key ingredient in entrepreneurial success, I hope that this study will prompt further research to advance our understanding of the complex interplay of actors, resources, and growth.

CHAPTER 4.

ROLE (INTER)PLAY: HOW ROLES CAN CONSTRAIN THE BENEFITS OF HOMOPHILY AND VISIBILITY WHEN ADDING WOMEN TO ENTREPRENEURIAL BOARDS¹⁰

INTRODUCTION

Gender disparities are part and parcel of the entrepreneurial ecosystem. Women are less likely than men to found new firms, raise financing from professional equity investors, appear in the ranks of those investors, and partake in high-liquidity exit events such as IPOs (Kanze, Huang, Conley, & Higgins, 2018; Langowitz & Minitti, 2007; see Jennings & Brush, 2013 for a review). These gender disparities extend all the way to the top of entrepreneurial ventures, where women are rarely represented in highly visible and influential roles, such as directors on boards. In an ecosystem where women are so rare, an essential question is: How does the presence of women in various leadership roles throughout the ecosystem shape the presence of women on entrepreneurial boards?

In research on the male-dominated context of entrepreneurship, homophily— the principle that interpersonal associations are based on shared group characteristics (McPherson, Smith-Lovin, and Cook, 2001) — has surfaced as a key explanation not only for gender inequities, but also for female advancement. Accentuated by the high degree of uncertainty and ambiguity embedded in entrepreneurial processes, homophily amongst men during activities such as founding team formation (Ruef, Aldrich, & Carter, 2003) can operate to reduce women's access and participation. Yet, in those rare cases when women are present in the entrepreneurial

¹⁰ An abbreviated version of an earlier draft of this paper appeared in the 2017 Academy of Management Best Paper Proceedings as: DeSantola, A., Ramarajan, L., & Battilana, J. 2017. New Venture Milestones and the First Female Board Member. *Academy of Management Proceedings*, 2017(1).

ecosystem, such as in the role of funders, there are positive indications that homophily processes amongst women may facilitate their advancement (Greenberg & Mollick, 2017). Though not specifically in the entrepreneurial domain, homophily has also been noted to influence the membership of boards of large, publicly-traded firms (McDonald & Westphal, 2013; Withers, Hillman, & Cannella, 2012). Building on these findings, one might surmise that the presence of women in prominent roles in the venture such as firm founders should spur the addition of women to its board. This supposition is in line with broader gender research on women effectively acting as catalysts for the advancement of other women (Beckman & Phillips, 2005; Cohen & Huffman, 2007).

Yet, paradoxically, research on gender in organizations has found that the presence of women in male-dominated contexts can also have inhibitory effects on the advancement of other women (Duguid, 2011; Duguid et al., 2012; Kanter, 1977). For instance, recent studies show that once women reach a certain small proportion of top management or board positions, more women are typically not added to those same positions (Chang, Milkman, Chugh, & Akinola, In press; Dezső, Ross, & Uribe, 2016). Whilst these negative effects have been studied in terms of the proportion of women in a given position, we argue that the presence of women having an inhibiting effect on other women can more generally be attributed to processes of gender-based categorization. Gender-based categorization processes are a form of social categorization processes that heighten the propensity of women to see themselves and be seen by others through the lens of their gender category. Gender-based categorization processes invoke cultural beliefs about men and women, such as stereotypes that women are more communal and men are more competitive (Ridgeway & Smith-Lovin, 1999). Categorization processes increase the likelihood that women are seen by both themselves and others as interchangeable members of their gender

category – in effect, enhancing the perception that women are substitutes for one another. From this research, we can postulate that the more that gender categorization processes are invoked, the more likely it is that the presence of women in the venture may also act as a countervailing force, inhibiting the addition of women to entrepreneurial boards.

To delineate how the presence of women in the entrepreneurial ecosystem may both catalyze and inhibit the addition of women to boards, we theorize about the work roles that women occupy in the context of the venture. We theorize that structural distinctions at the level of work role-relationships are a salient factor in predicting the exercise of homophily. Specifically, we distinguish between the effects of women occupying complementary work roles— which we conceptualize as adjacent work roles that have distinct but interacting activities and role expectations (Ashforth, 2001: 6; Biddle, 1979) — versus the effects of women occupying the same work role as one another. Put simply, we theorize that spillover effects are likely to differ between a scenario where two individuals are occupying the same role vs. a scenario where the two individuals occupy different yet interacting roles (what we call *complementary* roles). We argue that the positive effect of homophily among women will prevail when women occupy complementary roles. Thus, the presence of women in a complementary role will have a positive effect on the addition of women on entrepreneurial boards. However, women are subject to the forces of gender categorization when they occupy the same role as one another. Thus, we argue that the presence of women in the same role will have a negative effect on the addition of other women to the board. Put simply, women can better act as catalysts for change the less constrained they are by categorization processes. In the entrepreneurial context, research suggests two key work roles at the highest levels of the entrepreneurial ecosystem that are responsible for a new venture’s direction: the founder-CEO,

who initially controls strategy, context and membership (Wasserman, 2017) and board members, who constitute the firm's governance (Garg, 2013; Garg & Eisenhardt, 2017). Here we theorize that women who are founder-CEOs occupy a complementary role to that of board member because they are most often the individuals who have the largest ownership stake in the firm to which board members have monitoring and governance obligations. Women who are already in the position of board member occupy the same role.

Furthermore, we consider how gender categorization processes invoked when women are in the same role as one another may also inhibit a key institutional mechanism for advancing women in contexts when women are rare: institutional pressures that promote visibility, which are known to reduce discrimination in hiring and promotion (Chang et al., In press; Dobbin, Schrage, & Kalev, 2015). In recent years, lobbying groups, the media, and women's organizations have put firms under public scrutiny and visibility concerning their progress on women's advancement into top positions (Arguden, 2012; Catalyst, 2013; Kristof, 2013). As a result, scholars argue that in order to maintain legitimacy in this climate, firms need to make a "public demonstration of progress towards gender equity" (Dezsó et al., 2016: 100). In the entrepreneurial context, an important condition of visibility is the initial public offering (IPO), when the venture opens itself up for evaluation and investment from a broad audience (Certo, 2003; Higgins & Gulati, 2003). We theorize that the presence of women in the same role (i.e., already on the board) will attenuate the positive effects of visibility on the addition of women because they will be seen as interchangeable representatives of their gender category.

We test these predictions using a novel longitudinal dataset on the boards of 2,100 U.S.-based entrepreneurial ventures from 2002-2014. Consistent with our theorizing that homophily processes operate when women occupy complementary roles, we find that female founders

increase the likelihood of addition of women on to boards. In contrast, the presence of existing female board members decreases the likelihood of additional women, in line with the notion that categorization processes operate when women occupy the same role. Last, consistent with the supposition that gender categorization processes will even attenuate a key institutional mechanism for gender equality, visibility, we find that the presence of women in the same role, i.e., female board members, significantly decreases the likelihood that additional women will enter the board at the time of the IPO. Thus, the powerful positive effects of visibility are only seen when there are no women on the board of entrepreneurial ventures already.

By questioning how the presence of women leaders in one part of the entrepreneurial ecosystem may shape the advancement of women leaders in other parts of the system, our work contributes to scholarship on gender dynamics in entrepreneurial settings in three ways: first, we theorize about the importance of the relationship between the work roles (i.e., complementary vs. same roles) that women occupy at the highest levels of entrepreneurial ventures (i.e., founders and board members), and show how these may differentially shape the presence of women on entrepreneurial boards. Specifically, we provide a deeper understanding of the limits and opportunities of gender homophily among women, suggesting that homophily may operate best to women's advantage when women are in complementary roles. Second, we also contribute to an understanding of when categorization processes are likely to operate by highlighting the importance of the presence of women in the same role. Third, we further show how the presence of women in the same role also inhibits visibility, a key institutional mechanism known to help women's advancement. Our work thus points to the constraining effects of gender categorization activated when women occupy the same role on otherwise beneficial processes for women's advancement such as homophily and visibility.

