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"The liability of newness" revisited: Theoretical restatement and empirical testing in emergent organizations

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ABSTRACT

The mismatch between Stinchcombe's original propositions regarding "the liability of newness" and subsequent attempts to test those propositions suggests to us that the form and causes of the liability remain open to further investigation. Taking organizational emergence as a process comprising entrepreneurs engaging in actions that produce outcomes, we propose hypotheses about the social mechanisms of organizational construction involved in investing resources, developing routines, and maintaining boundaries. Distinguishing between initial founding conditions versus subsequent activities, our results not only confirm the liability of newness hypothesis, but also reveal a much higher risk of failure in organizations' early lifetime than rates found in previous research. Moreover, our results highlight the importance of entrepreneurs' continuing effort after their initial organizing attempts. Whereas only a few initial founding conditions lower the risk of failure, subsequent entrepreneurial activities play a major role in keeping the venture alive. Entrepreneurs contribute to whether a venture survives through raising more resources, enacting routines, and gaining increased public recognition of organizational boundaries. After controlling for financial performance, our results still hold. Based on our analysis, we offer suggestions for theory and research on organizations and entrepreneurship.

1. Introduction

All organizations were once new. Building on this simple premise, Stinchcombe (1965) proposed social mechanisms that have informed research on organizations for more than five decades. He argued that emerging organizations face complex challenges limiting their viability, including managing relationships among strangers, assembling resources quickly, and coping with difficult environments. He coined the phrase "the liability of newness" to describe the precarious existence of emerging organizations, implying that many would not survive their early days. Stinchcombe proposed the liability of newness as "a general rule" and in the 1980s organizational ecologists began investigating whether it really was, in fact, a universal principle. Many subsequent studies conducted on diverse populations appeared to support Stinchcombe's ideas, finding that the postulated age-dependence held even when controls were included for organizational size and other

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confounding effects (Carroll and Delacroix, 1982; Carroll, 1983; Carroll and Huo, 1986; Carroll and Hannan, 1989; Freeman et al., 1983; Hannan and Freeman, 1987).

As research on organizations' disbandings blossomed, however, some analysts found results contradicting "the liability of newness." For example, some studies showed that organizations' failure rates may *decrease* over most of their life course but *increase* during their early months (Brüderl and Schussler, 1990; Brüderl et al., 1992; Fichman and Levinthal, 1991; Levinthal, 1991a). Theorists described this pattern as a "liability of adolescence" and explained the initially low risk by positing a brief "honeymoon" period that organizations enjoyed until they used up initial resources. The key difference between the two theoretical propositions – a liability of newness versus a liability of adolescence – concerned organizations' survival patterns in the *very early months* (Brüderl and Schussler, 1990). Consensus was thus reached regarding a long-term decline in the death rate, but questions remained about initial survival chances when organizations were still going through the organizing process on their way to becoming firms. Despite the decades of research since Stinchcombe's original essay, subsequent research has not resolved this issue.

We believe that a critical step to understanding emerging organizations' disbandings and properly testing Stinchcombe's original propositions is to focus on *emergent organizations* rather than the *registered new firms* that many have studied before. We note that in Stinchcombe (1965:143) essay, the "liability of newness" was rooted in the founding process, as his first concern was with "the effect of social structure on the rate of *foundation* of new organizations." He underscored new firms' vulnerability from the point at which individuals attempt to explore alternative organizational forms, calculate future outcomes, mobilize resources, and evaluate potential competitors. However, when researchers designed research to test his ideas, they consistently left out the early months of the founding process because some believed that "organizing attempts" were not really foundings (Singh and Lumsden, 1990), and almost all relied on publicly available registries of established firms rather than locating firms still being organized (Aldrich et al., 1989; Davidsson and Gordon, 2011; Yang and Aldrich, 2012; Kim and Aldrich, 2011). Thus, almost all research has examined organizations that have already gone through the early period of struggle that most concerned Stinchcombe and that was the context for his propositions (Aldrich and Ruef, 2006; Denrell and Kovács, 2008).

In this paper, we re-open Stinchcombe's thesis on the liability of newness by theorizing and empirically testing the conditions under which emerging organizations are more likely to survive. To develop a theoretical framework, we theorize three critical dimensions of organizational emergence: resources, routines, and boundaries. We distinguish between initial conditions and subsequent activities regarding the three dimensions. We argue that, given initial endowments, entrepreneurs succeed to the extent that their commitments lead them to invest resources, build routines, and establish boundaries. By using a multi-wave panel study, the Panel Study of Entrepreneurial Dynamics II (PSED II), that has a nationally representative sample of emerging organizations, we are able to estimate the impact of entrepreneurial activities during the startup process. We find that although conditions at founding pose some immediate risks of failure to new ventures, subsequent activities matter much more: increased access to resources, entrepreneurial enactment of routines, and external ratification of boundaries.

2. Organizational emergence: theory and hypotheses

In developing our theoretical framework, we follow the growing field of analytical sociology and focus on mechanisms that individual entrepreneurs or entrepreneurial groups use to solve the problems that they encounter in their particular structural contexts (Emirbayer and Mische, 1998; Gross, 2009; Hedstrom and Udehn, 2009; Hedström, 2005; Aldrich and Yang, 2012). We think of organizational emergence as a process comprising entrepreneurs engaging in actions that produce outcomes. Accordingly, we construct an analytic framework for an in-depth analysis of organizational survival encompassing three dimensions of entrepreneurial activities: investing resources, developing routines, and fashioning boundaries, using a scheme initial developed by Aldrich (1979) and subsequently used by others scholars studying new businesses (Aldrich and Ruef, 2006; Brush et al., 2008; Katz and Gartner, 1988). Along the three dimensions, we further distinguish between what nascent entrepreneurs have available when their efforts begin and what they subsequently accomplish during the organizing process (Johnson, 2007; Levinthal, 1991a).

2.1. Resources

The first dimension, resources, refers to the building blocks of organizations, consisting of human capital, social capital, and financial capital (Katz and Gartner, 1988; Wernerfelt, 1984). An organization's founders can bring to their businesses both general human capital and specific human capital. In their previous jobs as employees of established organizations, founders are likely to have gained *general* business knowledge and skills (Carroll and Mosakowski, 1987; Sorenson and Audia, 2000). If they have worked in the same industry in which they are trying to start their new business, they may have accumulated *specific* human capital that provides shortcuts for identifying opportunities and designing quick responses to emergent problems (Klepper, 2001; Phillips, 2005; Roure and Maidique, 1986; Shane, 2000). Both kinds of human capital constitute important initial resources for new businesses and may increase their chances of survival.

Similarly, founders' accumulations of financial capital from previous work constitute an important component of their businesses' initial endowment (Basu and Parker, 2001; Cooper et al., 1994; Hechavarría et al., 2016). In addition, founders may obtain financing from personal savings, family members, and people to whom they are tied. Taking account of such

accumulations, Levinthal (1991b) argued that initial financial capital not only facilitates growth in new firms but also determines the length of the "honeymoon" period in which new firms are protected from death. Stuart and Sorenson (2003) argued that the effects of crucial liquidity events, such as initial public offerings, are contingent on nascent entrepreneurs' capitalizing on their initial access to resources via their prior employment status.

In addition to financial and human capital, Stinchcombe also suggested that emerging organizations are more likely to survive when they receive non-financial help from relatives and friends. Social support provided by these people helps nascent entrepreneurs overcome financial obstacles that arise in a founding process (Burton et al., 2009; Ruef, 2010). Kim et al. (2013) showed that relatives and friends may provide material resources and practical assistance without requiring an immediate return (Kim et al., 2007; Kim et al., 2007). Another study (Aldrich et al., 2004) found that almost all of the assistance provided by relatives and friends was provided free or at a discount; almost no one charged founders a "market price" for their help (Aldrich and Carter, 2004). In addition to reducing owners' financial burdens, social support from their core networks signals their attitudinal support for ventures, perhaps emboldening nascent entrepreneurs to push on with their startup activities. To the extent that founders can attract others to their cause, such support could be beneficial.

2.2. Routines

The second dimension, routines, refers to the ways in which organizations accomplish work, which include processing raw materials, collecting information, and eliciting cooperation among employees (Feldman and Pentland, 2003; Nelson and Winter, 1982). Stinchcombe posited that new organizations suffer from substantial liabilities because they do not have established routines governing members' work relations or a system for rewarding effective behaviors. From a learning perspective, scholars have defined organizational routines as the primary templates by which social actors achieve what they intend to accomplish (Feldman and Pentland, 2003; March and Simon, 1958; Nelson and Winter, 1982). Routines are effective in improving organizational persistence because they increase cognitive efficiency, disaggregate and reduce organizational complexity, stabilize operational practices, and facilitate role formalization among founders (Hannan and Freeman, 1984; March 1991).

