1042-2587

The Impact of Collective Optimism on New Venture Creation and Growth: A Social Contagion Perspective

Aaron H. Anglin
Aaron F. McKenny
Jeremy C. Short

Social contagion research suggests that individual decision making is shaped by collective, social processes. We extend the entrepreneurial optimism literature by arguing that collective optimism—the shared, positive expectations about future outcomes—is salient to key entrepreneurial outcomes. We test our position by examining how fluctuations in U.S. collective entrepreneurial optimism influence venture creation and growth using 1993–2010 NFIB entrepreneurial optimism data. Results indicate that collective entrepreneurial optimism exhibits a curvilinear relationship with venture creation and growth, which is moderated by environmental dynamism. We validate the NFIB measure by constructing an alternative measure of collective entrepreneurial optimism using media reports.

Introduction

Optimism is a fundamental building block of entrepreneurship (Cassar, 2010; Trevelyan, 2008). The expectation that positive events will occur in the future provides entrepreneurs with the belief that a venture will be successful despite the relatively high rate of failure common to nascent firms (Hmieleski & Baron, 2009). Indeed, without this belief many new ventures may never be created (Miller & Sardais, 2015). Consistent with this notion, a number of studies have found that entrepreneurs are generally more optimistic than nonentrepreneurs (Dushnitsky, 2010; Ucbasaran, Westhead, Wright, & Flores, 2010).

A rich history in the entrepreneurship literature has built knowledge by examining optimism as an individual characteristic of entrepreneurs (Trevelyan, 2008). This research finds that optimism is driven by internal, cognitive processes that shape the way an entrepreneur views the world (Crane & Crane, 2007). When viewed from this

Please send correspondence to: Jeremy C. Short, tel.: (405) 325-5692; e-mail: Jeremy.Short@ou.edu.

DOI: 10.1111/etap.12256

perspective, at the individual level, entrepreneurial optimism has been shown to influence opportunity recognition, new venture creation, and venture performance (e.g., Hmieleski & Baron, 2009; Nieß & Biemann, 2014).

While existing examinations of entrepreneurial optimism have established the importance of optimism at the individual level, optimism research in other fields, such as psychology, economics, and sociology, suggests that our current understanding of optimism is incomplete (e.g., Bennett, 2011; Biggs, 2003; Segerstrom & Sephton, 2010). Scholars in these fields argue that an individual's level of optimism is not just a function of internal cognitive processes acting in isolation, but also a function of external social processes shaped by the perceptions of others (Chambers & Windschitl, 2004). Consequently, a key source of influence on individual optimism is the collective optimism of one's peers (cf. Olson, 2006). Collective optimism from this perspective refers to the shared positive expectations and beliefs about the future among a set of individuals (Bennett). A variety of fields have undertaken examinations of collective optimism to investigate important phenomena of interest, such as explaining trends in consumer behavior (e.g., Ludvigson, 2004), the proliferation of social movements (e.g., Ginwright, 2007), and executives' willingness to make strategic acquisitions (e.g., Gao, 2010). Collective optimism impacts individual decision making because decisions are frequently made in a social context where individuals are influenced by the views, expectations, and beliefs of others (Lucey & Dowling, 2005). As such, collective optimism often becomes an important source of information to decision makers, especially in situations where uncertainty is high and objective information is scarce (cf. Bandura, 1998; Bénabou, 2012).

Despite the impact of collective optimism to decision making in other fields, its impact on key entrepreneurial outcomes such as new venture creation and small business growth remains unexamined. Optimism research in other fields suggests that when the collective optimism of a population changes over time, these fluctuations will influence the decision making of members of that population. Failure to explore this relationship limits our knowledge concerning the impact of optimism on entrepreneurial activity. Consequently, this provides an opportunity to bridge the gap between "what we know" and "what we need to know" concerning the influence of collective entrepreneurial optimism on new venture creation and growth.

To build knowledge regarding the nature of collective entrepreneurial optimism and its impact on entrepreneurial decision making, this study makes three key contributions to the entrepreneurship literature. First, we examine entrepreneurial optimism at the collective level of analysis, defining collective entrepreneurial optimism as a consensus positive outlook, which develops through social contagion processes, and which is shared by a population of entrepreneurs concerning the future prospects of their organizations. Our work is prompted by social psychology research that has advocated for multiple approaches to studying complex constructs of interest in decision making (optimism, psychological capital, etc.; e.g., Avey, Luthans, & Mhatre, 2008; Peterson & Chang, 2003). This work suggests that constructs such as optimism contain characteristics that are attributable to both individual and collective levels (Peterson, 2000; Watson, Chemers, & Preiser, 2001).

For our second contribution, we adopt a social contagion perspective to examine how variations in collective entrepreneurial optimism affect new venture creation and small business growth over time. Social contagion research explains the spread and diffusion of beliefs throughout a population of people and the influence of these collective beliefs on individual actions (Aral & Walker, 2011). Drawing from this literature, we contend that as collective entrepreneurial optimism rises and falls over time, these fluctuations will influence new venture creation and small business growth. We examine quarterly changes in the collective optimism of entrepreneurs in the United States from January 1993

through December 2010 using survey data collected by the National Federation of Independent Businesses (NFIB). These data are commonly used in academic research (e.g., Chow & Dunkelberg, 2011; Cooper, Woo, & Dunkelberg, 1988) and the Small Business Optimism Index created from this data regularly receives attention in the popular press (e.g., *Wall Street Journal*, 2015). Consequently, these data enable us to examine the effects of collective entrepreneurial optimism over time using data valuable to both academic and practitioner audiences. Our approach also responds to calls to investigate entrepreneurial optimism through time (e.g., Ucbasaran et al., 2010).

Our third contribution is to assess and improve the validity of the NFIB Small Business Optimism Index. Construct validity has been a persistent challenge in entrepreneurship research (e.g., Covin & Lumpkin, 2011; McKenny, Aguinis, Short, & Anglin, 2016). To improve the validity of the Optimism Index in a manner commensurate with entrepreneurship scholarship, we disentangle the components capturing optimism from those capturing entrepreneurial intentions. Consequently, our approach provides useful guidance to scholars who may use this measure in future empirical efforts. We then follow the previous work of entrepreneurship scholars who have examined collective opinions present in the mass media to create an alternative measure of collective entrepreneurial optimism (e.g., Cardon, Stevens, & Potter, 2011). Our alternative measure is constructed through content analysis of newspaper articles related to entrepreneur/small business optimism. We demonstrate the convergent validity of the refined survey measure by comparing it to a measure we create from the content analysis of media reports. In sum, our study is the first to view entrepreneurial optimism as a collective phenomenon and investigate how collective entrepreneurial optimism influences new venture creation and small business growth.