THE PRESENCE OF WOMEN ON ENTREPRENEURIAL BOARDS

We conceptualize entrepreneurial ventures as new private companies characterized by an orientation toward growth and innovation (Carland, Hoy, Boulton, & Carland, 1984; DeSantola & Gulati, 2017), highly uncertain future prospects (Bhidé, 2000), and reliance on significant provision of capital from professional investors (Pahnke, Katila, & Eisenhardt, 2015). Given the economic and cultural significance of entrepreneurial activity, prior research demonstrating that women are highly underrepresented and often at a significant disadvantage within the entrepreneurial context (Kanze et al., 2018; Thébaud, 2015) is cause for concern. Entrepreneurial boards are influential in shaping the firm's strategy and direction, including the firm's hiring and human resource practices (Garg, 2013; Hellman & Puri, 2002), which may influence the gender composition at all levels of the firms. Consequently, understanding the forces that shape the presence of women on entrepreneurial boards is important.

Gender Homophily Catalyzes Women's Advancement. A key mechanism underlying the presence and success of women in masculine domains that has been examined by research on gender in organizations is homophily among women (Beckman & Phillips, 2005; Gorman, 2005; Greenberg & Mollick, 2017). Homophily operates on the basis of familiarity, similarity-attraction and differential access to networks. Often, when women act as "agents of change" and advance other women (Cohen & Huffman 2007: 682), homophily processes are thought to be at play. While research has examined homophily in many domains and across many social characteristics (Ibarra, 1992; Kossinets & Watts, 2009; Marsden, 1988; McPherson et al., 2001; Reagans, 2005), here we focus on research relevant to gender homophily on boards in entrepreneurial ventures.

First, a strand of research on *boards of directors* in publicly traded firms has proposed that homophily based on shared social identity influences board member selection. Emphasis on director “fit,” social ties, and social capital during the board selection process (Davis, 1993; Zhu, Shen, & Hillman, 2014) leads to the reproduction of the demographic characteristics of the board and C-Suite in subsequent board appointments (Withers et al., 2012). For example, research shows that incumbent directors, who are predominantly white men, provide critical mentorship opportunities to first-time white male directors that in turn enhances their prospects of obtaining seats on other boards (McDonald & Westphal, 2013). More specifically, while not directly focusing on the benefits of homophily amongst women on boards, research on board interlocks has shown that a focal board’s ties to other boards where women are present increases the likelihood of appointing a woman (Hillman, Shropshire & Canella, 2007).

While not focused on boards, a second strand of research focused on gender homophily in *entrepreneurship* also hints at the influence of homophily on the participation and outcomes of women throughout the entrepreneurial ecosystem. In the male-dominated context of entrepreneurship, homophily amongst men has been suggested as a source of disadvantage in women’s opportunities and access to potential team members and investors (Ruef et al., 2003; Stuart & Sorenson, 2007). Conversely, recent research has begun to show that homophily amongst women may have positive spillovers: A study of female crowdfunding investors found that women are more likely to fund female-founded ventures when they perceive that women face shared structural barriers on the basis of their group identity (Greenberg & Mollick, 2017). This work seems to predict that due to homophily, the presence of women in the entrepreneurial ecosystem should have *positive* spillover effects, leading to the presence of women on the board.

Gender Categorization Inhibits Women's Advancement. Yet, in contrast to homophily, there is research on gender in organizations which has suggested that in male-dominated contexts, the presence of women can also have inhibitory effects on the advancement of other women (Duguid, 2011; Duguid et al., 2012; Kanter, 1977). While research has examined and explained these effects in terms of critical mass (Fernandez-Mateo & Kaplan, 2018) and numeric proportions of women (see for example Chang et al.'s in press discussion of "twomenism"), we argue that such numeric effects are more generally attributable to gender stereotyping and categorization processes that constrain the behavior of men and women (Ridgeway & Correll, 2004; Ridgeway & Smith-Lovin, 1999; Ely, 1995). Social categorization processes help simplify the social world because people slot themselves and others into categories (Turner, 1985). These "categories are constructed so as to minimize the differences among members within the category while maximizing the differences between other categories" (Glynn & Navis, 2013: 1125). Building on this work, gender-based categorization can be conceptualized as a social categorization process that heightens the propensity of women to see themselves and be seen by others through the lens of their gender category. Gender based-categorization can increase the likelihood that women are perceived as interchangeable substitutes for one another. Consequently, when women are numeric minorities, how they act and how they are treated may be influenced by cultural conceptualizations of what it means to be a member of their gender category (Kanter, 1977). In the entrepreneurial context, where women are a numeric minority, studies show that women are evaluated through gender-stereotyped beliefs about women's desire and capacity for becoming successful entrepreneurs relative to men (Kanze et al., 2018; Lee & Huang, 2018).

Once in play, gender categorization processes are apt to diminish the ability of a woman to act on behalf of other women. This can be because majority group members may discount a woman's opinions because she may be seen as biased on behalf of other women (Duguid, 2011). Gender categorization can also foster a sense of intra-subgroup threat among women themselves as they know they are being seen as substitutes for one another within their gender subgroup rather than being seen as members of the larger group (Duguid, 2011; McGinn and Milkman, 2013). Therefore, in contrast to homophily, we argue that when gender categorization processes operate, the presence of women should have *negative* spillover effects on the representation of women on entrepreneurial boards.

Complementary vs. Same Roles: Homophily vs. Categorization Processes

Gender scholars argue that gender categorization processes, which invoke stereotypical cultural beliefs and expectations about men and women and constrain men and women's behavior, are dynamic and situated in social-relational contexts (Ridgeway & Correll, 2004). In organizations, "the degree to which women achieve a critical mass" constitutes an important social-relational context that shapes gender dynamics (Fernandez-Mateo & Kaplan, 2018: 1232). Specifically, extant work suggests that gender categorization processes are more likely to become activated when women are in the numeric minority: for instance, the proportion of women at various levels of an organizational hierarchy invokes gender categorization processes (Ely, 1995; Kanter, 1977; McGinn & Milkman, 2013). Here, we extend this work by investigating circumstances in which women may still have a beneficial effect on the presence of women, even when they are in the numeric minority. Specifically, we consider how the work roles that women occupy relative to one another constitute a key social-relational context that can be either enabling or constraining on the addition of women.

Specifically, drawing on the literature on work roles, we conceptualize roles as complementary to or the same as a focal role (Ashforth, 2001: 6; Biddle, 1979). Here, the focal role is directors that are being added to the board. The same role is occupied by existing board members. We conceptualize complementary roles as adjacent roles that have distinct but interacting activities and role expectations which can influence one another (Katz & Kahn, 1978; Merton, 1968; Parsons, 1951). As noted previously, for a board member whose primary function is to assist in the governance of the firm, the relevant complementary role is inhabited by the firm's founders, who often retain a substantial ownership stake in the venture (Wasserman, 2017).¹¹ Consider the adjacency and mutual influence between the work roles of founder-CEO and board member: (a) founder-CEOs are intimately involved in selecting new board members and investors who take board seats, and (b) existing board members have voting power in decisions around founder-CEO replacement and the selection of new directors (Boeker & Karichalil, 2002; Garg, 2013; Wasserman, 2003). Most saliently, both roles are in a position to influence the addition of women to the board.

We argue that the presence of women in the *complementary* role of founder-CEO should increase the likelihood that women are added to the board due to the relatively unencumbered activation of homophily processes. Prior work suggests that when women are in higher tiers of the organization, they positively influence the presence of women in lower tiers of the organization though not at the same tier (McGinn & Milkman, 2013; Tolbert, Simons, Andrews, & Rhee, 1995). These findings are consistent with the idea that women who occupy complementary roles have the latitude to engage in homophily. If she advocates for the addition of a woman to a role that is *different* from her own, the woman is not posing a threat to the

¹¹ Although many new ventures are founded by teams of individuals, we focus on founder-CEOs because this "core" founder often has the most decision rights and the largest equity stake in the company (Wasserman, 2017).

composition and power dynamics of the group of which she is a part. That is, bringing a woman into a different role creates opportunities for coalition building that may not be as obvious to those in the group as the potential for coalition building when women enter the same group. Role set separation may also decrease the perceived cognitive association between women and reduce the potential for intragroup faultlines (Lau & Murnighan, 1998), thereby giving women in complementary roles the agency to act. Thus, consistent with homophily rather than categorization processes, we argue that the presence of female founders is likely to have a facilitating effect on the addition of women to the board.

H1: Female founders will have positive effects on the addition of women to the board.