We posit that a general mechanism through which founders can quickly and efficiently enact organizational routines at the initial stage is to form startup teams that already have joint experience working together. Besides an entrepreneur's own individual work experiences, joint experience with co-founders in working together on previous projects gives nascent entrepreneurs an opportunity to develop *collaborative* routines. Collaborative routines can be extremely beneficial for emerging organizations, as startup activities are mostly collective, involving negotiation, discussion, and cooperation. By working together on previous projects, entrepreneurs might have cultivated shared knowledge and mutual understanding of daily practices with co-founders, which facilitate a refinement of organizational routines later in the organizing process (Eisenhardt and Schoonhoven, 1990; Philips, 2002). Founders who have previously worked together, especially in businesses similar to the ones they are trying to start, may bring a pre-existing transactive memory structure to the new organization that can substantially reduce search costs for the founders (Miller et al., 2014).

2.3. Boundaries

The third dimension, boundaries, reflects the extent to which emerging organizations differentiate themselves from other organizations in their environments, as well as make connections with them (Santos and Eisenhardt, 2005). Organizational boundaries allow emerging organizations to stand on their own, apart from their founders (Aldrich and Herker, 1977). As Santos and Eisenhardt (2005) noted, scholars have put forward many different understandings of organizational boundaries, characterizing them in terms of efficiency, power, competence, and identity. We view organizational boundaries in terms of internal coherence and the presentation of a consistent face to outsiders. At the initial stage, nascent entrepreneurs are more likely to improve their internal coherence if they have built a strong founding team in which team members are linked by strong connections and have common interests (Aldrich and Waldinger, 1990; Sanders and Nee, 1996). Strong connections can create shared beliefs, mutual trust, and obligations among founders, thus allowing them to define and frame an emerging organization's attributes efficiently.

Our arguments above suggest that new businesses will benefit from initial stocks of assets and initial endowments their founders provided, including their previous work experience, personal savings, and the kinds of social support they obtained from co-founders and other social connections (Baron et al., 1999; Fichman and Levinthal, 1991; Hannan, 1998; Levinthal, 1991b; Ruef, 2002). These resources will help new businesses cope with initial challenges and reduce their liability of newness.

2.4. Initial endowment versus subsequent activities

In addition to initial conditions, we argue that entrepreneurs' subsequent activities directed toward raising more resources, establishing routines, and boundary development will substantially affect new ventures' survival. Because theories of social action emphasize that people construct solutions to specific problems in their structural contexts and the problems may change over time, researchers must investigate the *temporal patterns* of social action (Bourdieu, 1990; Emirbayer and Mische, 1998; Gross, 2009; Hedström, 2005). Indeed, Johnson (2007) has contended that organizational founding is an

agency-based process in which entrepreneurial activities are the driving force of emerging firms' survival (Baker and Nelson, 2005; Eisenhardt and Schoonhoven, 1990; Romanelli, 1989; Ruef, 2002). Thus, we argue that subsequent social activities will shape the fate of emergent organizations, in addition to what founders assemble as their initial endowments (Bhave, 1994; Hedstrom and Udehn, 2009; Lichtenstein et al., 2007).

With regard to resources, although some emerging organizations may begin with favorable endowments from founders' personal savings and closely related people, these initial endowments may depreciate over time unless nascent entrepreneurs obtain additional resources (Hannan et al., 1998). Taking account of such depreciation, Levinthal (1991b) argued that new firms' failure rates are influenced not only by initial assets but also by subsequent financial infusions. When initial resources depreciate, founders will be forced to explore alternative sources of financial capital to replenish their financial stock. Thus, we conjecture that additional resources the founders invest from their personal savings or obtain from other sources will significantly increase their ventures' survival chances (Stuart et al., 1999; Wernerfelt, 1984).

Subsequent activities in developing routines and boundaries may also significantly boost new businesses' survival chances. For example, regarding routines, whereas co-founders' joint work experience helps build routines at the initial stage, contracting with professionals is another route to developing effective routines. By taking advantage of professional personnel's skill and knowledge, new ventures may develop efficient routines even though the founders themselves lack such skills. Working with accountants to create accounting systems and hiring lawyers to draft contracts will help nascent entrepreneurs manage their activities, and thus increase new ventures' reliability and accountability, both internally and externally (Freidson, 1986; Hannan and Freeman, 1984). When solutions become routinized and responses to problems become habitual, rather than *ad hoc*, founders can economize on their time and spend more effort on longer-term issues.

Likewise, organizational boundaries are established as entrepreneurs conduct relevant startup activities. Although entrepreneurial teams may achieve a high level of internal coherence at the initial stage, presentation of a consistent face to outsiders is another important step toward building organizations' boundaries and gaining external legitimacy. For example, state and local governments require that businesses adopt a legal form for taxation and regulatory purposes. Founders can choose from a number of possible legal forms, depending on how complex they expect their operations to become and also on the degree of financial risk they are assuming. Businesses that comply with government regulations affecting their business are able to build their external legitimacy more quickly. Similarly, connections with existing entities – government agencies, banks, associations – increase new ventures' exposure to potential customers, vendors, and creditors (Aldrich and Waldinger, 1990). Joining a trade association, for example, signifies a commitment by the new venture to the larger common good of the industry (Spillman, 2012). Finally, some of these inter-organizational relationships imply a commitment on the part of other parties to supporting the continued existence of the emerging venture (Stinchcombe, 1965). All these events involve boundary-crossing activities that signal an organization's identity as an independent entity to outsiders (McCarthy and Zald, 1977).

Activities undertaken subsequent to initial startup activities, including increased access to resources, enactment of routines, and increased public recognition of organizational boundaries, reflect founders' commitment to their emerging ventures. Entrepreneurs' willingness to invest heavily in their businesses, especially given poor initial endowments, is important as returns on their investment are problematic for most new businesses. Indeed, previous studies have shown that most new businesses require at least several months to generate profit. Before entrepreneurs see a tangible return on their investment, they have to rely on their commitment to keep their businesses going. In fact, prior research has suggested that a key marker of commitment to starting a new business occurs when founders give up their regular jobs and begin working full-time on their new ventures (Reynolds and Curtin, 2009). Devoting most of their working week to a startup without clear economic returns marks a major turning point for the business. To the extent that entrepreneurs' commitments ultimately motivate them to undertake a variety of business activities, emerging organizations may survive despite competitive and financial challenges.

Based on our review of the initial constraints facing entrepreneurs and our three-part model of the dimensions jointly comprising effective organizing activities, we present our central thesis:

Founders' attempts at organizing new businesses will succeed to the extent that they go beyond their initial organizing conditions by investing additional resources, creating routines, and establishing boundaries. Such activities will mitigate, to some extent, the liability of newness.

3. Research design

We use data from Panel Study of Entrepreneurial Dynamics II (PSED II) to analyze the effects of initial conditions and subsequent startup activities on new ventures' survival. PSED II is one of the few data sets designed to study new businesses and entrepreneurial teams. For a long time, research on entrepreneurship was constrained by the difficulties of obtaining representative samples of startups. Beginning in the early 1990s, Reynolds and his collaborators demonstrated that it was possible to rigorously identify nascent entrepreneurs attempting to start new businesses (Reynolds, 2007). The resulting panel research design was eventually called the Panel Study of Entrepreneurial Dynamics I (PSED I). Based on what investigators learned from that study, the research design was improved for PSED II, using more effective screening questions for identifying entrepreneurs and their co-owners.

3.1. Data

The data are ideally suited for research on emerging organizations for two reasons. First, unlike studies of official registration data using samples of new firms which have become publicly visible, PSED II has a sample of emerging organizations which were identified at the very beginning of the founding process, when nascent entrepreneurs first began working on their startups. Second, having time-varying information on business development substantially improves research on business creation. PSED II has extensive *monthly* information about fifty-two types of business activities, including collecting information on competitors, making a plan, purchasing materials, earning their first revenue, earning positive cash flow, and so on (Manolova et al., 2009; Reynolds and Curtin, 2007). Respondents were asked a set of two questions related to these important events. The first was whether an event occurred and the second was the specific time the event happened, including the month and the year.