Optimism and Entrepreneurship

Optimism refers to the expectation that positive events will occur in the future and that these positive events will outweigh other negative events (Scheier & Carver, 1985). Research investigating optimism and its effects on behavior and decision making has revealed a complex but powerful construct (Peterson, 2000). Consequently, research across fields has conceptualized optimism in a variety of ways in order to better understand how optimism operates and influences outcomes at both the individual and collective levels. Individual optimism refers to the positive expectations of a single individual (Peterson), while collective optimism refers to the shared positive expectations of a set of individuals (Bennett, 2011).

Entrepreneurship research has generally approached optimism and its effects at the individual level (e.g., Hmieleski & Baron, 2009; Trevelyan, 2008). Optimism at the individual level is thought to operate through cognitive processes that help shape how the individual views the world (Peterson, 2000). Some entrepreneurship researchers have conceptualized individual optimism as an enduring individual difference. Scholars exploring optimism from this vantage point generally find entrepreneurs to be more optimistic than nonentrepreneurs (e.g., Cooper et al., 1988; Trevelyan). Other research at the individual level suggests that factors such as increased experience, setbacks, or venture failure may cause the individual optimism of entrepreneurs to change over time (e.g., Miller & Sardais, 2015; Ucbasaran et al., 2010). For example, because experienced entrepreneurs have failed in the past, they may be less optimistic than less experienced entrepreneurs (Ucbasaran et al.).

Research investigating individual optimism has provided key insights into our understanding of entrepreneurial decision making. First, optimism explains why an individual would launch a new venture despite considerable risk and uncertainty (e.g., Dushnitsky, 2010; Fraser & Greene, 2006). Optimism provides entrepreneurs with the belief that they will be successful regardless of the high failure rate common to new firms (e.g., Busenitz & Barney, 1997). Second, optimism is important in opportunity recognition and exploitation (e.g., Ardichvili, Cardozo, & Ray, 2003). Optimism facilitates the recognition of a greater number of opportunities and encourages a belief that identified opportunities can be exploited successfully. Third, optimism influences the performance of entrepreneurial ventures (e.g., Hmieleski & Baron, 2009). Optimism can influence firm performance by encouraging entrepreneurs to be more open to taking risks, more willing to persevere, and better able to recognize new opportunities after launch (e.g., Segerstrom & Solberg Nes, 2006). At the same time, optimism may lead an entrepreneur to disregard negative information—potentially compromising decision making, hindering the growth of the firm, and increasing the chance of failure (e.g., Hmieleski & Baron; Nieß & Biemann, 2014).

Elevating Entrepreneurial Optimism to the Collective Level

Collective optimism broadly refers to the shared positive expectations of a set of individuals (Bennett, 2011). Collective optimism has been attributed to collectives at the team (e.g., Watson et al., 2001), organization (e.g., Bénabou, 2012), and national (e.g., Bennett) levels. Unlike individual optimism, which is primarily driven by cognitive processes, collective optimism is typically a function of social processes (Biggs, 2003). Therefore, its influence on individual decision making occurs because most decisions are made in a social setting where individuals are influenced by others (Lucey & Dowling, 2005). In particular, individuals often look to others who they view as similar or who are in similar situations to validate their beliefs. As a result, individuals tend to consider the optimism of their peers in determining how optimistic they should be regarding their entrepreneurial aspirations. For entrepreneurs in the United States, this suggests that individual entrepreneurs will consider the optimism of other U.S. entrepreneurs when determining an appropriate level of optimism.

We define collective entrepreneurial optimism as a consensus positive outlook, which develops through social contagion processes shared by a population of entrepreneurs concerning the future prospects of their organizations. In elevating multilevel constructs such as optimism, it is important to identify whether the construct is thought to be isomorphic (e.g., Staw, Sandelands, & Dutton, 1981) or a fuzzy composition (e.g., McKenny, Short, & Payne, 2013). In isomorphic multilevel constructs, the meaning of the construct is thought to be the same at each level. By contrast, in fuzzy composition constructs, the meaning of the construct may change from level to level (Bliese, 2000; Morgeson & Hofmann, 1999). While the meaning of optimism is similar at each level, individual and collective optimism are distinct constructs. At the individual level, optimism is a cognition of the individual, whereas at collective levels it is the shared level of these individual-level cognitions rather than being a cognition of the collective, suggesting a change in meaning across levels (cf. Bliese; McKenny et al.). Similarly, the mechanism by which optimism forms differs across levels. At the individual level, optimism forms primarily through cognitive processes whereas collective optimism forms through social processes. As a result, the nomological networks are likely to differ by level. For example, individual-level optimism is positively associated with physical health outcomes (e.g., Bennett & Elliot, 2005), whereas there is no direct analog to

physical health at the collective level (McKenny et al.). Accordingly, we conceptualize collective entrepreneurial optimism as a fuzzy composition construct. This is consistent with other research examining psychological constructs at aggregate levels of analysis (e.g., McKenny et al.).

Our definition of collective entrepreneurial optimism also provides important information about the nature of the construct. There are two aggregate construct models that capture the shared agreement of an individual-level phenomenon within a population: consensus and referent shift (Chen, Mathieu, & Bliese, 2004). In the consensus model, the referent or target of the individual-level phenomena remains at the individual level (Chan, 1998; Chen et al.). For example, a consensus view of collective entrepreneurial optimism would reflect growing agreement among entrepreneurs with the statement "I am optimistic." By contrast, in the referent-shift model, the referent of the individual-level phenomena pertains to the collective (Chan; Chen et al.). A referent-shift view of collective entrepreneurial optimism would reflect growing agreement with the statement "We are optimistic."

While agreement among members of a population is common in research concerning collective optimism at multiple levels, the appropriateness of the consensus or referent-shift model varies from level to level. In small teams, the members may interact frequently and share common goals (Watson et al., 2001). This makes a referent-shift model of team optimism possible because an individual can be expected to provide a reasonable assessment of the team's optimism. By contrast, an individual entrepreneur may have more difficulty assessing the optimism of the nationwide population of entrepreneurs. Accordingly, we suggest that collective entrepreneurial optimism at the national level is best construed as a consensus model construct. This treatment of collective optimism as a national-level construct where individuals converge on a common level of individual optimism is consistent with previous work examining optimism at the national level (e.g., Olson, 2006).