Conversely, we argue that the presence of women in *the same* role (i.e. female board members) should reduce the likelihood that additional women are brought into that role. Specifically, we propose that the presence of a woman in the same role activates categorization processes in which individual women are treated as representatives of their gender as a whole. Categories activate a prototype matching process by which members are slotted into the category in a “fairly mechanized or routine” manner (Glynn & Navis, 2013: 1126; Durand & Paoella, 2013). This may result in women silencing themselves or conforming to the majority to avoid negative stereotyping such as a perceived lack of competence. It may also result in a discounting of women’s voices even if they were to advocate for other women as they may be seen as biased. The entry of additional women into the same role may further pose a compositional threat to the group and spur men to engage in social closure and women to engage in in-group competition (Kanter, 1977; Dezső et al., 2016; Duguid, 2011; Duguid et al., 2012; McGinn and Milkman, 2013). Moreover, women seeking to occupy the same work role may be subject to the perception that they are interchangeable substitutes for one another as a result of their shared

female gender category. Thus, consistent with categorization processes rather than homophily, we argue that the presence of female board members is likely to have an inhibitory effect on the addition of other women to the board. We thus propose:

H2: The presence of women on boards will have a negative effect on the addition of subsequent women to the board.

Women in the Same Role and Visibility

In male-dominated contexts, the roles that women occupy relative to one another can not only shape whether women can act as catalysts themselves, but they can also present a challenge to other important institutional mechanisms that advance women. One such key mechanism known to have positive effects for women's representation is visibility. Conditions of visibility—circumstances under which heightened attention and scrutiny is paid to the focal organization (Chang et al., In press)—are likely to elevate concerns around demographic representation and inequalities. Scholars note that there are institutional norms regarding progress towards the fair representation of women (Dezsó et al., 2016), and visibility often spurs organizations to take action to meet those norms. For instance, in a 30-year study of the longitudinal effects of personnel in 816 U.S. workplaces, increases in attention and monitoring from outside actors were shown to be coupled with a reduction in discrimination in hiring and promotion patterns (Dobbin et al., 2015). In another study of the boards of directors of large S&P 1500 companies, Chang et al. (In press) found that more visible firms—measured in terms of media coverage—attend more closely to social norms regarding the expected number of female directors.

In our context, a key condition in which entrepreneurial firms become highly visible and scrutinized—particularly with regard to board composition—is the time of the initial public offering (IPO). IPOs often attract significant attention and media coverage for the venture

(Demers & Lewellen, 2003; Pollock & Rindova 2003). In the lead up to the IPO, firms disseminate promotional materials highlighting their technology and service offerings, management team, business plans, and financial accounts to investment banks (Higgins & Gulati, 2003). Firms set off on roadshows where they showcase these aspects of their business in presentation pitches to influential investors with the goal of convincing them to buy shares (Certo, 2003). Through these processes, board composition becomes highly visible. Indeed, by Security & Exchange Commission rules, the names and backgrounds of all board members must be listed in IPO prospectuses (Higgins & Gulati, 2006). Because of the visibility and potent signaling effects of boards at this time, firms have been shown to make changes to their board composition in the run-up to the IPO in order to redress perceived inconsistencies or gaps (Chen, Hambrick, & Pollock, 2008).

However, just as gender categorization processes present a contrast to the positive effects of homophily amongst women when they occupy the same roles, we argue that they may also present a challenge to the positive effects of visibility. Specifically, visibility during the IPO will make gender representation on the board salient, but the effect of the IPO on the addition of female board members will be contingent on whether they already have women in the board member role. Firms that already have women in a board role will be less likely to be concerned about falling short on norms of fair representation and equality than firms that have no women in that role. This is because once women are present in the focal role, all other women who are considered for that role are more likely to be viewed as substitutes for those women. That is, women in the same role will be likely to be seen as interchangeable representatives of their gender category. In essence, the presence of women in the role of board member can be filtered as evidence that these firms have already met the normative expectations and already achieved

some level of progress on gender integration (Dezső et al., 2016). In contrast, in firms with fewer women in that same role, it is more likely that conditions of visibility will heighten concerns regarding progress on gender-integration and equality, spurring the entry of women into the same role.

Given the increased visibility of board composition at the moment of the IPO (Certo, 2003; Chen et al., 2008; Deutsch & Ross, 2003), we expect that firms will be particularly aware of the gender composition of the board at this time. For firms that already have women on the board, the concerns around progress on gender representation may be alleviated. Because they have already satisfied this expectation, they may be even *less* motivated to add a woman to their board at the time of the IPO. By contrast, for firms that do not have women on the board already, visibility will amplify concerns about board gender composition. In this manner, we argue that the positive effects of visibility are bounded by the presence of women in the same work role because categorization processes are evoked. Therefore, we propose:

H3: Firms that have women on their boards prior to the IPO will be less likely to add women to their boards at the time of the IPO than other firms.

DATA & METHODS

Because young ventures are privately owned and small in size, public-domain information about their organizations is typically scarce (DeSantola & Gulati, 2017; Eisenhardt, 2010; Wasserman, 2003). Data on their boards of directors is no exception. In order to test our hypotheses, we created a novel longitudinal dataset on 2,100 U.S.-based entrepreneurial ventures using information from several subscription and online sources; a full-time research assistant manually verified the information listed for each company.

We began with data from Crunchbase on U.S.-based entrepreneurial firms that had received financing from U.S.-based venture capital investors. Crunchbase originated as an internal system for tracking startup investments at TechCrunch, a popular technology reporting website (Hallen & McDonald, 2007). Since becoming publicly available in 2007, it has evolved into a widely used reference site for information on entrepreneurial ventures and their investors (Cohen, Bingham, & Hallen, 2018; 2018; Piezunka & Dahlander, 2015; Ter Wal, Alexy, Block, & Sandner, 2016). We drew a sample of entrepreneurial ventures from Crunchbase and matched this list to data on board membership from BoardEx, a subscription service that aggregates public-domain information about the boards of both private and publicly traded companies. Because BoardEx launched in 2001, we focused our sample on entrepreneurial ventures whose boards were formed in or after 2002 in order to have consistent data coverage. The final sample consists of 2,100 entrepreneurial ventures across 12,590 board-years over the time frame of 2002-2014. To our knowledge, this final sample constitutes one of the most comprehensive longitudinal datasets on entrepreneurial boards.¹²

We hired a research assistant to manually confirm via internet searches the years when BoardEx-listed directors joined and departed boards. Specifically, we verified those dates for all board members (male and female) at ventures that at some point had female board members. This exercise indicated that about 89.7% of the start and end dates listed in on BoardEx were accurate. It is possible that the BoardEx database may be missing data, but we found no evidence of false positives (i.e., individuals listed as board members who had not actually served). We

¹² We searched for combinations of the term *board of directors* with the terms *entrepreneurial venture*, *new venture*, *de novo*, *new firm*, and *young firm* in six top management journals in the period 1985–2016. This search suggested that the sample sizes of prior longitudinal studies of new ventures that included information on boards rarely exceeded a few hundred firms.

augmented the BoardEx data with additional data from other online and subscription sources, explained in greater detail below.

Finally, we aggregated all data at the firm-year level. Because young ventures are at high risk of failing or being acquired, we dropped any yearly observations subsequent to the date when a firm is listed in Crunchbase as having been acquired or when its board size fell to zero. We also performed manual internet searches for events that would lead to board dissolution, such as firm deaths and acquisitions.

Dependent Variable

Our dependent variable is whether the venture *adds a woman to the board of directors*. Using BoardEx, we coded this binary variable as one if the appointment of a female director occurred during the calendar year in question. BoardEx identifies the gender of board members listed in its database. We excluded founder-CEO board seats from this and other board membership variables to ensure we could accurately test Hypothesis 1 (i.e., the influence of women occupying complementary roles). Very few ventures appointed even one woman; far fewer appointed more than one. Only 452 (21.5 percent) of the 2,100 firms in the sample ever had a female director between 2002 and 2014. Of those that did have a woman, 82.1 percent never had more than one female board member at the same time.¹³

Across the 12,590 board-years for which we obtained data, 7.2 percent of ventures' board members were women. This figure is in line with a 2015 *Forbes* survey's estimate that about 6.2

¹³ Because only about a half-percent of firm-year observations indicate the addition of more than one woman to the board, we focus on the binary question of whether a firm does or does not add a woman in a given year. We report an alternative ordered logit model in the Table 4.5 which uses the number of women added in a given firm-year as the dependent variable. All findings remain robust to this alternative specification.

percent of board members at the 81 largest venture-capital-backed startups were women (Swallow, 2015).