The research design for the PSED II consists of two phases. In the first phase, a representative sample of 31, 845 individuals living in the contiguous 48 states and the District of Columbia were screened in 2005 to identify nascent entrepreneurs. When an adult 18 years of age or older was identified and agreed to respond to the survey, a screening interview was conducted to identify nascent entrepreneurs, using a set of three general qualification questions. If respondents said "yes" to at least one of the three questions, three additional questions were used to ascertain whether respondents had taken any action in creating a new business, whether they would share ownership of the new businesses, and whether the new businesses had become fledging firms. About 87% (1214) of those identified as entrepreneurs agreed to participate in the study (Reynolds and Curtin, 2009).

In the second phase, the University of Michigan Institute for Social Research conducted interviews to collect information on all the entrepreneurs. During the phone interview, respondents were asked, "How many people will legally own this new business-only you, only you and your spouse, or you and other people or businesses?" If the respondent indicated others would share ownership in the venture, they were asked to identify up to five who would have the highest level of ownership. The respondents were then asked to provide information about each cofounder.

The initial wave of interview was conducted in 2005, and six annual follow-up interviews were conducted until 2011. We use all the seven waves of data in our analyses. To our knowledge, no other survey study of the liability of newness has followed such a large nationally representative sample over so many panel waves.

3.2. Sample

For analyses of new ventures, the appropriate unit of analysis should be a new venture. Because PSED II used a nascent entrepreneur as the sampling unit, we adjust the weights to obtain a representative sample of new businesses. As Ruef (2010) noted, a consequence of the sampling in PSED II is that new ventures with more owners are over-represented. In repeated probability sampling using an individual owner as the unit of sampling, the probability of selection for a new venture with *n* owners is *n* times of the probability for a new venture with a solo owner. Given that the sampling weight is the inverse of the selection probability, the sample weights for a new venture with *n* owners should be one *n*th (n is the number of owners for a new ventures) of the weight for a new venture with a solo owner.[1] The average team size of new ventures is only 1.73 and more than half of new ventures are owned by solo entrepreneurs.

We use information on startup activities and outcomes to check the validity of each emerging organization. Of the original 1214 cases in PSED II, we exclude 118 invalid cases because for these cases: (1) nascent entrepreneurs did not conduct any activity since they first had the idea of creating a new business; or (2) new ventures started more than 60 months prior to the screening interview date, and thus were more or less established firms; or (3) any variable used in our statistical analyses had missing values. As a result, we reduced our sample to 1030 new ventures.

3.3. Dependent variable

3.3.1. Survival time

This is defined as the duration between starting time and termination date of an emerging business (Reynolds and Miller, 1992; Schoonhoven et al., 2009). We defined the starting time as the conception date when nascent entrepreneurs initially began the business creation process. To determine the date of termination, we first evaluated entrepreneurial status: "Do you consider yourself to be actively involved with the new business (startup) or disengaged from it?" If the answer was "disengaged," we asked a follow-on question "Are there any other people still involved?" to differentiate business termination from individuals' exits. For terminated businesses, we obtained the termination time from the question "In what *month* and *year* did you end your active role in working on this business startup?" Thus the unit of a business's survival time is a month. For individual exit, a business is coded as surviving but treated as a *right-censored* observation at the point of individual exit

[1] PSED II comes with weights developed by two steps: (1) survey weights that were developed to adjust non-coverage and non-response; (2) post-stratification weights were developed after screening interviews were conducted, given respondents' information on income, sex, age, and race. Thus the final weights of PSED II are $WT_{respondent} = WT_{survey} * WT_{post-strat}$. Conditional on the final weights developed to achieve a representative sample of nascent entrepreneurs, we further adjust the weights to obtain a representative sample of new businesses: $WT_{venture} = WT_{survey} * WT_{post-strat} * \frac{1}{Teamsize}$.

because respondents who provided information on their businesses are no longer in the sample after their exits. Of the individuals who quit their businesses, only 8% reported that other people were still working on their new ventures. In most cases, an individual "quit" indicates the new venture was terminated.

3.4. Independent variables

We created variables to characterize initial conditions – resources, routines, and boundaries – and then subsequent activities regarding each.

3.4.1. Initial resources invested

(1) Human capital: As previous studies suggested, creating a new business involves multiple tasks that rely heavily on founders' management skills. Thus, we included *managerial experience* as an important indicator of initial endowments. We measured managerial experience as the average years of managerial, supervisory or administrative responsibilities that new firms' owners had at the initial point. Given that industries in modern societies are segmented and often draw on skills that are industry specific, we included *work experience in the relevant industry*, measured as the average years of work experience in the same industry where a new firm will be completed. Additionally, *entrepreneurial experience* is measured as the average number of other businesses that founders started as owners or part-owners.

(2) Financial capital: we measure this variable by the log cumulative amount of money invested before the 12th month from all kinds of resources, including personal savings, family members, friends, employers, work colleagues, bank loans, and loans from other financial institutes. We update the amount of initial financial capital each time that a respondent reported that additional money was invested before the 12th month. We take the log of the variable because the distribution of the continuous variable is highly positively skewed.

(3) Social Capital: entrepreneurs may obtain social support from others when they make contributions as owner founders, non-owner founders, or helpers (Burton et al., 2009). In PSED II, the identity of owner founders was determined based on respondents' self-reported ownership. Non-owner founders were defined as people who will not have an ownership share, but who "have made a distinctive contribution to the founding of this new business, such as planning, development, financial resources, materials, training, or business services." Helpers were defined as people who "will not have an ownership share but have made a significant contribution to the founding of this new business." We used a simple count of each.

3.4.2. Initial routines developed

Prior joint work experiences: because our argument is that founders' prior joint work experience allows the teams to develop routines quickly, we use a dummy variable to measure prior joint work experience: coded as 1 if at least one pair of owners has joint work experience.

3.4.3. Initial boundaries established – internal coherence

Strong connections between entrepreneurial founders: At the initial stage, nascent entrepreneurs are more likely to improve their internal coherence if they have built a strong founding team in which team members are linked by strong connections and have common interests. We believe that members from the same family are more likely to have strong connections than others (Aldrich and Waldinger, 1990; Sanders and Nee, 1996). Indeed, about half of all new businesses are initially based within a household, a sign that support from others in the household, especially family members, is critical under conditions when resources are scarce. Although the family business literature is filled with cautionary tales about the difficulties of mixing family and business, we might still expect household and family-based businesses to have a slight advantage in the organizing process. The picture is less clear with respect to involving friends, as whether their help is valuable depends upon how much business experience they have had (Kim et al., 2013). Given that a household is typically a primary group in which family members commonly share household income, our indicator of strong connections is a dummy variable coded "1" if all co-owners are from the same household. An alternative measure for strong connections between team members is the number of years they have known each other. We tried both measures and found them highly correlated, because family members have often known each other much longer than others. We report results using the dummy variable for a startup attempted being household based.

3.4.4. Subsequent activities: resources, routines, and boundaries

We constructed variables characterizing *subsequent activities regarding resources, routines, and boundaries*.

3.4.4.1. Additional financial resources. PSED II collected information on the amount of financial capital invested *after* the first 12 months. As we did with initial financial capital, we measure additional financial capital as the log cumulative amount of money invested after 12th months, from all sources, including personal savings, family members, friends, employers, work colleagues, bank loans, and loans from other financial institutes.

3.4.4.2. Subsequent activities in constructing routines. we include four indicators to measure efforts made by owners to develop routines for their startups during the organizing process. The indicators are: whether owners have (1) started preparing a plan, (2) signed an agreement regarding ownership shares, (3) retained an accountant, and (4) retained a lawyer. Whereas creating a business plan puts into place a template that disciplines future behavior (Baron and Shane, 2005; Delmar and Shane, 2003; Timmons and Spinelli, 2007), signing an ownership agreement that divides the profits according to a preset formula reduces the likelihood of conflict within an ownership group (Boeker and Wiltbank, 2005; Mizruchi, 1983). Working with professionals, such as accountants or lawyers, helps founders to economize on their time and spend more effort on longer-term issues. All four indicators are time-varying variables, coded using time information updated monthly.

3.4.4.3. Subsequent boundary-defining activities. We include a set of time-varying dummy variable indicators to measure boundary-defining activities: (1) whether a new venture has joined its trade association; (2) whether a new venture has been listed with Dun and Bradstreet; (3) whether a new venture is formally registered with a government agency or bureau. Because these established institutions involve large numbers of people, they serve as effective vehicles through which emerging organizations can distribute their information to external actors in their community and thus define their identity (McCarthy and Zald, 1977).