Social Contagion and the Spread of Collective Entrepreneurial Optimism

Social contagion occurs when individuals use the emotions, beliefs, or behaviors of others as informational cues that lead these individuals to think or act in a similar manner (Angst, Agarwal, Sambamurthy, & Kelley, 2010; Burt, 1987). Social contagion is driven by ambiguity concerning a belief or behavior (Marsden, 1998). When in an ambiguous situation, individuals will look to others for information about what to believe or do, often causing individuals to act in similar ways. Social contagion is a commonly used theoretical lens for exploring the adoption and diffusion of ideas, social movements, beliefs, and behaviors (Burt, 1987; Iyengar, Van den Bulte, & Valente, 2011). For example, social psychologists and sociologists use contagion to study the spread of unethical behavior (e.g., Gino, Ayal, & Ariely, 2009). Marketing and management scholars contend that social contagion plays a role in the adoption of new products and innovations (e.g., Angst et al.). The prevalence of evidence for social contagion processes is not surprising given that the formation of beliefs, decision making, and actions rarely occur in isolation, but occur in a social context where they can be influenced by others. As such, social contagion often results in a shared set of beliefs among members of a group or population (Olson, 2006).

Social contagion operates through both individual and collective mechanisms. Individual mechanisms such as social ties and observation of others' behavior are noted to be important transmitters of contagious beliefs (Iyengar et al., 2011; Olson, 2006). Mass

media sources (television, newspapers, social media, etc.) and normative pressures are collective mechanisms that enable contagion (e.g., Aral & Walker, 2011). While social contagion mechanisms work together in the spread of collective beliefs, direct observation of these mechanisms in practice is difficult (Van den Bulte & Lilien, 2001).

Certain conditions must be met for social contagion to occur. First, there must be exposure to the belief or behavior (Meade & Roediger, 2002). This can occur directly through observing others' behavior and actions or indirectly through observing others' behavior in stories propagated by the mass media (Angst et al., 2010; Strang & Soule, 1998). Second, individuals must have the capacity to change their belief or behavior (e.g., Angst et al.). Third, there are typically similarities between those who are transmitting and those who are adopting a belief (Scherer & Cho, 2003). These similarities (e.g., career, socioeconomic status) lead the potential adopter to compare his or her situation with that of the transmitter, giving the potential adopter a reason to consider adoption (Marsden, 1998).

The spread of social contagion generally occurs in a curvilinear fashion (e.g., Burt, 1987; Onnela & Reed-Tsochas, 2010; Young, 2009). While similarity provides a reason for an individual in a particular population to look to the beliefs or actions of others in that population for guidance into their own situation, populations are rarely made up of perfectly homogeneous individuals. Heterogeneity within populations influences contagion transmission within the population (Young). Heterogeneity within a population suggests that a subset of the population will more readily adopt a belief (cf. Marsden, 1998). As a result, during the initial stages of contagion, transmission takes place rapidly for early adopters. This rate slows as early adopters are exhausted, leaving primarily late adopters who adopt beliefs at a slower rate (Young). As the adoption of a belief slows, corresponding actions associated with the adoption of the belief slow as well.

There are notable overlaps between social contagion research and collective optimism research. For example, the spread of a contagious idea and the spread of optimism through a collective both occur because individual belief formation is influenced by others, and most often by others who are similar (e.g., Bénabou, 2012; Scherer & Cho, 2003). Like optimism, a contagious belief can be transmitted in a variety of ways, including observation of others or the media. These overlaps suggest that optimism can be a contagious phenomenon. This has led some researchers to adopt a social contagion lens when exploring the role of collective optimism on the prevalence of certain actions taken by larger groups of individuals (e.g., Huberman & Regev, 2001). Our inquiry builds on this research as we demonstrate how collective entrepreneurial optimism influences the creation and growth of small businesses.

Hypotheses Development

Collective Entrepreneurial Optimism and Entrepreneurial Activity

Collective entrepreneurial optimism may emerge and spread among entrepreneurs and small business owners through a combination of social contagion mechanisms. First, an entrepreneur may intentionally seek out the opinions of those in similar situations. Indeed, social ties tend to be particularly salient sources for social contagion (Bond et al., 2012). Specifically, an entrepreneur may tap other business owners or entrepreneurs in her social network (e.g., Greve & Salaff, 2003). This is because other entrepreneurs or small business owners are currently in or have been in similar circumstances. Other entrepreneurs and small business owners face similar constraints and limitations such as

difficulty obtaining access to financial capital, finding managerial talent, and overcoming liabilities of smallness (e.g., Bruderl & Schussler, 1990; Schwienbacher, 2007). By communicating with these colleagues to share ideas and beliefs, optimism may be directly or indirectly communicated, encouraging its spread.

Second, optimism can spread through observing other entrepreneurs and existing small business owners. Looking to others enables the entrepreneur to reduce the ambiguity and uncertainty that accompanies the launch or growth of a firm (Alvarez & Barney, 2005; Felin & Zenger, 2009). For example, an entrepreneur who witnesses the opening of new businesses in her city may become more optimistic about her own prospects for success. In addition, entrepreneurs will often mimic the behaviors of others that they see as similar and successful (Aarstad, Haugland, & Greve, 2010). For instance, if mentors, friends, or associates of the entrepreneur that are viewed as successful are taking actions such as seeking financing or engaging in business planning, this could influence a prospective entrepreneur's level of optimism. Thus, when the behaviors and actions of other entrepreneurs give the appearance of optimism (e.g., by seeking financing), this provides justification to others that they should also be optimistic about their own venture.

Third, entrepreneurs may be influenced by mass media sources (cf. Schultz & Achtenhagen, 2013). Media sources both chronicle and shape the prevailing views of the populations they cover (Dahlgren & Sparks, 1994). Television reports, newspaper and magazine articles, blogs, and social media all serve as potential transmitters of collective beliefs. In particular, studies have shown the mass media to be reflective of collective beliefs concerning entrepreneurship (e.g., Cardon et al., 2011). As such, the mass media is likely a key transmission medium for collective entrepreneurial optimism.