Independent Variables

To test Hypotheses 1, the effect of women in the complementary role of founder on the addition of women to the board, we constructed the independent variable *female founder-CEO*. To do so, we asked a research assistant to perform manual internet searches to identify the name and gender of the founder-CEO at each of the 2,100 ventures. In those rare cases where the founder-CEO could not be identified, we looked for the name and gender of the earliest identifiable CEO. To test Hypothesis 2, the effect of women in the same role, i.e., board member, we used the BoardEx data to identify the *number of women on the board* at time t_{i-1} . To test Hypothesis 3, which looked at the interaction of women in the same role as board member with conditions of visibility, we created a *time of IPO* variable. Crunchbase identifies ventures that have issued an IPO and the date of this public offering. We created a binary variable to capture whether a venture issued an IPO in a given calendar year (coded as one if it was an IPO year and zero if not).

Control Variables

Our analyses included several time-variant board-level control variables. Using BoardEx, we calculated *board size* in the prior year based on board members' start and exit dates to account for ventures that did not have any outside directors, regardless of gender. We also collected the *number of men* added to the board in a given year to control for the possibility that board additions occur in clusters. Along these lines, we controlled for *time of board formation* and *time*

of fundraising using the BoardEx and Crunchbase data, respectively, given that additions to entrepreneurial ventures' upper echelons tend to cluster around these times (Ferguson, Cohen, Burton, & Beckman, 2016). We operationalized time of fundraising using early-stage rounds (e.g. Series A and Series B). Following prior research, which has suggested that the entry of women to boards tends to occur in tandem with the exits of prior female directors (Farrell & Hersch, 2005), we created a binary variable to indicate whether a *female director exits* the board in a given year. We added *year* fixed effects to help control for shifting economic conditions that could have influenced the gender composition of the labor force and the likelihood of reaching developmental milestones.

We also constructed a control variable indicating receipt of funding from a venture-capital firm with a *female V.C. partner*. V.C. firms often install one of their partners on the board of directors when they invest in an entrepreneurial venture (Garg & Eisenhardt, 2017) and thus firms that have received investment from a V.C. firm with a female partner should be more likely to have a woman on their board. To construct this variable, we used Crunchbase to identify the names of the participating VC firms in the firm's early financing rounds (e.g. Series A and Series B). Most fundraising rounds involve an investment syndicate composed of two or more venture-capital investment firms (Zhelyazkov & Gulati, 2016). We coded this variable as one if the firm had completed an early stage fundraising round at or before t_i where at least one of the firms in the syndicate had a female partner; the variable was otherwise coded as zero. Female partners are extremely uncommon in the venture-capital industry: some estimates run as low as 4 percent (Primack, 2014). As a consequence, the names of female senior partners are highly publicized. We used two such sources to identify female partners. Women VC, a non-profit organization, provides a list of women in venture capital based on a search of over 1,000 venture

capital firms. Gender Metrics provides a list of V.C. firms founded or co-founder by women. We hired temporary research assistants to perform online biographical searches on the women on these lists to identify the firms they worked at, their job titles, and (if applicable) a best estimate of the date they were promoted to partner. In parallel, we also coded the backgrounds of all women added to boards at the time of fundraising to identify female V.C.s who were taking board seats.

We included time-variant firm-level controls for the natural log of organizational *headcount* to account for size of the firm, and the *percentage female* headcount, in order to capture a measure of important but largely unobservable aspects of a venture's hiring practices, culture, and attitudes toward women that might affect its likelihood of appointing a female board member. We obtained these variables using résumé data about individuals who listed work experience at the ventures in our sample on a popular career-networking website. We collected first names and past and present employment start and end dates at the startup. Researchers who have worked with similar samples have estimated that such online résumés are at least ninety-percent accurate and are characterized by notably lower false-negative rates than such other employment data sources as patents (Ge, Huang, & Png, 2016). Using start and end dates, we estimated headcount by year. To construct the *percentage female* (0–100) variable, we matched first names from the résumé data to gender probabilities using the API “genderize.io” (Greenberg & Mollick, 2017). The genderize.io API uses large datasets of user profiles from prominent social-networking websites to produce a probabilistic estimate of gender based on first names.¹⁴

¹⁴ At the time of the match, the API contained over 200,000 names across 79 countries and 89 languages. In the entrepreneurial venture context, where many founders may have names that may originate in other cultures or languages (Fairlie & Lofstrom, 2015), we thought this was a more comprehensive way to assign gender to names than other ways of categorizing gender such as matching to the U.S. census.

Finally, as entrepreneurial and gender dynamics may vary by particular regions and fields, we included two time-invariant firm level controls: headquarters *region* and *industry*. To account for possible regional differences, we used the Crunchbase data to identify the metropolitan region where each firm was located. Because startups are highly concentrated in just a few regions, we included binary variables for the five most common regions—the San Francisco Bay Area, New York City, Boston, Los Angeles, and Seattle—and an “other” binary variable for firms located elsewhere. The five most concentrated regions accounted for 68.0 percent of the firms; a plurality of firms (41.1 percent) were located in the San Francisco Bay area. Most firms in the sample operated in technology (e.g., web, hardware, software, mobile application, etc.) or life science domains. Given that the medical professions have proportionately more women than technology-related professions such as engineering (Bureau of Labor Statistics, 2016), we also created a binary variable to identify biotechnology firms. We categorized a firm as being a biotechnology firms if it had a market category group affiliation in biotechnology and/or health care in the Crunchbase data.

Model Estimation

The core analyses are conducted using a discrete-time random-effects logistic regression model of the probability of the addition of a woman to the board. Discrete-time logistic regression models are commonly used in management research when observation time windows are not continuous and failures are tied, therefore rendering continuous hazard models— such as the Cox proportional hazard model—less efficient (Bermiss & McDonald, 2018). Observations in our models are at the firm-year level of analysis. All models include robust standard errors clustered by firm.

Table 4.1: Descriptive Statistics and Correlations

Variable	Mean	S.D.	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	
1. Add woman	0.04		0.00	1.00	1.0																		
2. Female founder-CEO	0.07		0.00	1.00	0.1	1.0																	
3. Female board members, t_{i-1}	0.15	0.40	0.00	3.00	-0.0	0.1	1.0																
4. Time of IPO, t_i	0.01		0.00	1.00	0.1	0.0	0.1	1.0															
5. Time of formation, t_i	0.17		0.00	1.00	0.1	-0.0	-0.2	-0.0	1.0														
6. Time of fundraising, t_i	0.14		0.00	1.00	0.1	-0.0	-0.1	-0.0	0.3	1.0													
7. Female exits board, t_i	0.01		0.00	1.00	0.0	0.0	0.2	0.0	-0.0	-0.0	1.0												
8. Number of men added, t_i	0.40	0.68	0.00	6.00	0.1	0.0	-0.1	0.1	0.5	0.2	-0.0	1.0											
9. Board size, t_{i-1}	1.75	1.62	0.00	12.00	0.0	0.0	0.4	0.2	-0.5	-0.2	0.1	-0.2	1.0										
10. VC with female partner	0.27		0.00	1.00	0.1	-0.0	0.1	0.0	-0.1	0.1	0.0	-0.0	0.1	1.0									
11. Biotechnology	0.23		0.00	1.00	0.1	0.1	0.2	0.1	-0.0	-0.0	0.0	0.1	0.2	0.0	1.0								
12. Log headcount, t_i	2.83	1.19	0.00	7.60	0.0	-0.1	0.1	0.1	-0.2	-0.1	0.0	-0.0	0.2	0.1	-0.2	1.0							
13. Headcount % female, t_i	0.30	0.17	0.00	1.00	0.1	0.2	0.2	0.1	-0.1	-0.0	0.0	-0.0	0.2	0.1	0.3	0.1	1.0						
14. SF-Bay Area	0.41		0.00	1.00	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	0.1	-0.1	0.1	-0.1	1.0					
15. NYC	0.06		0.00	1.00	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.2	1.0					
16. Boston	0.12		0.00	1.00	0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	0.1	-0.0	0.0	-0.3	-0.1	1.0			
17. LA	0.06		0.00	1.00	0.0	-0.0	0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1	1.0				
18. Seattle	0.03		0.00	1.00	0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.1	-0.0	1.0			

Note: Across 12,590 observations

We chose a random effects model specification (as opposed to fixed effects) because fixed effects models drop all firms that lack variation on the dependent variable. As noted earlier, all but 452 of the 2,100 ventures in the sample never had a women on their boards, leading to no variation on the dependent variable. Moreover, fixed effects models do not permit for the estimation of the coefficients for time-invariant variables, such as our female founder-CEO hypothesis (H1). However, we also discuss alternate specifications in our robustness checks, which we report in Table 4.5.