3.4.4.4. Commitment. We use the time invested by the founders as the proxy to measure commitment. Devoting most of their working week to the startup marks a major turning point in the resources available to a new business. Studies have shown that startup activities in emerging organizations are much more time-consuming than those in established firms because the tasks are far less specialized and their structures far less developed (Bird, 1988; Greve and Salaff, 2003). Nonetheless, more than half of founders begin the business organizing process while still holding another full-time job (Ruef, 2010) Faced with competing demands, entrepreneurs struggle to free enough time for paying jobs and their new ventures. Therefore, we suspect that the extent to which nascent entrepreneurs invest a significant amount of time in startup activities strongly influences their new ventures' survival chances. We tried two measures for commitment: (1) whether at least one owner spends at least 35 h per week on the business; (2) the number of owners with another full-time job besides the business. Because the two variables are highly correlated and the hours owners spent on the business ultimately determine the number of startup activities they conduct, we present results using the first measure.

3.5. Control variables

3.5.1. Performance

Our three-part model of the organizing process follows Stinchcombe's lead in positing that the liability of newness arises from social structural factors, and not just economic ones. Although he pointed to the importance of acquiring financial resources, Stinchcombe was mainly concerned with issues of social relationships and difficulties in organizing a social unit under very trying conditions. A possible threat to the validity of our models could be raised by those who question Stinchcombe's views and who view money and financial performance as the supreme arbiter of whether a new venture avoids the liability of newness. But, if Stinchcombe is correct, good financial performance is not enough to guarantee startup. Thus, in testing our model, we will explicitly take account of financial performance over time to investigate whether the other conditions we have identified truly make a difference, net of economic performance. We differentiate three levels of performance: did not receive any revenue; received revenue, and received revenue larger than expenses. We set the lowest performance level as the control group and include two dummy variables for the other performance levels. Both dummy variables are time-varying non-recursive variables.

We also control for the characteristics of entrepreneurial teams. All the variables related to team characteristics, such as team size, composition, average age, and team diversity, are time-varying variables updated once new owners were added or old owners were excluded. *Team Size*: measured by the number of owner founders. We control for size because prior studies have suggested that new ventures founded by larger teams are more likely to succeed than those founded by small teams (Ruef et al., 2003). *Team Composition*: we differentiate three types of teams: solos, teams having friend(s) as owner(s), and teams of family members. *Owners' Personal Characteristics*: we control for the average age of owners and the average level of education of owners in a team.[2] *Team Diversity*: for age, we calculated the standard deviation of owners' ages; for race and sex, we calculated Blau's index of diversity using this formula: $D = 1 - \sum_{i=1}^{n} P_i^2$, where n is the number of categories and p is the proportion of all owners in a category.

3.5.2. Household conditions

We control for a variety of household conditions, including household income, the number of adults, and the number of children in the households.

These variables have been associated with new businesses' survival in previous research (Kim et al., 2013). Household income and the number of adults in a household affect the amount of financial resources and human capital available to

[2] We differentiate 10 levels of education: (1) up to eighth grade; (2) some high school; (3) high school degree; (4) technical or vocational degree; (5) some college; (6) community college degree; (7) Bachelor degree; (8) some graduate training; (9) Master degree; (10) Law, MD, PHD, EDD, degree.

businesses. We also control for the number of children because entrepreneurs, especially men, may feel more pressure to create successful businesses when they have more dependents at home (Bianchi et al., 2006).

3.5.3. Industry type

PSED II uses 6-digit master NAICS industry codes to record each business's industry type. Based on the industry code information, we categorize these new ventures into five types of industries: primary/manufacturing, retail/wholesale, consumer, business support, and professional services.

3.5.4. Age at entry time

we also include new ventures' age at entry time, the screening interview, in order to control for heterogeneity in the length of time founders have spent on organizing, prior to our first interview with them.

3.6. Analytical strategies

Survival analysis is ideal to test emerging organizations' survival because it uses information on both events and time (Allison, 2010; Blossfeld et al., 2007; Cox and Oakes, 1984; Tuma et al., 1979). Comparing three available survival models: non-parametric models, parametric models, and semi-parametric models (Cox proportional hazards model), we chose the Cox Proportional hazard model because this model leaves the baseline survival function unspecified (Blossfeld et al., 2007), easily incorporates time-varying variables (Allison, 2010; Hosmer et al. 2008), handles left-truncated and right-censored data (Guo, 1993), and effectively deals with survival time with ties (Collett, 2003).

The hazard rate of interest is the instantaneous death rate, or conditional death rate, written as:

$$h(t) = \lim_{\Delta t \to 0} \frac{p(t \le T < t + \Delta t | T \ge t)}{\Delta t} = \lim_{\Delta t \to 0} \frac{\frac{p(t \le T < t+\Delta t,\ T \ge t)}{\Delta t}}{P[T \ge t]} = \lim_{\Delta t \to 0} \frac{\frac{p(t \le T < t+\Delta t)}{\Delta t}}{P[T \ge t]} = \frac{f(t)}{S(t)}$$

The formula indicates that the hazard rate is the ratio of the probability density function to the survival function, meaning the approximate probability that a new venture is terminated between the time interval $[t,\ t + \Delta t]$, conditional on its probability of surviving to time t.

In Cox proportional hazards models, the hazard rate of failure at time t, $h(t)$, is:

$$h(t) = h_0(t) exp[\boldsymbol{\beta X}(t)]$$

where $h_0(t)$ is a baseline hazard function (shared across the population), $\boldsymbol{X}(t)$ is a vector of covariates (varying across individual observations), and $\boldsymbol{\beta}$ is a vector of the estimated regression coefficients.

In our analyses, we are aware of potential methodological problems related to research design and data collection that may bias model estimation: left-truncation, right-censoring, and survival time with ties. Both left-truncation and right-censoring lead to incomplete panel data (Guo, 1993). Left truncation occurs when emerging organizations have already been exposed to the risk of quitting for a certain period (depending on when they started) when they came under observation. While the conception date of emerging organizations (the date when nascent entrepreneurs initially launched business creation) is their original time of being at risk of termination, in practice emerging organizations can only be identified and sampled after they have existed for a certain period. Given the time lag between startups' conception dates and the beginning point of our observation, left-truncated data include disproportionate numbers of hardy organizations, which are those that survived long enough to be selected into the sample (Hannan et al., 1998). Although the left-truncation in PSED II tends to be relatively less severe than the project aimed to select new ventures from a very early period, there is potential for bias if we do not control for left-truncation in the model.

With left-truncated data, if the start time of being at risk is known, we can specify the length of elapsed time before entry into the observation with a conditional likelihood approach (Allison, 2010; Guo, 1993). The idea behind the conditional likelihood approach is that it excludes subjects from the risk set when they have not yet entered into our observation. We apply a conditional likelihood approach in our analysis, and specify the length of elapsed time in the pre-entry period as equal to the age of a startup at the date of the screening interview (Yang and Aldrich, 2012).

4. Results

We begin with a figure showing that the emerging ventures in our sample faced a severe liability of newness, confirming findings from previous studies. Having established the presence of a liability of newness, we systematically present a series of five models, beginning with a baseline model of initial conditions. We then add new variables in the next three models to capture the effects of organizing activities undertaken in the months and years after the startup effort began, culminating in a model that includes all initial conditions and subsequent activities. Finally, we test to determine the effects of founders' commitments on the survival of the effort and then present a full model including all independent variables. In all models, we

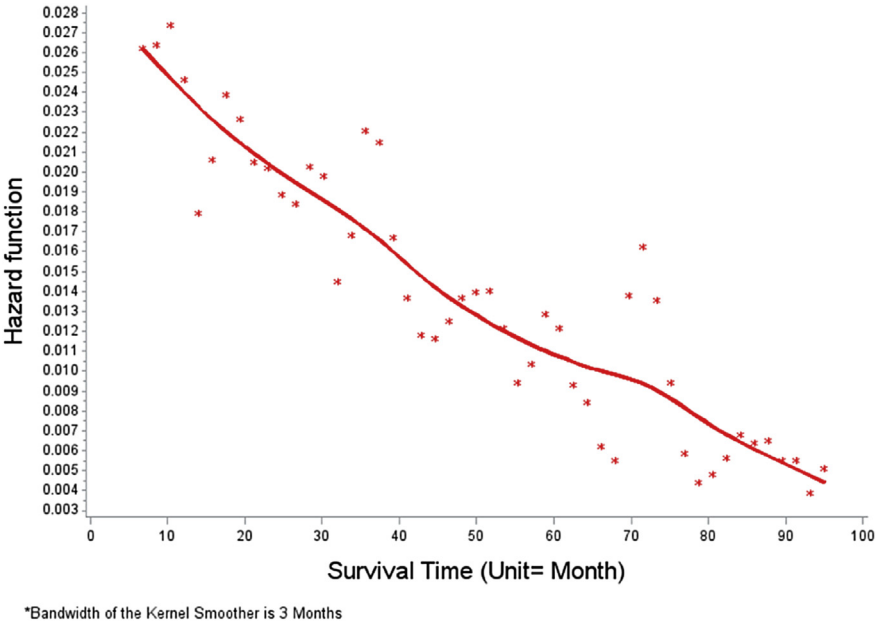

Fig. 1. Smoothed hazard rate of failure for new ventures in the U.S. 2005–2011*.

control for economic performance, based on our argument that survival depends not only on financial but also on organizing capabilities.