Collective optimism provides individuals with an important piece of information that enables them to reduce their ambiguity regarding a particular action by providing validation that the action is desirable (cf. Bennett, 2011). Given the importance of optimism to the decision to launch a new venture (Fraser & Greene, 2006; Trevelyan, 2008), collective entrepreneurial optimism is likely important to new venture creation. Specifically, entrepreneurs may consider this information in determining how optimistic they should be regarding the viability of launching a new venture. As such, when collective entrepreneurial optimism rises and falls, it will be reflected in the number of new venture starts.

The social contagion of collective entrepreneurial optimism cannot continue indefinitely. A belief can only spread as far as there is a set of people open to the belief (e.g., Marsden, 1998). Further, heterogeneity exists within this set of potential adopters concerning the readiness to adopt a particular belief. As such, social contagion research indicates that the spread of a particular belief is nonlinear, with the adoption of the belief initially increasing quickly among those most ready to adopt, but slowing over time as later adopters become slower to accept the belief (Young, 2009).

In any population of nonentrepreneurs, some subset of the population will be uninfluenced in their decision to become or not to become an entrepreneur (Sarasvathy, 2004). However, if the circumstances were right, many individuals would consider becoming an entrepreneur (Sarasvathy). Collective entrepreneurial optimism is most likely to influence the decision making of these individuals; however, the level of collective entrepreneurial optimism required to entice an individual to take action is likely to differ. Individuals in this group vary in their intentions and aspirations to launch a new venture (e.g., Douglas, 2013; Douglas & Shepherd, 2002). Those with stronger entrepreneurial aspirations may be quicker to act on information suggesting conditions are right for new venture launch (Lee & Venkataraman, 2006). Consequently, these individuals are more likely to respond quickly to changes in collective entrepreneurial optimism and launch a new venture. Other individuals with weaker entrepreneurial aspirations may require more assurance (i.e., a

higher level of collective entrepreneurial optimism) before taking action. This suggests that the rate of new venture creation in response to rising collective entrepreneurial optimism will slow over time as the proportion of the population comprised by individuals with lower entrepreneurial aspirations increases. In all, these factors suggest that collective entrepreneurial optimism will have a curvilinear relationship with new venture creation—the relationship will be positive, but its impact will decline as collective entrepreneurial optimism increases. Formally,

> **Hypothesis 1a**: The relationship between the level of collective entrepreneurial optimism and new venture creation is curvilinear: the relationship will be positive, but the positive influence of collective entrepreneurial optimism will decrease as the level of collective optimism increases.

Identifying the right time to grow a venture is also fraught with uncertainty (Stone & Brush, 1996). While some small business owners may desire to grow their existing firms, determining when to do so may not be clear. This is particularly difficult for small businesses as they tend to be much more resource constrained than their larger counterparts, making tools such as large-scale market analysis unavailable. To make such determinations, they often turn to their social network and observe the actions of others in similar situations (Macpherson & Holt, 2007). This suggests that collective entrepreneurial optimism may also influence small business growth. For those small business owners desiring to grow their firms, collective entrepreneurial optimism provides information on whether or not conditions are right for expansion. As the collective consensus toward optimism grows, this gives assurance to small business owners that their plans will likely be met with success.

Only some small business owners in the United States desire to grow their firm (e.g., Douglas, 2013). This suggests that as collective entrepreneurial optimism spreads through the population of small business owners, those who would potentially act on this increasing collective entrepreneurial optimism is limited. Further, there is considerable heterogeneity among small business owners in the strength of their intentions to grow as well as their ability to grow the firm (Morrison, Breen, & Ali, 2003). This suggests that those high in intentions will respond quickly to increasing collective entrepreneurial optimism. However, after these early actors invest in the expansion of their firms, the remaining population will consist of small business owners with lower intentions or resources for growth. As a result, the number of small businesses pursuing growth will decline over time. This suggests that collective entrepreneurial optimism will also have a curvilinear relationship with small business growth as the relationship will be positive, but its impact will decline as collective entrepreneurial optimism increases. Stated formally,

> **Hypothesis 1b**: The relationship between the level of collective entrepreneurial optimism and small business growth is curvilinear: the relationship will be positive, but the positive influence of collective entrepreneurial optimism will decrease as the level of collective entrepreneurial optimism increases.

The Moderating Influence of Environmental Dynamism

The macroeconomic environmental dynamism that entrepreneurs face varies over time, cycling between periods of relative stability and periods of higher dynamism (Sirmon, Hitt, & Ireland, 2007). Dynamic environments are characterized by unpredictability and change (Dess & Beard, 1984). Such environments increase uncertainty and

information scarcity for entrepreneurs (Hmieleski & Baron, 2009). This makes rational decision making based on past experiences difficult and increases information processing burdens (Chandler, Honig, & Wiklund, 2005). For example, environmental uncertainty makes forecasts of future sales numbers from past sales figures less reliable. Given the complications with decision making under the uncertainty caused by dynamism, entrepreneurs often default to heuristics and implicit theories when making decisions (Busenitz & Barney, 1997). In dynamic environments, the lack of hard information also causes individuals to look to others for information on how they should approach the situation (Angst et al., 2010; Felin & Zenger, 2009). The views and beliefs of others provide individuals with information that they can use to reduce uncertainty (e.g., Marsden, 1998). This suggests that if others are optimistic about the prospects of launching or growing a venture during dynamic periods, entrepreneurs can use the optimism of others to fill the information gaps created by the environmental dynamism. Therefore, while the launch or growth of a venture is always an uncertain endeavor, during periods of elevated environmental dynamism, the importance of collective entrepreneurial optimism increases. Formally,

Hypothesis 2a: Environmental dynamism moderates the relationship between collective entrepreneurial optimism and new venture creation, such that this relationship is stronger during periods of high environmental dynamism.

Hypothesis 2b: Environmental dynamism moderates the relationship between collective entrepreneurial optimism and small business growth, such that this relationship is stronger during periods of high environmental dynamism.

The Moderating Influence of Environmental Munificence

Entrepreneurs often must overcome significant resource constraints when launching a new firm (Bruderl & Schussler, 1990). The ability to obtain needed resources frequently depends on the level of environmental munificence. Environmental munificence refers to the abundance of resources in a given environment (Staw & Szwajkowski, 1975). In more munificent environments, organizations are better able to access the resources they need than those in more hostile environments (Zott & Amit, 2007).

For new ventures in particular, low environmental munificence can limit the seed funding available for launch. In periods of low munificence, banks are less willing to lend to new ventures and equity investment in new ventures falls (e.g., Li, 2008; Powers & McDougall, 2005). Further, given that periods of low munificence coincide with economic downturns that have negative personal wealth effects (cf. Braun & Latham, 2009), fewer personal financial resources or resources from friends and family may be available to the start up. In contrast, in periods of higher environmental munificence, lending requirements are relaxed, equity investment increases, and personal wealth increases.