RESULTS

Table 4.1 reports descriptive statistics and the correlation matrix across the 12,590 firm-year level observations. During an average year, 4 percent of ventures added the first woman to their boards. Across the 12,590 firm-year observations in the sample, 7 percent began with a female founder-CEO and the average board had about .15 women. The average prior-year board size of 1.75 reported in Table 4.1 includes the year of board formation, when the prior board size was zero, and excludes the board seat held by the CEO. When the year of board formation is excluded and the CEO seat is included, mean prior-year board size rises to about three members. Closely aligned with previous studies (Baker & Gompers, 2003), in the year of an IPO, the mean and median board size is five members. Looking beyond the board to the overall firm gender composition, the average firm-year observation in our sample was estimated to be 30% female by the genderize.io API. This finding is consistent with a large body of research that shows that the labor force in entrepreneurial ventures is male-skewed (see Jennings & Brush, 2013).

The correlation matrix generally indicates low correlations amongst the independent and control variables. The only exceptions are the negative correlation between the time of board

**Table 4.2: Random-Effects Logistic Regression
Predicting Adding A Woman to Board (2002-2014)**

	Model 1	Model 2	Model 3	Model 4	Model 5
	b/robust s.e.	b/robust s.e.	b/robust s.e.	b/robust s.e.	b/robust s.e.
Female founder-CEO		0.593*** (0.142)			0.791*** (0.199)
Female board members			-1.383*** (0.304)	-1.297*** (0.316)	-1.322*** (0.315)
Fem. board mem. x IPO				-1.064* (0.524)	-1.045* (0.520)
Time of IPO, t_i	1.438*** (0.264)	1.459*** (0.266)	1.412*** (0.273)	1.690*** (0.298)	1.689*** (0.297)
Time of formation, t_i	1.172*** (0.167)	1.173*** (0.168)	1.243*** (0.168)	1.253*** (0.169)	1.253*** (0.170)
Time of fundraising, t_i	0.895*** (0.114)	0.890*** (0.115)	0.911*** (0.120)	0.915*** (0.120)	0.909*** (0.121)
Female exits board, t_i	1.077** (0.346)	1.043** (0.351)	1.620*** (0.374)	1.691*** (0.356)	1.696*** (0.355)
Number of men added, t_i	0.125 (0.082)	0.124 (0.083)	0.129 (0.085)	0.123 (0.086)	0.122 (0.086)
Board size, t_{i-1}	0.149*** (0.036)	0.151*** (0.036)	0.269*** (0.043)	0.265*** (0.043)	0.270*** (0.043)
VC with female partner	0.423*** (0.097)	0.431*** (0.097)	0.551*** (0.123)	0.552*** (0.124)	0.557*** (0.124)
Biotechnology	0.519*** (0.114)	0.497*** (0.114)	0.725*** (0.154)	0.726*** (0.153)	0.693*** (0.151)
Log headcount, t_i	0.133** (0.043)	0.138** (0.043)	0.174*** (0.053)	0.173*** (0.052)	0.179*** (0.052)
Headcount % female, t_i	1.563*** (0.263)	1.343*** (0.259)	1.817*** (0.310)	1.803*** (0.308)	1.544*** (0.304)
SF-Bay Area	-0.121 (0.108)	-0.121 (0.109)	-0.142 (0.134)	-0.145 (0.134)	-0.144 (0.135)
NYC	0.227 (0.182)	0.225 (0.183)	0.303 (0.228)	0.303 (0.227)	0.298 (0.226)
Boston	0.030 (0.144)	0.029 (0.142)	0.062 (0.179)	0.060 (0.179)	0.059 (0.178)
LA	0.062 (0.201)	0.067 (0.200)	0.121 (0.245)	0.112 (0.244)	0.124 (0.243)
Seattle	0.584* (0.233)	0.613** (0.235)	0.760* (0.310)	0.749* (0.308)	0.777* (0.307)
Constant	-4.120*** (0.413)	-4.131*** (0.408)	-4.746*** (0.499)	-4.740*** (0.499)	-4.742*** (0.488)
Log Pseudo-Likelihood	-1963.807	-1956.215	-1948.574	-1946.465	-1937.542
Wald Chi-squared	465.648	483.236	414.062	414.744	426.801

12,590 firm-years (2,100 firms). Robust standard errors, clustered by firm, in parentheses. Includes year fixed effects.

†Significant at $p < .10$ *Significant at $p < .05$. **Significant at $p < .01$. ***Significant at $p < .001$; significance levels based on two-tailed tests.

formation and board size at t_{i-1} (which was always zero at time of formation) and the positive correlation between the time of board formation and number of men added to the board. In order to address this, we input these variables into the models both separately and simultaneously, which did not influence our findings. We also calculated the variance inflation factors for all variables to check for multicollinearity. The variance inflation factors for all variables except the year dummy variables is less than 2, suggesting that multicollinearity should not be a substantial concern (Kutner, Nachtsheim, & Neter, 2004). Excluding the year dummies from the analysis does not alter the results presented here.

The main logistic regression analyses are reported in Table 4.2. Model 1 is a baseline model including just the controls. Models 2 and 3 respectively add in the main effects of a female founder-CEO and prior women on the board. Model 4 shows the interaction effect between prior women on the board and the time of the IPO. Model 5 constitutes the full model with all independent variables and interactions included.

We find support for H1, which predicted that the presence of women in the complementary role of founder-CEO would *increase* the likelihood of entry of women to the board. The coefficient for female founder-CEO was positive and significant when modeled individually in Model 2 (coeff= 0.593; corresponding odds ratio=1.81) and jointly in the full model in Model 5 (coeff= 0.791; corresponding odds ratio= 2.20).

We also find support for H2, which predicted that the presence of women in the same role, i.e., women already on the board, would *decrease* the likelihood of entry of subsequent women to the board. The coefficient for number of prior female board members was negative and significant when modeled individually in Model 3 (coeff= -1.383; corresponding odds

ratio=0.251) and jointly with the other independent variables and interactions in Model 5 (coeff=-1.322; corresponding odds ratio= 0.267).

We additionally find support for H3, which predicted that the presence of women in the same role, i.e., women on the board, would have a dampening effect on the entry of women to the boards during conditions of high visibility. The coefficient on the interaction term between number of female board members in the prior year and the time of the IPO was negative and significant when modeled separately in Model 4 (coeff= -1.064; corresponding odds ratio= 0.345) and jointly with the other independent variables in Model 5 (coeff= -1.045; corresponding odds ratio= 0.352), indicating that firms that have more women are less likely to add a female board member at the time of the IPO.

Figure 4.3 graphically displays the predicted probability from the full Model 5 of adding a woman to the board at the time of the IPO as a function the firm's number of prior female board members. As can be seen in Figure 4.3, undertaking an IPO substantially increases the probability that firms that lack a woman on their board will add a female board member. However, the IPO does not appear to materially increase the likelihood that a firm that already has a woman on their board will add a new one. Indeed, Figure 4.3 shows that firms that lack women on their board have a more than three-fold greater predicted probability of adding a woman at the time of the IPO compared to those that already have just a single woman on their board. These findings lend support to our argument that gender categorization processes dampen the positive effects of visibility. In response to visibility pressures, firms appear to be spurred to add a woman; however if they already have a representative of the female category, visibility does not appear to have material effects on the entry of women. Collectively, these findings suggest that there is an important boundary condition to the benefits of visibility.