4.1. Presence of a liability of newness

Fig. 1 reports the smoothed hazard rate (instantaneous death rate at time t). It shows a monotonically decreasing hazard rate over time, with a rate of 0.031 at the beginning and only about half that, 0.015, at the 40th month since the first entrepreneurial activity, confirming that the "liability of newness" and not a "liability of adolescence" exists in this sample of startups.[3] We note that the highest risk of failure in our results, 0.026, is much higher than the peak of hazard failure, 0.018, found by Brüderl and Schussler (1990) using data on founders whose firms were registered with Munich's Chamber of Commerce (Germany). Our results strongly confirm that emerging organizations suffer a greater liability of newness than the "new" organizations examined in previous studies that used registration data.

We report means, standard deviations and correlations for all variables in Table 1. About half of businesses were terminated during the six-year observation period. The Pearson correlations show that terminations of emerging ventures are highly correlated with subsequent activities but only weakly correlated with initial conditions, except for entrepreneurs' experiences in the same industry where a startup is being created. A few other subsequent conditions are noteworthy.

First, entrepreneurs on average invest much more financial capital after the first 12 months. The average additional financial capital invested afterwards is about $61,840, nearly double the initial financial capital invested, $32,913. Second, entrepreneurs' activities in establishing routines and boundaries in general are highly correlated with startups' failure, suggested by the correlation coefficients that ranged from −0.15 to −0.21. Third, our commitment measure, the number of owners spending more than 35 h per week, is also highly correlated with business failure, suggesting that entrepreneurs' commitment might be an important driver of all the subsequent activities and efforts made by entrepreneurs. Together, the descriptive results provide preliminary support to our main proposition that entrepreneurial activities in obtaining resources, developing routines, and establishing boundaries may help their new businesses overcome barriers to the survival of emerging ventures, even when they started with limited support.

4.2. Initial conditions

Table 2 presents the estimated coefficients $\widehat{\beta}$ and the standard errors of coefficients. Model 1 includes covariates for initial conditions and all control variables, examining the effect of a new business's human, social, and financial capital when organizing first began.

[3] The basic idea of the Kernel Smoother is to compute the estimator of the hazard rate at time T as a weighted average of hazard rate at nearby times. The bandwidth is a range of time within which hazard rates will be averaged. Larger value of bandwidth leads to greater degree of smoothing.

Table 1
Descriptive and correlations of initial conditions, subsequent activities, and commitment (obs = 1030) businesses).

	Variable	Mean	Std dev	1	2	3	4	5	6	
1	Termination	0.47	0.50							
2	Avg managerial experience	10.30	9.03	−0.05						
3	Avg no. of startups created	1.00	1.66	−0.07	0.32					
4	Avg experience in the relevant industry	8.23	9.05	−0.14	0.35	0.08				
5	Initial financial capital	32913	234108	−0.07	0.06	0.04	0.02			
6	No. of non-owner founders	1.05	3.56	−0.04	0.01	0.06	−0.03	0.03		
7	No. of helpers	0.89	2.50	−0.01	−0.03	0.03	−0.04	0.04	0.56	
8	Prior joint work experience	0.08	0.27	−0.06	−0.01	0.06	0.03	0.01	−0.01	
9	Members from same household	0.24	0.43	0.00	−0.02	−0.05	−0.10	−0.04	−0.05	
10	Additional financial capital	61840	483222	−0.07	0.07	0.02	0.06	0.82	0.03	
11	Made a plan	0.74	0.44	−0.08	0.06	0.03	0.00	0.05	0.07	
12	Sign an agreement on ownership	0.12	0.33	−0.17	0.07	0.11	0.04	0.12	−0.02	
13	Hire accountant	0.40	0.49	−0.21	0.16	0.12	0.10	0.13	0.01	
14	Retain lawyer	0.27	0.44	−0.18	0.10	0.14	0.04	0.17	0.01	
15	Join trade association	0.23	0.42	−0.19	0.16	0.16	0.06	0.10	0.07	
16	List on Dun and Bradstreet	0.10	0.30	−0.15	0.00	0.05	0.02	0.08	0.03	
17	Registered with government	0.49	0.50	−0.17	0.10	0.11	0.05	0.10	0.02	
18	At least one owner works 35 h a week	0.41	0.64	−0.15	0.02	0.06	0.04	0.10	0.02	
19	No. of owners with full-time job	0.69	0.81	0.02	−0.09	−0.11	−0.06	0.00	−0.04	
20	Receive revenue	0.66	0.47	−0.26	0.04	0.08	0.09	0.04	0.03	
21	Receive positive cash flow	0.47	0.47	−0.32	0.08	0.09	0.12	0.07	0.05	
22	Team size	1.73	0.95	−0.03	0.04	0.02	−0.03	0.13	−0.05	
23	no. of adults in the household	2.20	3.16	0.03	0.02	−0.05	−0.04	−0.01	0.02	
24	No. of children in the household	0.85	1.18	−0.02	−0.21	−0.02	−0.11	0.04	0.04	
		7	8	9	10	11	12	13	14	
8	Prior joint work experience	−0.05								
9	Members from same household	−0.04	−0.16							
10	Additional financial capital	0.07	0.00	−0.04						
11	Made a plan	0.07	0.05	0.07	0.05					
12	Sign an agreement on ownership	−0.03	0.17	0.02	0.14	0.12				
13	Hire accountant	−0.01	0.10	0.01	0.12	0.16	0.28			
14	Retain lawyer	0.04	0.11	−0.01	0.15	0.22	0.32	0.41		
15	Join trade association	0.07	−0.02	0.03	0.11	0.15	0.14	0.28	0.25	
16	List on Dun and Bradstreet	0.02	0.03	−0.03	0.05	0.17	0.15	0.19	0.22	
17	Registered with government	0.05	0.06	0.04	0.10	0.17	0.28	0.38	0.32	
18	At least one owner works 35 h a week	0.04	0.11	0.04	0.08	0.09	0.22	0.18	0.16	
19	No. of owners with full-time job	−0.01	0.24	0.16	−0.02	0.05	0.11	0.02	0.05	
20	Receive revenue	0.04	−0.02	0.07	0.01	0.08	0.16	0.28	0.17	
21	Receive positive cash flow	0.05	0.03	0.04	0.05	0.08	0.17	0.37	0.22	
22	Team size	−0.03	0.36	0.16	0.14	0.09	0.35	0.15	0.20	
23	no. of adults in the household	0.01	−0.01	0.01	−0.01	0.02	−0.01	0.03	−0.03	
24	No. of children in the household	0.00	0.07	0.08	0.03	0.02	0.02	−0.03	0.01	
		15	16	17	18	19	20	21	22	23
16	List on Dun and Bradstreet	0.23								
17	Registered with government	0.30	0.29							
18	At least one owner works 35 h a week	0.18	0.20	0.17						
19	No. of owners with full-time job	−0.06	−0.05	0.02	−0.06					
20	Receive revenue	0.27	0.21	0.37	0.23	−0.07				
21	Receive positive cash flow	0.26	0.24	0.36	0.21	−0.08	0.67			
22	Team size	0.03	0.02	0.10	0.22	0.48	−0.07	−0.03		
23	No. of adults in the household	−0.03	−0.01	−0.04	−0.02	−0.02	−0.04	−0.03	0.00	
24	No. of children in the household	−0.04	0.03	−0.02	0.01	0.06	0.01	0.01	0.08	0.01

Among all the initial conditions, only two significantly reduce a new business' failure rate: the average amount of previous work experience in the same industry as the startup and the amount of financial resource invested in the first 12 months. In particular, previous work experience in the same industry as the new venture provided substantial advantages to founders. For example, five years of work experience in the same industry reduced the hazard of failing by 10 percent, and ten years work experience in the same industry reduced it by 20 percent. As the median founder in our sample had about five years' work experience in the startup's industry, many of the new ventures benefited from this effect.