A key component in the spread of behaviors or actions is that individuals who wish to take action can do so (e.g., Angst et al., 2010). For optimistic entrepreneurs, this suggests that those who wish to launch or grow a venture would need access to seed funding in order launch a new firm (e.g., Cassar, 2004). If such financial resources are scarce, then entrepreneurs will have difficulty acting on collective entrepreneurial optimism. By contrast, in periods of environmental munificence—periods where resources are more readily available (Dess & Beard, 1984)—the influence of collective entrepreneurial optimism on new venture creation will be strengthened. Stated formally,

Hypothesis 3a: Environmental munificence moderates the relationship between collective entrepreneurial optimism and new venture creation such that this relationship is stronger during periods of high environmental munificence.

While the lack of external financial resources may be a salient factor to small businesses wishing to grow, environmental munificence also impacts the use of internal resources in small businesses. Existing firms may have accumulated internal resource stocks that could be used for growth (Wiklund & Shepherd, 2003). However, a decline in external resource availability reduces the ability to utilize internal resources for growth (Heeley, King, & Covin, 2006). Instead, these existing resource stocks often become buffers against the decline of external resources (Bradley, Shepherd, & Wiklund, 2011). Therefore, although small businesses may have internal resources at their disposal, these internal resources may become "tied up" when external resources become more scarce. By contrast, in periods of greater environmental munificence, both external resources and internal resources become more readily available for use in growing the small business. Thus, in periods of greater environmental munificence, the influence of collective entrepreneurial optimism on small business growth will be strengthened. Stated formally,

Hypothesis 3b: Environmental munificence moderates the relationship between collective entrepreneurial optimism and small business growth such that this relationship is stronger during periods of high environmental munificence.

Method

We draw our sample of entrepreneurs and small business owners from data provided by the National Federation of Independent Businesses (NFIB) and examine fluctuations in collective entrepreneurial optimism from 1993 through 2010. NFIB economists track trends, economic and business expectations, and relevant policy issues related to entrepreneurs and small business owners in the United States by collecting data from their members. Drawing our sample from a single country allows us to control for any country-level differences that might impact the role of collective optimism in new venture creation and small business growth (cf. Coviello & Jones, 2004).

The membership of the NFIB consists of approximately 350,000 entrepreneurs and small business owners, providing a sizable population from which to collect data. Members are fairly evenly geographically dispersed throughout the United States, with some overrepresentation in the Midwestern, Plains, and Mountain states (Dunkelberg, Scott, & Dennis, 2003). The size of the NFIB's membership suggests that the data collected by this organization should be reasonably representative of entrepreneurs and small business owners in the United States. In addition, the survey data collected from the NFIB members has been tested for systematic differences from other sources of entrepreneurship and small business data, such as Dun and Bradstreet (Dennis, 2009). No systematic differences were found, suggesting that conclusions drawn from these data are externally valid and generalizable to entrepreneurs and small business owners that are not members of the NFIB (Dennis). From these data, the NFIB constructs several well-established measures of entrepreneurial trends such as the Small Business Economic Trends report and the Small Business Optimism Index (e.g., Chow & Dunkelberg, 2011).

The NFIB defines a small business as an independently owned organization with fewer than 250 employees. Their membership consists of both younger and older firms with approximately 24% of firms being less than 5 years old and 44% of firms being less than

10 years old (NFIB, 2008). While entrepreneurs and small business owners are distinct, research suggests that they are similar in ways that make both fundamentally different than corporate managers (e.g., Stewart, Watson, Carland, & Carland, 1999). For example, they face similar constraints and limitations arising from liabilities of smallness, such as difficulty obtaining access to financial capital, managerial talent, and other resources (e.g., Bruderl & Schussler, 1990; Schwienbacher, 2007). Therefore, we do not distinguish between small business owners and entrepreneurs for our analyses (cf. De Jong, 2013; Lofstrom, Bates, & Parker, 2014).

The data for both of our dependent variables come from the United States Bureau of Labor Statistics (BLS) and are reported in thousands. Data from government and international databases, such as the BLS or the U.S. Census Bureau, are commonly used to capture national-level entrepreneurial activity (e.g., Chang, Chrisman, & Kellermanns, 2011). Quarterly adjusted data was available beginning in the second quarter of 1993 and ending in the fourth quarter of 2010 for new venture births in the United States at the time of writing, which provides us with 71 time periods. To maximize comparability across models, we use the same time frame for our small business growth measures. Our moderator data were collected from the Federal Reserve Economic Database and National Bureau of Economic Research over the same time period.

Measuring New Venture Creation and Firm Growth

Our dependent variables measure the creation of new ventures and growth of small businesses. To capture the creation of new ventures, we use the number of new firms created in the United States each quarter (e.g., Kirchhoff & Phillips, 1988). The Bureau of Labor Statistics defines a firm birth as the creation of a combination of new factors of production such as organization, fixed assets, and employment (Sadeghi, 2008). When calculating births, events such as mergers, takeovers, reactivations, relocations, and industrial reclassification of existing businesses are all excluded from the calculation (Sadeghi). To operationalize firm growth, we use the number of jobs added for businesses with fewer than 250 employees, which is consistent with the NFIB's definition of a small business. For a firm to be considered growing, it must have a positive change in net employment from the previous quarter. To construct this measure, the number of job losses is subtracted from the number of job gains (e.g., Kirchhoff & Phillips). This process ensures that job gains are not double-counted. For example, if an employer hired one employee, lost one employee in the same time period, and hired a replacement, this would result in a net gain of one job. Without subtracting the job losses, this would provide the impression that the employer added two positions instead of one.

Measuring Collective Entrepreneurial Optimism

Previous studies have employed a number of approaches to measure entrepreneurial optimism, such as the Life Orientation Test-Revised questionnaire (e.g., Hmieleski & Baron, 2009) or by directly asking entrepreneurs to rate their expectations for success compared to other entrepreneurs (e.g., Cooper et al., 1988). These studies capture the optimism of individual entrepreneurs and demonstrate the impact of individual optimism on entrepreneurial outcomes.