Figure 4.3: Predicted Probability of Adding a Woman as a Function of IPO Year and Firm's Number of Prior Female Board Members

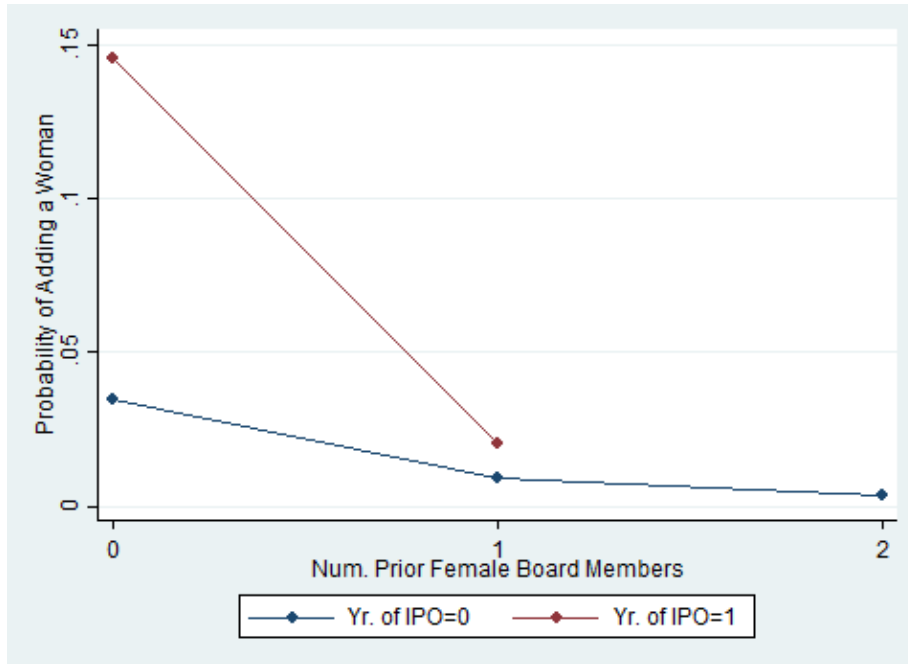
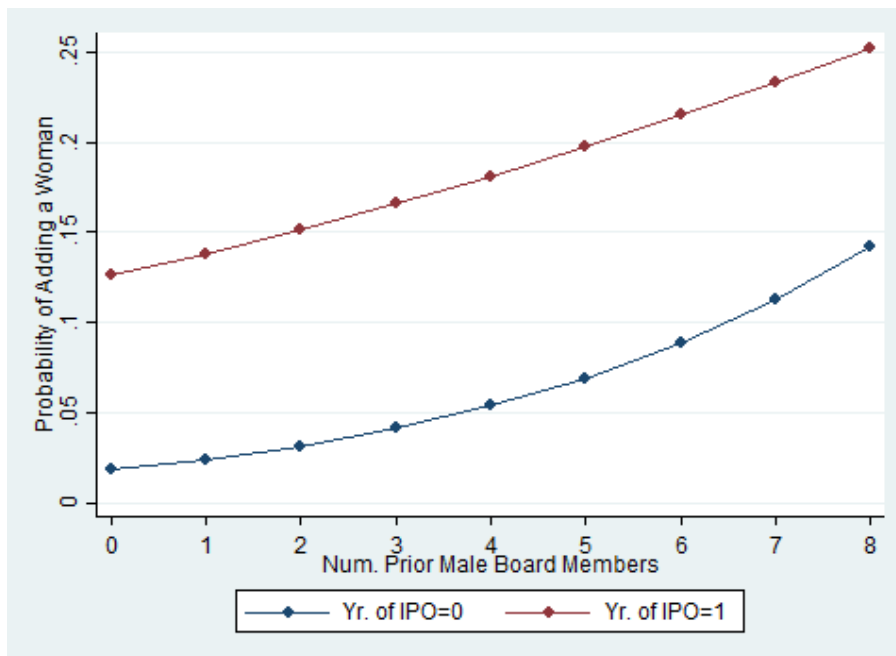


Figure 4.4: Predicted Probability of Adding a Woman as a Function of IPO Year and Firm's Number of Prior Male Board Members



Effects of Controls

The effects of several of the control variables that were significant also merit discussion (see Table 4.2). Prior research has proposed that the entry of organizational members to entrepreneurial ventures tends to be clustered at specific developmental milestones that punctuate the life course of the firm (Ferguson et al., 2016). Aligned with this, the coefficients on the time of board formation, time of fundraising, and time of IPO variables are positive and significant across all models suggesting a clustering effect of board appointments around the time of developmental milestones. Consistent with the findings of previous research on mature companies that the probability of appointing a woman materially increases when a woman leaves the board, the coefficient on a woman's exit from the board is positive and significantly associated with the likelihood that a new woman is added to the board.

Across all models, raising money from a venture capital firm with a female senior partner is associated with a significant increase in likelihood that a woman is added to the board. However, many of the board seats taken early in the life of a venture are held by investors themselves (Garg, 2013), suggesting that the same woman is likely to both VC and board-member. We therefore probed into the effects of the female VC control variable further in order to examine whether these effects are principally driven by female VCs taking board seats themselves on behalf of their investment firms. For the subset of firms that had raised money from female venture capitalists (n=727), we manually checked whether female board members were also VCs. Through this process, we identified 98 board seats held by female VCs. When we run the analysis without the 98 board seats held by female VCs, we observed that the relationship between VC firms with female partners (the female VC variable) and the advancement of women

to the board became non-significant. Further, this does not alter our main results. Thus, it seems likely that the female VC variable was positive because she herself was added to the board.

The coefficient on the overall-organizational-headcount control variable is also positive and significant in all models, which aligns with previous research linking larger organizational size to female representation on the boards of publicly-traded companies (Hillman et al., 2007). Unsurprisingly, across all models, the coefficient on the percentage-female-headcount control is also positive and significant. The gender composition of the overall firm likely reflects key but often unobservable aspects of the venture (e.g. culture, member selection criteria, and business model) that could also influence its propensity to add a woman to its board. No consistent upward or downward trend over time was apparent in the likelihood that ventures added a first female board member. The coefficient on the biotechnology industry control is also positive and significant. Research on occupational gender norms and gender segregation (Reskin, 1993) explains these results: compared to other technology fields, health and wellness tend to be (relatively) female-typed occupational fields (Bureau of Labor Statistics, 2016).

Robustness Checks

As noted earlier, as a robustness check, we considered fixed effects specifications of the models (see Table 4.5, Models 1 and 2). The fixed effects models only utilize data from the 452 firms that did at some point add a woman to their board and are not able to test time-invariant hypotheses like Hypothesis 1. However, the results are consistent with the results of the random effects models for Hypothesis 2 (Table 4.5, Model 1) and Hypothesis 3 (Table 4.5, Model 2), suggesting that our findings are a product of within-in firm changes, rather than merely being a byproduct of cross-firm differences.

We also evaluated an alternative random-effects ordinal logit model specification which uses *number of women added to the board* in a given firm-year as the dependent variable instead of the current binary dependent variable of whether at least one woman is added (see Table 4.5, Model 3). In only 71 of the 12,590 firm-years in the analysis is more than one woman added to the board. The findings of this alternative ordinal logit model support all three hypotheses.

In order to parse visibility effects from those associated with simply being a more mature firm, we created variables for the year before and year after the IPO. We interacted the female board member independent variable with each of these new variables. The results (reported in Table 4.5, Model 4) are not significant.

Lastly, in order to further probe the effect of women in the same role (i.e., female board members) at the time of the IPO (H3), we also examined whether the number of existing male board members is associated with a differential likelihood that a woman would be added at the time of the IPO. In contrast to the negative relationship between number of prior female board members and likelihood of adding a woman at the time of the IPO (as discussed earlier in Figure 4.3), as the number of men on the board increases, the probability of adding a female board member increases rather than decreases at the time of the IPO (see Figure 4.4). Together, the results of these latter two robustness checks support our argument that there is likely something unique about the heightened attention and visibility during the year of the IPO that propels firms that lack women to redress this gap by adding a female board member.