Fig. 2 graphically portrays the effects of initial financial capital on the odds ratio, with the odds ratio shown on the Y axis and the amount of financial capital invested up to the first 12 months shown on the X axis. The figure shows that an initial $1000 invested lowered the odds of failing by 23 percent. At the median investment of about $700, the failure rate was reduced about 22 percent (not shown on the graph). Larger amounts further lowered the likelihood of failure, but at a decreasing rate. For example, a $5000 investment lowered the rate by 36 percent. Consistent with results regarding

Table 2
Initial conditions and subsequent activities that affect the failure rate of new businesses.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
	Initial conditions	Additional resource	Routines Activities	Boundary Activities	All activities
Avg managerial experience	−0.003 (0.006)	−0.005 (0.006)	−0.002 (0.006)	−0.001 (0.006)	−0.002 (0.006)
Avg no. of startups created	−0.037 (0.037)	−0.030 (0.037)	−0.010 (0.037)	−0.023 (0.038)	0.001 (0.037)
Avg experience in the relevant industry	−0.021 (0.006)***	−0.021 (0.006)***	−0.021 (0.006)***	−0.023 (0.007)***	−0.021 (0.006)***
Log initial financial capital	−0.036 (0.012)**	−0.017 (0.014)	−0.021 (0.012)	−0.032 (0.012)**	−0.001 (0.014)
No. of non-owner founders	−0.014 (0.019)	−0.013 (0.019)	−0.011 (0.017)	−0.010 (0.019)	−0.008 (0.017)
No. of helpers	0.018 (0.025)	0.018 (0.025)	0.022 (0.025)	0.019 (0.026)	0.019 (0.026)
Prior joint work experience	−0.243 (0.239)	−0.292 (0.240)	−0.265 (0.241)	−0.236 (0.238)	−0.286 (0.241)
Members from same household	−0.788 (0.461)	−0.780 (0.462)	−0.857 (0.466)	−0.788 (0.462)	−0.843 (0.469)
Log additional financial capital		−0.042 (0.015)**			−0.041 (0.015)**
Made a plan			−0.296 (0.106)**	0.744	−0.258 (0.107)*
Sign an agreement on ownership			−0.623 (0.205)**	0.536	−0.571 (0.206)**
Hire accountant			−0.387 (0.119)***	0.679	−0.331 (0.120)**
Retain lawyer			−0.344 (0.134)*	0.709	−0.287 (0.135)*
Join trade association				−0.472 (0.146)***	−0.364 (0.146)**
List on Dun and Bradstreet				−0.218 (0.221)	−0.092 (0.222)
Registered with government				−0.317 (0.108)**	−0.158 (0.111)
Receive revenue	−0.212 (0.122)	−0.197 (0.122)	−0.160 (0.123)	−0.073 (0.125)	−0.060 (0.126)
Receive positive cash flow	−1.269 (0.134)***	−1.254 (0.134)***	−1.099 (0.137)***	−1.138 (0.137)***	−1.053 (0.139)***
−2 Log L	5235.270	5227.540	5180.384	5206.968	5126.303
AIC	5283.270	5277.539	5236.384	5260.968	5226.303

Note: two-tail *t*-test, *, 0.05; **, 0.01, ***, 0.001; All control variables are included in the models, but not shown in the tables because of limited space. Standard errors are in parentheses; Coefficients are logarithm of hazard ratio.

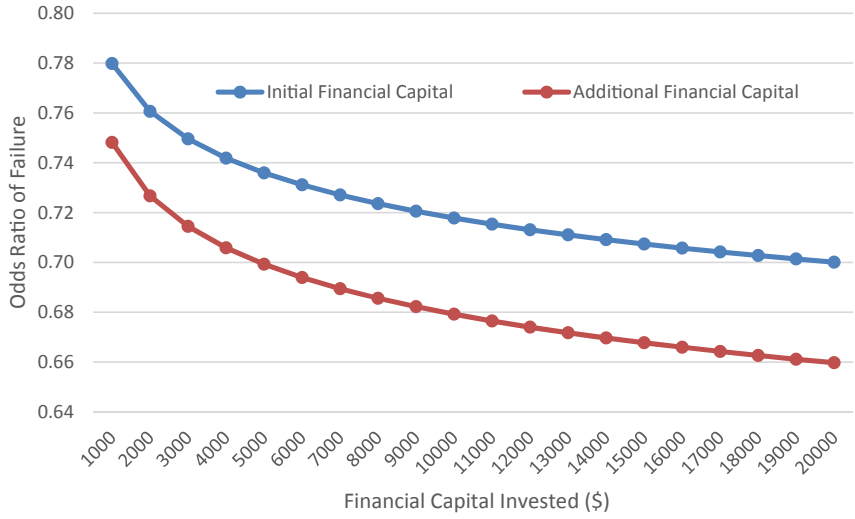

Fig. 2. The effects of initial and additional financial capital on the failure rate of new businesses.

diminishing returns of initial capital in some previous studies (Gimeno et al., 1997), we found that additional increments of capital beyond $5000 did little to further reduce hazard rates. For example, an investment of $10,000 reduced an emerging organization's hazard rate of failure by 39%, a trivial improvement over the 36% reduction with a $5000 investment. This result lends support to our argument that financial capital alone is not sufficient to overcome the liability of newness.

Our results in Model 1 also show insignificant effects of the other initial conditions. Neither managerial experience nor previous startup experience reduces the liability of newness, net of experience in the same industry. The specific human capital acquired from working in the same industry does give founders an advantage, but they derive no benefits from the general human capital obtained from working in other industries. Previous startup experience also confers no protection against the liability of newness, perhaps because the knowledge required to do well in the early days of a startup is highly context- and industry-specific. Transferring knowledge from other industries may be difficult because founders face new challenges and difficulties for which experience elsewhere has not prepared them. Similarly, we found that new businesses do not benefit from founders' prior joint work experience or the internal coherence potentially developed from members living in the same household.

Our results suggest that new businesses' survival depends less on what founders bring to a startup than on how much they can learn during the organizing process, a conjecture we investigate in the remaining models. General prior knowledge is evidently of little use, and accordingly founders must bring specific knowledge and practices to bear on the problems that they encounter in their particular contexts.

4.3. Subsequent activities

With Model 1 having established the limited protective effects of initial conditions, we now turn to examining the effects of subsequent activities. We first add each set of conditions in separate models and then combine all the conditions in model 5.

Model 2 adds the variable for additional financial capital invested during the organizing process, once initial conditions have been established. The relationship is graphically portrayed in Fig. 2. Just as founders invested a small amount of financial resources initially, they also invested relatively modest amounts after organizing efforts got underway. The median amount of additional resources invested was only $3,000, which reduced the likelihood of failure by about 28%. We found diminishing returns to additional investments *after* the first 12 months, replicating what we had found for investments *during* the first 12 months. An additional financial capital infusion of $1000 reduced the hazard rate by 25 percent. Adding $4000 more in financial capital, to a new level of $5,000, led to a reduction in the hazard rate of only 30 percent. With the measure of additional financial capital added to the model, the effect of initial financial capital was no longer statistically significant. Thus, regardless of what founders initially invested, it was only the subsequent investments that significantly lowered their liability of newness.

Model 3 allows us to examine the importance of implementing routines. We argued that as founders develop routines, they lower their liability of newness. Our expectations were strongly supported: all four indicators of the institutionalized practices are statistically significant and have substantial impact. The hazard rate of failing decreased by 26 percent when they enacted a business plan, by 32 percent if they retained an accountant, and by 30 percent if they retained a lawyer. The effect of owners signing an agreement regarding their ownership is even bigger, as it reduced new ventures' failure rates by 46 percent. Compared with what the typical new venture was able to raise in additional financial resources, these discrete organizing events were much more significant.

In model 4, we test the effects of engaging in boundary crossing activities. Two of our three indicators significantly lowered the risk of failure and one had no effect. Joining a trade association reduced a new venture's hazard rate by about 38%, and being registered with a government agency or bureau reduced new ventures' rates by 27%. Being listed by Dun & Bradstreet in a credit report did not have a significant effect on the liability of newness, possibly because a D&B rating would only come to the attention of customers or creditors if they had already begun establishing a business relationship with the new venture.