Our study seeks to measure the influence of collective entrepreneurial optimism on entrepreneurial outcomes. This requires us to utilize a different approach to measuring optimism in order to capture the collective optimism of entrepreneurs across the United

States. Consequently, we measure collective entrepreneurial optimism using data from NFIB Small Business Optimism Index (e.g., Chow & Dunkelberg, 2011; Levanon, 2011). NFIB economists construct an index from member surveys to serve as a barometer for the collective level of entrepreneurial and small business optimism. The response rate of the survey varies, but a recent survey drew a sample of 10,799 small-business owners/entrepreneurs and received 1,699 usable responses, yielding a response rate of 16% (Dunkelberg & Wade, 2014). Quarterly and monthly estimates of this index are provided by the NFIB and are corrected for seasonality.

The index consists of 10 equally weighted components, including plans to increase employment, plans to make capital outlays, plans to increase inventories, expectations that the economy will improve, expectations that real sales will increase, current inventory, current job openings, expectations of credit conditions, perceptions of whether now is a good time to grow, and earnings trends. In general, these components capture both expectations about the future and the intentions of entrepreneurs and small business owners. Techniques such as correlation analysis and principal component analysis have been used to demonstrate the predictive and convergent validity of the components and support their use as meaningful measures of business sentiment (Dunkelberg et al., 2003). Economics research also suggests that this index is a powerful predictor of macroeconomic activity, such as predicting changes in the U.S. gross domestic product (e.g., Phillips, 2003).

Despite the index's predictive validity, adjustments must be made to enhance the index's discriminant validity between optimism and the intentional/behavioral consequences of such optimism. For example, the question "In the next three months, do you expect to increase or decrease the total number of people working for you?" is similar to conventional measures of intentions in the entrepreneurship literature (e.g., Liñán & Chen, 2009). The question "About the economy in general, do you think that six months from now general business conditions will be better than they are now, about the same, or worse?" aligns with the conceptualization of optimism as beliefs and expectations about the future. While optimism and intentions are closely related (Krueger, Reilly, & Carsrud, 2000), the intentions items must be removed to isolate the influence of optimism. Thus, we only use the five index items that closely mirror our conceptualization of optimism: expectations that the economy will improve, expectations that real sales will increase, expectations of improving credit conditions, perceptions of whether conditions are right for growth, and current earnings (see the Appendix for the survey questions associated with these items). Consistent with past conceptualizations of optimism indicating that optimism is best viewed as a reflective construct (e.g., Crane & Crane, 2007), we view these items as parallel indicators of the collective entrepreneurial optimism construct. The Cronbach's alpha for these five items is .79.

Measuring Environmental Dynamism

Environmental dynamism is often measured as the rate of unpredicted change of an important variable to firms (Dess & Beard, 1984; Sharfman & Dean, 1991). Frequently, this is operationalized using variance estimates of sales figures (e.g., Dess & Beard; Hmieleski & Baron, 2009). For example, industry sales figures may be regressed onto a given time period and the standard errors for each industry are used to capture industry dynamism (e.g., Hmieleski & Baron). We apply a similar logic to create a macroeconomic measure of environmental dynamism. Specifically, Dess and Beard use archival data collected on important market benchmarks to create measures of environmental

dynamism. We use archival data from an important macroeconomic benchmark to create our measure of environmental dynamism.

As a proxy for environmental dynamism at the macroeconomic level, we estimated the sales volatility for real retail sales in the United States (e.g., Everett & Watson, 1998). Real retail sales is a commonly used figure to capture dynamism at the macroeconomic level of analysis (Alon, Qi, & Sadowski, 2001). For example, the U.S. Federal Reserve frequently uses retail sales as an indicator of macroeconomic dynamism (Bernanke, 2004). Retail sales are particularly affected by fluctuations in the economy and are highly volatile during periods of elevated economic dynamism where they often exhibit large month-to-month swings (Alon et al.). Monthly real retail sales data are available in the Federal Reserve Economic Database.

Calculations of sales volatility typically rely on the variance of sales over a given period of time (e.g., Dess & Beard, 1984). Because our data are in quarterly increments, we measure quarterly estimates of retail sales variance. Using the monthly data, we are able to directly calculate the variance in retail sales for each quarter and operationalize this as the standard deviation for each quarter. Quarters with larger standard deviations indicate more dynamic periods. The standard deviation values are multiplied by our collective optimism values to conduct our tests for moderation.

Measuring Environmental Munificence

At the macroeconomic level, recessions are periods of low environmental munificence (Simpson, 1986). During recessions, consumer demand declines, which in turn reduces sales and the inflow of cash resources into organizations (Shama, 1993). In addition, credit markets tighten and investment declines (Bernanke, 1981). This suggests that the amount of available resources in an economy for venture creation and growth is reduced. Recessionary periods are particularly problematic for new and small firms as they are more resource constrained than larger firms (Latham, 2009).

To capture the influence of recessions we created a dummy variable equal to zero if a particular quarter fell during a period of recession and one if there was no recession (e.g., Ludvigson, 2004). We use the National Bureau of Economic Research (NBER) recession dates to identify which quarters occurred during a recession (cf. Chauvet & Piger, 2008). The NBER defines a recession as a significant decline in economic activity prevalent across the economy that lasts more than a few months, which is normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales (Issler & Vahid, 2006). The specific dates for the beginning and end of a recession are determined by the judgment of the NBER's Business Cycle Dating Committee.

Control Variables

Because new venture creation and small business growth are strongly influenced by economic conditions, it is important to control for these conditions in a systematic manner (e.g., Acs & Szerb, 2007). Consequently, we selected common controls in the literature known to influence new venture creation and small business growth. Entrepreneurship and economics research has suggested that at the macroeconomic level business cycles, price conditions, interest rates, and exchange rates all influence new venture creation and small business growth (e.g., Shane, 1996). The unemployment rate is used to control for fluctuations in the business cycle that influence new venture creation and small business growth (e.g., Storey, 1991). The real interest rate controls for fluctuations in the credit markets that

encourage or discourage creation or expansion (e.g., Manigart, 1994). For example, reducing interest rates is done to promote economic activity, including the establishment and expansion of business activities. The Consumer Price Index (CPI) is used to control for the overall prices of goods, which can influence the price of supplies, inventories, and labor (e.g., Gorman & Sahlman, 1989). The Trade Weighted U.S. Dollar Index for Major Currencies is inserted to control for changes in the value of the U.S. dollar against major currencies (e.g., Choi & Prasad, 1995). Given that small businesses make up a large amount of self-identified exporters (Leonidou, 2004), fluctuations in the price of the U.S. dollar can encourage or discourage sales and business opportunities abroad.