DISCUSSION

The present study advances a theoretical framework that proposes that the relationship among the work roles that female leaders occupy in the entrepreneurial ecosystem shape whether

Table 4.5: Alternative Model Specifications

	Model 1	Model 2	Model 3	Model 4
	Logit F.E.	Logit F.E.	Ologit R.E.	Logit R.E.
	DV: Adding a Woman b/robust s.e.	DV: Adding a Woman b/robust s.e.	DV: Num. Women Added b/robust s.e.	DV: Adding a Woman b/robust s.e.
Female founder-CEO			0.773*** (0.194)	0.808*** (0.203)
Female board members	-5.379*** (0.317)	-5.291*** (0.318)	-1.306*** (0.313)	-1.491*** (0.324)
Fem. board mem. x IPO		-1.338† (0.761)	-1.026* (0.511)	
Time of IPO, t_i	1.277*** (0.345)	1.785*** (0.470)	1.665*** (0.291)	1.520*** (0.289)
Yr. before IPO, t_i				0.041 (0.400)
Yr. after IPO, t_i				0.254 (0.615)
Fem. board mem. x before IPO				0.274 (0.631)
Fem. board mem. x after IPO				0.993 (0.732)
Time of formation, t_i	0.421† (0.232)	0.444† (0.231)	1.247*** (0.170)	1.210*** (0.171)
Time of fundraising, t_i	0.529** (0.197)	0.543** (0.197)	0.903*** (0.120)	0.904*** (0.121)
Female exits board, t_i	2.518*** (0.433)	2.541*** (0.431)	1.677*** (0.349)	1.645*** (0.377)
Number of men added, t_i	0.114 (0.102)	0.113 (0.103)	0.124 (0.086)	0.126 (0.086)
Board size, t_{i-1}	0.298** (0.094)	0.307** (0.095)	0.268*** (0.043)	0.261*** (0.046)
VC with female partner	0.856* (0.340)	0.859* (0.339)	0.556*** (0.123)	0.560*** (0.126)
Biotechnology			0.690*** (0.151)	0.693*** (0.153)
Log headcount, t_i	0.941*** (0.134)	0.926*** (0.134)	0.179*** (0.052)	0.177*** (0.053)
Headcount % female, t_i	0.872 (0.649)	0.840 (0.649)	1.548*** (0.301)	1.562*** (0.307)
SF-Bay Area			-0.139 (0.134)	-0.137 (0.136)
NYC			0.304 (0.224)	0.302 (0.228)
Boston			0.061 (0.177)	0.060 (0.179)
LA			0.160 (0.246)	0.136 (0.246)
Seattle			0.776* (0.306)	0.799* (0.312)
cut1 Constant/ Constant ^a			4.702*** (0.484)	-4.730*** (0.490)
cut2 Constant			8.335*** (0.569)	
Log Likelihood	-481.498	-479.719		
Log Pseudo-Likelihood			-2013.043	-1936.874
Wald Chi-squared	948.546	952.104	436.43	422.138
Observations	3,369 (452 firms)	3,369 (452 firms)	12,590 (2,100 firms)	12,590 (2,100 firms)

†Significant at $p < .10$ *Significant at $p < .05$. **Significant at $p < .01$. ***Significant at $p < .001$; significance levels based on two-tailed tests. Includes year fixed effects. (a.) cut1 constant in Model 3 and constant in Model 4.

their presence tends to catalyze or inhibit the presence of women on entrepreneurial boards. We argue that women's presence in a complementary role (i.e., firm founder-CEOs in our study) can activate homophily processes, positively impacting the presence of women on boards. In contrast, the presence of women in the same role (i.e., board members in our study) can activate gender categorization processes, negatively impacting the presence of women on boards. We further argue that the presence of women in the same role (i.e., already on the board) also limits the beneficial effects of visibility, a key institutional mechanism known to advance women, such that firms with women already on the board are less likely to add women at the time of the IPO compared to firms without women on the board. We find support for these hypotheses using a novel longitudinal dataset on the boards of 2,100 U.S.-based entrepreneurial ventures covering the time period of 2002-2014. By examining relationships among the work roles that women occupy in the entrepreneurial ecosystem, we show how the representation of women on entrepreneurial boards can be facilitated by homophily and visibility, but also how pernicious gender categorization processes can limit these benefits.

Our work contributes to scholarship on gender dynamics in entrepreneurial settings. We advance a deeper understanding of the limits and opportunities of gender homophily (Beckman & Phillips, 2005; Duguid, 2011; Greenberg & Mollick, 2017; Ibarra, 1992; McGinn & Milkman, 2013), suggesting that homophily may operate best to women's advantage when other women are in complementary roles. We also further an understanding of the dynamics underpinning the presence of women at the highest levels of the organization (Helfat, Harris, & Wolfson, 2006; Hillman, Shropshire & Canella, 2007) by examining the board of directors in the male-dominated context of entrepreneurship. In doing so, we contribute to an understanding of how gender categorization processes can be evoked when women are in the same role, limiting the

advancement of women. Finally, we contribute to research on how gender categorization processes may interact with visibility, both enabling and bounding the benefits of visibility, suggesting that gender norms regarding the presence of women on boards can be a double-edged sword (Chang et al., In press; Dezsó et al., 2016). On the one hand, the absence of a single representative of the category spurs firms to fill the void; on the other hand, the presence of a single representative of the category seems sufficient for firms.

Homophily and Gender Categorization

Some scholars argue that the path to greater female representation is initial female representation— that is, once women achieve positions of power they will open up opportunities for other women, in effect becoming “agents of change” (Cohen & Huffman, 2007, p. 682; Cohen, Broschak, & Haveman, 1998; Ely, 1995). Research has shown that gender homophily indeed operates in both the entrepreneurial ecosystem (Ruef et al., 2003; Greenberg & Mollick, 2017) and on boards of directors (McDonald & Westphal, 2013), seemingly indicating that the presence of women within a firm’s social sphere could increase the likelihood that women are added to the board. However, building on the insight that gender is situated and contextually contingent (Ridgeway & Smith-Lovin, 1999), we draw a key distinction concerning how the benefits of gender homophily may depend on the particular work roles that women occupy relative to one another. In line with research on entrepreneurship and research on boards of directors, which has uncovered evidence of gender homophily, we find that when women are in the complementary role of founder-CEO, entrepreneurial ventures have an increased propensity to add women to their boards of directors.

However, our study also reveals an important limit to these beneficial homophily processes. When women already occupy the role of board member, the addition of subsequent women into that role is limited. We theorize that this occurs due to the activation of gender categorization processes which may result in women in the same role being seen as fungible and interchangeable members of their category. While scholars have discussed how the proportionality or numeric representation of women at various hierarchical levels of the organization can activate these categorization processes (Cohen et al., 1998; Duguid, 2011; Elvira & Cohen, 2001; Ely, 1995; Kanter, 1977; Tolbert et al., 1995), here we theorize how these categorization processes may also be evoked by roles women occupy relative to one another. More specifically, the proportional representation arguments suggest that women at higher levels of the organization will have positive spillovers on the representation of women at more junior levels, and women at the same level will have negative effects on the representation of women (McGinn & Milkman, 2013). One implication of such arguments is that junior women lack the influence to move the dominant male coalition, whereas women in more senior roles have more latitude. While we build on this work, our study suggests a broader understanding of when homophily vs. categorization processes may be at play. In our study, rather than levels of the organization, we examined founders and board members, which are powerful roles that interact and mutually influence one another and the firm. We still find that even at the highest levels of the organization, women leaders are constrained in their ability to advance other women, in our case, due to their roles.

Furthermore, while some research has shown that women who perceive similar structural barriers engage in homophily-based activism (Greenberg & Mollick, 2017), our research points to how the specific work roles that women occupy relative to one another are important to

consider in evaluating the likelihood that gender-based homophily is exercised. In our context, it is entirely possible that women in both complementary and the same roles have similar networks, preferences, and aspirations to support other women in the entrepreneurial ecosystem, and may all even have a shared perception of barriers, but women in the same role may still be more constrained and have less agency to engage in homophilous behavior than those in complementary roles. Our paper also sheds light on the importance of studying gender spillovers especially in the entrepreneurial ecosystem. Specifically, we highlight the potential importance of advancing women to *all* parts of the ecosystem— not just to specific roles (such as founders or board members). To this work, our theorizing adds the insight that spillovers from complementary roles may be one of the few ways in which women can enact positive change in this system because they may be too constrained when they are in the same roles. Indeed, other work on boards of large public corporations has found evidence that the number female directors appears to have positive effects on the representation of women in executive roles (Bilimaira, 2006; Matsa & Miller, 2011; Dezsó et al. 2016), suggesting that the negative effects of prior female board members that we find here are not an inherent limitation of the board role itself but are more plausibly attributable to the constraining categorization processes that being in the same role can invoke.