In model 5, we included all variables for initial conditions and the three dimensions of the subsequent organizing process to check the robustness of our results and to look for confounding effects. Comparing model 5 to the three models – model 2, 3, and 4 – which include indicators of activities undertaken during the subsequent process, our model results are very robust, as the magnitude of net effects for most indicators decreased only slightly. In model 5 the effect of investing initial capital is not statistically significant, whereas the effect of *additional* financial capital invested is still significant and the size of the coefficient changes only slightly. When founders focus their efforts on the organizing activities involving the development of routines and boundaries, as well as raising additional funds, any negative impact of beginning with limited initial financial capital is more than offset. Only *new* infusions of financial capital really matter with regard to reducing the liability of newness.

To assess whether our results could be explained by an emerging venture's financial performance, we included two dummy variables of performance in all models. We could thus check whether our indicators of organizing activities and reductions in the liability of newness were both simply a result of positive financial performance. As expected, emerging ventures' financial performance did have a significantly positive effect on their survival chances, although gross income alone was insignificant. Simply receiving revenue from the sales of goods and services made no difference to survival. However, earning enough revenue to more than cover expenses, thus creating positive cash flow, had a major impact and reduced new ventures' death rates by 65 percent. Nonetheless, with new ventures' performance controlled for, all the variables regrading startup activities still remain significant, including additional financial capital invested.

Our results highlight the importance of focusing on founders' activities during the organizing process, rather than just financial capital, as a way of understanding what factors affect the liability of newness. What factors make it possible for founders to spend enough time on organizing activities such that they are able to offset the liability of newness? Most startups face hazardous initial conditions and achieve positive cash flows slowly, and so founders must be highly committed to their emerging ventures. Previous research has discovered that a major sign of entrepreneurial commitment to new ventures is the decision to quit wage and salary jobs and work full time on the venture. Thus, we used an indicator for commitment whether at least one owner on the team was working more than 35 h per week on the business, and we examined whether this commitment possibly explained the positive effects of investing resources, developing routines, and building boundaries.

In Table 3, we show Model 6, which includes only initial conditions, control variables, and the variable for commitment. The model shows that the failure rate of new businesses decreases by 25 percent if at least an owner is working full time for the business. However, when we added all the subsequent conditions to create model 7, the commitment variable was no

Table 3
Initial conditions and subsequent activities that affect the failure rate of new businesses.

Variables	Model 6	Model 7
	Commitment	All activities
Avg managerial experience	−0.003 (0.006)	−0.002 (0.006)
Avg no. of startups created	−0.041 (0.038)	−0.002 (0.037)***
Avg experience in the relevant industry	−0.022 (0.006)***	−0.022 (0.006)
Log initial financial capital	−0.033 (0.012)**	0.000 (0.014)
No. of non-owner founders	−0.012 (0.019)	−0.007 (0.017)
No. of helpers	0.019 (0.025)	0.021 (0.025)
Prior joint work experience	−0.272 (0.240)	−0.319 (0.242)
Members from same household	−0.820 (0.460)	−0.872 (0.469)*
Log additional financial capital		−0.039 (0.015)*
Made a plan		−0.257 (0.107)**
Sign an agreement on ownership		−0.564 (0.207)**
Hire accountant		−0.343 (0.120)*
Retain lawyer		−0.285 (0.135)*
Join trade association		−0.337 (0.147)
List on Dun and Bradstreet		−0.043 (0.224)
Registered with government		−0.163 (0.111)
At least one owner works 35 h a week	−0.290 (0.112)**	−0.224 (0.115)
Receive revenue	−0.176 (0.123)	−0.028 (0.127)
Receive positive cash flow	−1.256 (0.134)***	−1.061 (0.138)***
−2 Log L	5168.282	5236.416
AIC	5222.282	5274.416

Note: two-tail *t*-test, *, 0.05; **, 0.01, ***, 0.001; All control variables are included in the models, but not shown in the tables because of limited space. Standard errors are in parentheses; Coefficients are logarithm of hazard ratio.

longer statistically significant but the effects of subsequent activities remained substantial. The results of this robustness check suggest that the effect of founders' commitments on new ventures' survival chances is mediated through their organizing efforts: the variety of activities they undertake in founding the businesses. These results are consistent with what we showed in Table 1: the commitment measure is highly correlated with indicators of subsequent activities. Our findings provide compelling evidence that emerging organizations can survive despite competitive and financial challenges, if entrepreneurs' commitments motivate them to undertake a variety of business activities. That is, escalating commitments by founders partially overcome the liabilities produced by lower initial investments.

5. Discussion

We re-examined Stinchcombe's influential proposition, the “liability of newness,” by investigating emerging organizations' initial endowments and subsequent entrepreneurial activities along three dimensions: resources, routines, and boundaries. Based on a representative sample of emerging organizations in the United States in the first decade of the 21st century, our study clarifies not only the form but also the causes of new businesses' failure rate. We found results in support of Stinchcombe's insight that emerging organizations face considerable challenges and encounter the highest risk of failure at the very beginning of their life course, with the risk dropping significantly as the ventures age (Carroll, 1983; Freeman et al., 1983). Furthermore, our analyses of both initial conditions and subsequent activities revealed that new businesses' survival depends more on how much entrepreneurs can learn during the organizing process than on how much they have accumulated from previous experience.

We conducted a rigorous test of the liability of newness by using well-suited data with three distinct features. First, compared to previous studies, we have much better data with regard to the actual inception of organizing events. We have thus reduced the selection bias by capturing the early months of a venture's life when the liability of newness should be most evident. Second, with our six waves of panel data updated monthly, we have much better micro data with regard to the organizing process. We are able to capture the timing of key events and activities that affect failure. Third, we applied state-of-the-art procedures to control for left-truncation, right-censoring, and survival time with ties, avoiding the problems that biased results from previous research (Guo, 1993; Petersen, 1991; Tuma and Hannan, 1984). The three features allowed us to confirm the liability of newness thesis from the moment that organizing began, rather than from when organizations were registered in government or trade association data bases.

With regard to the causes of the liability of newness, our results from Cox proportional models revealed four noteworthy limited effects of initial endowments on emerging organizations' survival. First, among all the initial conditions we investigated, only financial capital and nascent entrepreneurs' previous work experiences in a relevant industry significantly enhanced new ventures' survival chances (Beckman et al., 2007; Hannan, 1998; Stuart and Sorenson, 2003). Furthermore, the effect of initial financial capital disappeared once we controlled for subsequent investments, suggesting that what really matters is whether founders continue to invest. The only initial condition that significantly reduced the liability of newness was pervious work experience in relevant industries. We offer two interpretations of this finding. One possibility is that

experienced workers were better able to spot promising business opportunities that outsiders missed and thus they occupied a more favorable market position. Another possibility is that experienced workers learned best practices for coping with various liabilities of newness and thus were better able to manage the organizing process. Founders with industry experience may be better positioned to put their achievements in context and take a more realistic view of their prospects (Beckmanet al., 2007; Hsu, 2007).

Second, the insignificant effects of prior startup experience and managerial experience suggest that experience and skills acquired in established organizations are not necessarily effective when used in creating businesses (Begley and Boyd, 1987; Stewart et al., 1998). Because most new businesses fail quickly, entrepreneurs who previously started businesses might not have had the chance to learn by trial-and-error and draw lessons from it. It is possible that entrepreneurs make the same mistakes again in new businesses, repeating what they did in previous startups. Regarding managerial experience, managers in established organizations occupy pre-defined roles and follow rules and techniques inherited from their predecessors and mandated by official procedures. By contrast, nascent entrepreneurs have to take the initiative in defining and constructing roles and rules.

General managerial experience typically gives workers few opportunities for taking the initiative and creating new structures, and thus workers occupying higher ranks in established organizations do not necessarily have an edge over those below them. Lack of managerial experience does not constitute a barrier to creating a viable startup, at least at the emergent stage. Later in an organization's life, social capital gained through work experience might become more important. Nevertheless, our results suggest that typical nascent entrepreneurs begin on the same footing, with equal chances against the liability of newness. Essentially, everyone starts over if they want to become their own boss.