Statistical Procedure

To conduct the analyses for this study we employ time series regression techniques. This approach is necessary because our data set presents several concerns that prohibit the use of ordinary regression, which would not effectively rule out spurious relationships. As with most macroeconomic data, our data are highly correlated with themselves and with other variables due to the passage of time (Granger & Newbold, 1974). For example, macroeconomic data have been shown to regularly exhibit serial correlations in excess of .80 (Granger & Newbold, 1974). Serially correlated data violate the independence assumptions of ordinary least squares regression. Failure to correct for this issue leads to smaller standard errors, heteroscedasticity, and inflated estimates of variance explained. Further, given that the Pearson correlations also rely upon the independence assumption, it is difficult to draw meaningful inferences from examining correlations of serially correlated data. We assess the likelihood of these issues by examining a number of diagnostics.

We utilized OLS models to determine the influence of serial correlation and the presence of heteroscedasticity. Using these models, we conducted a Durbin–Watson test to examine the presence of serial correlation in the models' error terms. A Durbin–Watson score of 2 indicates no problem with serial correlation, while scores less than 2 indicate positive serial correlation and scores above 2 indicate negative serial correlation (Wooldridge, 2006). The Durbin–Watson statistics ranged from .89 to 1.25 indicating a strong issue with serial correlation. This suggests that current error terms are largely dependent on past error terms. We used a Cook–Weisberg test for heteroscedasticity. The tests revealed a threat for heteroscedasticity in all regression models. The presence of heteroscedasticity and strong serial correlation indicate that ordinary regression techniques are not appropriate for our analysis.

To ameliorate these issues, we took three precautions. First, we utilized autoregressive regression techniques inserting autoregressive terms to correct for the influence of time. Given that the Durbin–Watson test only tests for serial correlation in the first lagged error term, we used partial autocorrelation analysis to determine how many terms were needed. This analysis indicated substantial serial correlation in the first lagged time period for most variables suggesting that error terms from the present were largely dependent on the error terms from the previous period. After the first period the influence of serial correlation largely disappeared. As such, we inserted one autoregressive term into the models. Second, robust standard errors were used to correct for heteroscedasticity (e.g., Enders, 2008). Third, we performed unit roots tests to check the stationarity of our models (e.g., Saridakis, Marlow, & Storey, 2014). Nonstationary models can arise from persistent trends in a data set. Stationary models will have unit roots that fall inside the unit circle (i.e., they are real numbers and not imaginary numbers). We tested the unit roots of each model. The results indicate that all unit roots fall inside the unit circle, suggesting that nonstationary concerns are not introducing spurious

Table 1

Descriptive Statistics

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1	New ventures	198.60	12.67									
2	Small business growth	4,562.64	340.32	.49**								
3	Unemployment rate	5.68	1.55	−.70**	−.80**							
4	Real interest rate	2.74	1.92	.29*	.76**	−.69**						
5	Trade weighted exchange rate	89.12	18.35	.17	.54**	−.48**	.32**					
6	Consumer price index	180.86	23.42	.16	−.70**	.40**	−.63**	−.54**				
7	Collective optimism	97.66	3.72	.54**	.67**	−.57**	.33**	.43**	−.43**			
8	Media optimism	.01	.01	.12	−.21	.14	−.38**	−.13	.39**	.11		
9	Dynamism	871.08	522.68	−.07	−.34**	.16	−.37**	−.06	.30*	−.15	.14	
10	Munificence	.85	.36	.09	.40**	.05	.30*	−.06	.36*	.52**	.07	−.35**

*$p < .05$, **$p < .01$.

relationships into our model. Because the variables in our analysis were on different numerical scales, it is also important to note that all variables were standardized using z-scores to facilitate interpretation.

Results

Table 1 presents the means, standard deviations, and correlations among the study variables. To facilitate interpretation of our collective entrepreneurial optimism measure and to provide a comparison with the original Index, we rescale the measure to its original base of 100 (1986 = 100) and reported the corresponding mean and standard deviation. Thus, an optimism value below/above 97.66 (the 1993 to 2010 mean) indicates that the level of collective entrepreneurial optimism is below/above its historical average.

Tables 2 and 3 provide the results for our hypotheses tests. Hypothesis 1a proposes that collective entrepreneurial optimism exhibits a curvilinear relationship with new venture creation. In model 2, the coefficient for collective entrepreneurial optimism is positive and significant ($\beta = .14$, $p < .01$) and the coefficient for the quadratic term is negative and significant ($\beta = -.04$, $p < .01$), providing support for hypothesis 1a. Hypothesis 1b proposes that the collective entrepreneurial optimism exhibits a curvilinear relationship with small business growth. In model 9, the coefficient for collective entrepreneurial optimism is positive and significant ($\beta = .24$, $p < .01$) and the coefficient for the quadratic term is negative and significant ($\beta = -.14$, $p < .01$), supporting hypothesis 1b. Figure 1 provides plots depicting these relationships.

Hypothesis 2a argues that environmental dynamism moderates the relationship between collective entrepreneurial optimism and new venture creation such that the influence of collective entrepreneurial optimism is stronger during periods of high environmental dynamism. Model 4 includes the interaction term for environmental dynamism and collective entrepreneurial optimism. Model 7 includes both the dynamism and munificence moderators. In Model 4, the interaction term for dynamism and collective entrepreneurial optimism is positive and significant ($\beta = .09$, $p < .01$). In Model 7, the interaction term for dynamism and collective entrepreneurial optimism is positive and

Table 2

Results for New Venture Creation Models

Variables	Controls	New ventures	New ventures (dynamism main effect)	New ventures (dynamism moderator)	New ventures (munificence main effect)	New ventures (munificence moderator)	New ventures with both moderators
Model	1	2	3	4	5	6	7
Unemployment rate	−.25**	−.18**	−.18**	−.18**	−.19	−.18**	−.18**
Real interest rate	.01	.02	.02	.05	.02	.02	.04
Trade weighted exchange rate	.01	.00	.00	.01	.00	.00	.01
Consumer price index	.20**	.26**	.26**	.28**	.27**	.27**	.28**
Collective optimism		.14**	.13**	.04	.13**	.14**	.04
Collective optimism squared		−.04**	−.04**	−.02	−.04**	−.05*	−.03
Munificence					.01	.02	.03
Optimism × munificence						.01	.01
Dynamism			−.01	−.01			−.01
Optimism × dynamism				.09**			.09**
Constant	−.13**	−.08**	−.08	−.09**	−.08**	−.07*	−.09*
AR term	.52**	.22†	.23†	.20	.23†	.24†	.21
Chi square	84.77	214.57	243.62	450.79	248.56	343.21	491.28
N	71	71	71	71	71	71	71