Our work therefore also sheds light on debates such as whether the presence of women catalyzes or inhibits the outcomes of other women, such as representation, wage-gaps, retention, and promotions, (Duguid, 2011; Srivastava and Sherman, 2015, Cohen & Huffman, 2007) by demonstrating that it does both, depending on the structure of work role relationships between women themselves. That is, our work suggests that women will be agents for change the less constrained they are. Thus, we contribute to research on gender in entrepreneurial settings and

women on boards by providing a more contingent model of homophily, showing the conditions under which gender homophily may operate, and when gender categorization processes might be at play.

Visibility and Gender Categorization

We also contribute to research on the role of visibility in narrowing gender disparities. This research has generally pointed to the positive role of visibility in decreasing gender wage gaps, increasing the representation of women in managerial roles (Dobbin et al., 2015), and accentuating the likelihood of their appointments to boards of directors of large publicly traded firms (Chang et al., In press). Consistent with this work, we do indeed see that visibility—represented in our context by the time of the IPO— appears to motivate the addition of women to the board. Nevertheless, our work also demonstrates that the beneficial effects of visibility are bounded: we find that firms only add women to the board at the time of the IPO when they lack women in that role. When there are already women in the role, firms do not noticeably respond to the visibility and transparency pressures of the IPO by adding more women. Thus, gender categorization processes seem to paradoxically be both enabling and constraining for facilitating the representation of women. While in the presence of prior women, gender categorization is a constraint; all women are seen as substitutes for one another so another woman is not needed. However, in moments of high visibility when there is a norm of gender representation, gender categorization processes can also make salient that there is not even a single representative of the category, spurring the addition of women. That is, categories are not merely limiting; they can also be generative by expanding the possibilities for action (Glynn & Navis, 2013). Specifically, our study suggests that when gender categorization processes are activated, not only is the

presence of a category member noticeable, so is her absence. For example, there was a widespread public outcry and negative media coverage against Twitter for undertaking an IPO in 2013 without a female board member (Kristof, 2013). And after years as COO, Sheryl Sandberg became the first woman added to the board of Facebook but only at the time of the IPO – media headlines at the time noted the timing with headlines like “Sheryl Sandberg named to Facebook Board. Finally.” (Casserly, 2012). Consequently, high visibility moments such as the IPO when categorization processes are salient may also prompt awareness of the absence of category members.

However, gender categorization processes are also constraining because even in those high visibility moments, we found a ceiling on the number of women on the board. Having a single representative of the category (a token) was sufficient for firms to demonstrate commitment to gender diversity; firms did not add a second woman at the time of the IPO if they already had a woman on the board. That is, visibility did not generate sufficient pressure, suggesting that the pressure to add a second woman may be distinctly less intense. This argument is broadly consistent with research indicating that firms do not promote female candidates once an “implicit quota” of at least one female top manager has been reached (Dezsó et al., 2016). This pattern suggests considerable potential for institutionalization of tokenism (Kanter, 1977). Other work has pointed to the possible operation of threshold models in organizations and markets with reference to appointments of women (Chang et al., In press). We provide further evidence highlighting the role visibility may play in activation of such models. Specifically, we suggest that pressure to meet implicit quotas is accentuated at moments of visibility, like an IPO.

Limitations and Future Directions in Research

Our study has several limitations and suggests directions for future work. First, although a key strength of our study is that it draws on a unique and large dataset of entrepreneurial boards, with 2,100 firms, over a 12-year time-frame, with data on the characteristics of firms, boards and funders, one limitation is that we cannot directly provide evidence of causal relationships. However, our data are longitudinal such that our independent variables (e.g. female founder-CEO and prior female board members) temporally precede our dependent variables, and our firm fixed effect model robustness checks also help provide greater confidence in our results. Future research should continue to expand on available data and may also want to consider utilizing data from policy changes, such as mandates and quotas regarding women's representation, to gain additional insight into these dynamics. One strength of our research is that much of our data (2002-2014) are prior to the current spike in public attention to gender discrimination in the technology and entrepreneurial worlds. It seems likely that in today's environment many firms may experience visibility pressures earlier than the IPO. Future work may seek to extend our research by considering how societal visibility pressures evolve.

Our findings regarding the effects of women in complementary vs. the same role and visibility may be limited to entrepreneurial settings. We focused on entrepreneurial ventures because they allowed us to observe how boards are built from the ground up in a context where women are rare. However, there are differences between entrepreneurial ventures, where actors have more of a direct influence due to the typically small size of the firm, and large publicly traded companies. In particular, relational processes, such as homophily, may be more apparent in small firms than large firms (Huang & Knight, 2017); for instance, it is possible that women in complementary roles in large companies may have less opportunity to exercise homophily.

Moreover, the specific complementary role we have highlighted—that of firm founder—is quite influential in our context. Similar roles may be less likely to exist and operate in the same way in other contexts. Thus, future research should examine the applicability of our complementary vs. same role based conceptual model to other industry contexts and organizational fields.

Future work can build on our homophily findings in several ways. First, gender and entrepreneurship researchers have begun to explore homophily and positive spillover effects among women in the entrepreneurial ecosystem (Greenberg & Mollick, 2017). Future work in this area could explore whether the observed influence of the female-founder CEOs is due to preference (choice) homophily vs. structural homophily based on differential access to networks. Future work could also examine how homophily interacts with visibility. Intriguingly, one of the reasons why visibility is thought to assist women’s advancement is by dampening in-group preferential processes such as homophily amongst men (Correll & Mackenzie, 2016). Although we do not find evidence that the positive effects of women in complementary roles are noticeably attenuated at the time of the IPO, future work could also examine whether visibility could also have the inadvertent deleterious effect of imposing constraints on women’s exercise of homophily.

Future work can also build on our categorization and visibility findings. Our work is particularly timely given that governments around the world are instituting gender quotas for board diversity. In parallel, gender and organizational scholars have also begun to consider threshold models and implicit quotas for gender diversity (Chang et al., In press; Deszo et al., 2016). Our findings suggest that in the context of IPOs at the time of our study, visibility may work in tandem with categorization processes to introduce “implicit quotas” (e.g. Dezsó et al., 2016). However, our work also suggests that researchers should consider how quotas and other

visibility and accountability mechanisms (e.g. Castilla, 2015; Dobbin al., 2015) may be helpful but even those positive effects could also be bounded by categorization processes. Future work could explore how other social categorization processes such as race or class may also be shaped by the complementary and same role dynamics we examine here, and thus also limit the effects of mechanisms such as quotas and visibility. It could also examine other junctures and conditions that influence the activation or neutralization of threshold models in entrepreneurial ventures and other contexts where women are scarce. Finally, though our findings suggest that categorization processes can interact with visibility to enforce implicit quotas, more research is needed to understand the mechanisms that underlie these dynamics and how they can be overcome. Comparative research across industries and/or countries will be particularly helpful. It may be that differences in the regulatory frameworks guiding markets, as well as cultural differences, influence the extent to which visibility facilitates or hinders the addition of multiple women to boards. Such research is critical to overcome institutional barriers to the adequate representation of women on boards and in other leadership roles in firms.

Conclusion

While entrepreneurial ventures have been celebrated for their influence as motors of technological progress and economic change, they have also been condemned for their reproduction of gender disparities. A key rallying cry has been to improve the representation of women at the highest levels of the entrepreneurial ecosystem so women can champion more women, yet, expecting women to shoulder the burden of change when they are the numeric minority is a troublesome proposition. Our findings suggest that this is likely to vary depending on the role that women play relative to one another. On the positive side, women can catalyze the

presence of other women despite still being a numeric minority in the entrepreneurial ecosystem when they are in complementary roles. On the negative side, women's numeric minority status seems locked in. Even when women are in influential positions, such as on entrepreneurial boards, they are still constrained by the pernicious barriers of gender categorization when they occupy the same role as one another.

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