Third, we did not find any significant effect of social support from non-owner founders or helpers. Our investigation of the size and content of social support provides some clue to this non-finding. We found that 58 percent of the new ventures in PSED II did not receive *any* support from non-owner founders and 65 percent did not receive *any* support from helpers. Even though about 99 percent of the non-owner founder and helpers are family members and friends, only 10 percent of the ventures had more than five such people. Furthermore, social support received by nascent entrepreneurs mainly comprises advice and information, instead of financial or physical resources. In particular, our analysis of PSED II showed that 50 percent of non-owner founders primarily provided advice and information but only 12 percent provided financial resources. Similarly, about 64 percent of helpers primarily provided advice and information but only 6 percent provided financial resources. According to Granovetter (1974), information is more likely to be non-redundant and valuable if it is provided by weak ties. Given that most non-owner founders and helpers are strongly tied to owner founders, their social support, mostly consisting of information resources, may add little value to startup efforts.

Fourth, we did not find any positive effects of joint work experience and strong relations among owners, even though the collective nature of entrepreneurship would seem to reward such effort. Possibly co-founders' joint work experiences in established organizations fails to provide the cooperative templates that nascent entrepreneurs can use to guide activities in the more chaotic conditions of new business creation. Similarly, we found that living in the same household contributed nothing to a new venture's survival. A plausible explanation for this insignificant effect is that all founders are trying to select co-owners from their social networks who are trustworthy and reliable (Kim et al., 2007; Ruef et al., 2003). Accordingly, strong connections between co-owners are a common feature of all entrepreneurial teams and therefore are not an influential factor differentiating stronger teams from weaker ones.

Whereas the limited impact of initial conditions on survival suggests the cause of the liability of newness, the substantial effects of subsequent entrepreneurial activities reveal processes for reducing the liability of newness through activities, such as investing further resources, developing routines, and constructing boundaries. For the dimension of resources, we found that investing additional resources trumped initial resources in mitigating the liability of newness. Rather than enjoying positive entrepreneurial momentum from initial financial investments, founders must invest additional resources after the first year to ward off the liability of newness during the subsequent organizing process (Levinthal, 1991b; Mens et al., 2011).

More important than financial investments, however, are entrepreneurs' activities in developing routines and establishing boundaries. Our results highlight two important ways for developing effective routines that persist: creating internal governance procedures and contracting with professionals. Without stable routines and agreed upon operating principles, founders and employees must deal with problems on an *ad hoc* basis, gaining little from their experiences. Although owners and managers often complain about “bureaucratic red tape” and the mindlessness they associate with meeting regulatory mandates, such constraints impose discipline upon activities in emerging organizations and help nascent entrepreneurs understand what they need to do (Sine et al., 2006). Contracting with professionals is another route to developing effective routines. By taking advantage of professional personnel's skill and knowledge, new ventures may develop routines in an efficient way even when nascent entrepreneurs themselves lack such skills.

With regard to delineating boundaries, connections with existing entities – government agencies, banks, associations – increase new ventures' exposure to potential customers, vendors, and creditors (Aldrich and Waldinger, 1990). Because these established institutions involve large numbers of people, they serve as effective vehicles through which emerging organizations can distribute their information to external actors in their community (McCarthy and Zald, 1977). Accordingly, emerging organizations may benefit from “free advertising” and become known quickly if they build close connections with stable organizations. Moreover, acceptances by well-established institutions may be particularly influential for new organizations because they signal new organizations' credibility, legitimacy, and competence so that customers, vendors, and creditors are more likely to accept products and services provided by new firms (Meyer and Rowan, 1977; Stuart et al., 1999).

To initiate and sustain their activities in building routines and boundaries, entrepreneurs must have a sufficient level of commitments to their businesses. We have argued that the major elements of routines – stable standards and repertoires – develop more easily when entrepreneurs search for promising standards and select better ones (Cohen and Bacdayan, 1994; Edmondson et al., 2001). Similarly, joining a trade association and registering with government agencies require entrepreneurs to study and understand the social and legal procedures that affiliate their businesses with such organizations. Consistent with our prediction, our results suggest that entrepreneurs' time investment substantially increases entrepreneurs' odds of conducting activities and thus enhance their businesses' survival chances. Indeed, social movement theorists have noted a strong association between individuals' participation and emotional commitments to social activities.

In research on high-risk activism, McAdam argued that strong attitudinal affinity increases peoples' participation in high-risk activism and also increases time invested when structural constrains on availability are equal across alternative activities (McAdam, 1986). Similarly, Mark (1998) contended that "available time" is socially constructed as individuals spend more time in a social group or a social activity when they values its significance. Therefore, we believe that investing significant amounts of time increases emerging organizations' survival because they indicate entrepreneurs' commitments to the venture's survival, spurring them to undertake organizing activities even before their businesses become profitable.

6. Conclusions

In his seminal paper on social structure and organizations, Stinchcombe made the organizational capacity of populations his first of five major themes, and the liability of newness figured prominently within that theme. Over the past decades, scholars in the field of organizations have conducted numerous research on the "liability of newness." However, the growing number of citations to his article in recent years testifies to the myriad ways in which ideas from that essay still inform theorizing about organizations. Drawing on a representative sample of emerging organizations in the United States, we closed the gap between Stinchcombe's original hypothesis regarding emerging organizations and empirical studies that have mostly studied fledging firms. According to our results, new organizations face a severe liability of newness and it begins, as Stinchcombe posited, during the months when founders are trying to assemble resources, create effective routines and defensible organizational boundaries, and cope with difficult environments. In this concluding section, we discuss the implications of our study for organizational and entrepreneurship theory as well as for the design of future research projects on emerging and new organizations.

First, our analysis points to the advantages of establishing a stronger connection between organization theory and entrepreneurship through a focus on organizational emergence. To analyze the multifaceted process of organizational emergence, we drew on an analytic framework solidly based on organization theory. Using a definition of organizations as goal directed, resource seeking, boundary maintaining activity systems, we identified the social mechanisms of organizational construction as encompassing three dimensions of entrepreneurial activities: resource acquisition, routine development, and boundary creation and maintenance. Our framework, following the concept of social mechanisms in analytical sociology, focuses attention on the social processes involved in the genesis and persistence of organizations. For entrepreneurship theory, we believe that scholars should pay more attention to what entrepreneurs actually do in constructing organizations. How do they learn what social practices to try and how to involve others in their endeavors? For organization theory, we urge greater appreciation for entrepreneurship research on where organizations actually come from. All organizations in our studies have a history and that history shapes, in part, what is possible in their future.

Second, organizational emergence is not just about money. Our results show that most new businesses begin with meager funding and mundane objectives. However, entrepreneurs are less likely to terminate their emerging businesses if they can accomplish a great deal with whatever it is available to them, especially when they are fully committed to their business. New ventures are not stuck at the start with whatever they have assembled. Instead, during the organizing process, entrepreneurs can transform limited resources into organizations through action along a variety of dimensions. Those who pursue external resources, make time to create routines and standards, and undertake activities that bring organizational boundaries into sharper relief can substantially increase the likelihood that their emerging ventures persist long enough to achieve a stable existence.

Third, we noted that help from family and friends seemed to play almost no role in the survival of the organizing efforts we studied. Not only did household-based ventures enjoy no advantages, but also enrolling more non-equity founders and helpers provided no advantages to organizers. Perhaps more surprising, the absolute numbers of family and friends involved, beyond spouses and partners, were low, echoing other social science findings recently regarding the shrinking size of primary groups on which individuals depend. Although we could find no historical data to support our argument empirically, we speculate that our analysis may have captured a period effect in the historical evolution of conditions facing nascent entrepreneurs. Were greater numbers of family and friends available to be recruited as founders and helpers in the organizing process, perhaps failure rates would be lower.

With regard to future research, we see three ways in which some of the limitations of our research could be overcome. First, with regard to study design, the PSED is a representative sample of business startups in the United States, which means that most of the startup efforts are not high technology-based and are poorly capitalized. For those entrepreneurship and organization theorists interested in just these subsets of the startup population, investigators will either need to draw a much larger initial sample from the population or put more resources into screening the initial qualifiers so that only those new ventures of interest are chosen. Second, because of resource limitations, the PSED did not collect information on all the

potentially repeatable events. We have information on some critical repeatable events, such as investments of capital, but for many other events, the design assumes that once an event has occurred, its contribution to the organizing process has been made manifest. Future research could allocate more resources to pursuing a larger number of repeatable events. Third, the study includes very few indicators of environmental context. As Stinchcombe suggested, organizational emergence is clearly an interactive process that depends upon the fit between entrepreneurial activities and their contexts. Future research could pay more attention to the neighborhood and community environments in which startups begin.

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