†$p < .10$, *$p < .05$, **$p < .01$

Table 3

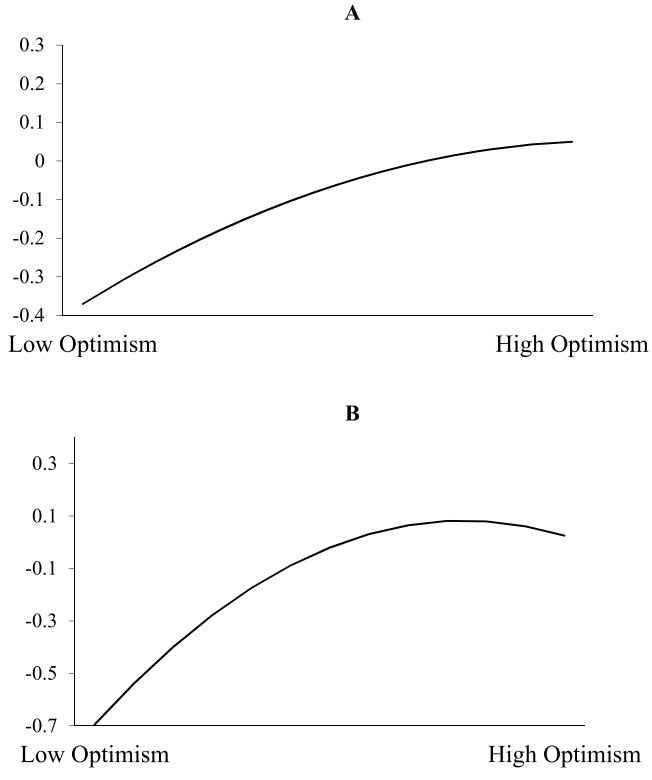
Results for Small Business Growth Models

Variables	Controls	Firm growth	Firm growth (dynamism main effect)	Firm growth (dynamism moderator)	Firm growth (munificence main effect)	Firm growth (munificence moderator)	Firm growth with both moderators
Model	8	9	10	11	12	13	14
Unemployment rate	−.61**	−.48**	−.49**	−.47**	−.49**	−.49**	−.48**
Real interest rate	.05	.01	.00	.08	.01	.00	.08
Trade weighted exchange rate	−.03	−.06	−.05	−.02	−.04	−.04	.01
Consumer price index	−.50*	−.39**	−.37**	−.35**	−.37**	−.37**	−.32**
Collective optimism		.24**	.23**	.01	.21**	.23**	−.03
Collective optimism squared		−.14**	−.13**	−.09	−.13**	−.15**	−.08
Munificence					.14	.17	.20
Optimism × munificence						.02	.02
Dynamism			−.04	−.06			−.05
Optimism × dynamism				.21*			.22*
Constant	−.19†	−.02	−.02	−.06	−.00	−.01	−.03
AR term	.47**	.45**	.44	.42*	.41*	.43*	.37†
Chi square	80.27	268.40	291.92	333.77	292.03	295.73	447.16
N	71	71	71	71	71	71	71

†$p < .10$, *$p < .05$, **$p < .01$.

Figure 1

(A) New Venture Creation Curvilinear Relationship. (B) Small Business Growth Curvilinear Relationship

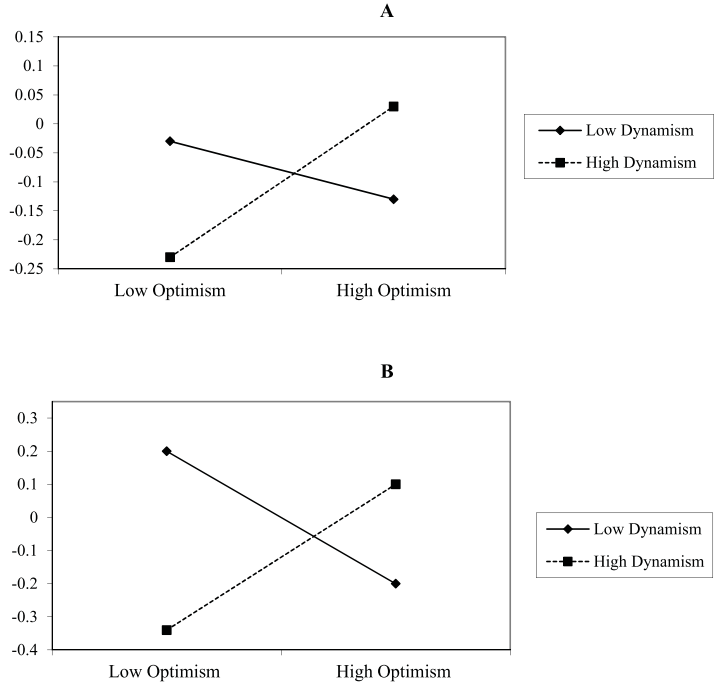


significant ($\beta = .09$, $p < .01$). Thus, hypothesis 2a is supported. Model 11 includes the interaction term for environmental dynamism and collective entrepreneurial optimism. Model 14 includes both the dynamism and munificence moderators. Hypothesis 2b argues that environmental dynamism moderates the relationship between collective entrepreneurial optimism and small business growth such that the influence of collective entrepreneurial optimism is stronger during periods of high environmental dynamism. In Model 11, the interaction term for collective entrepreneurial optimism and dynamism is positive and significant ($\beta = .21$, $p < .05$). In Model 14, the interaction term for collective entrepreneurial optimism and dynamism is positive and significant ($\beta = .22$, $p < .05$). Thus, hypothesis 2b is supported. Simple slope plots are provided in Figure 2.[1]

1. We looked for potential quadratic interactions when examining our moderating relationships. For environmental dynamism, both the coefficient signs and graphs were consistent with a quadratic interaction, but the quadratic interaction terms did not reach statistical significance at $p < .05$ (new venture creation, $\beta = -.03$, $p = .23$; small business growth, $\beta = -.07$, $p = .28$). The linear interaction terms for environmental dynamism are statistically significant when included on their own and when included with their corresponding interaction terms. We found no evidence of moderation, linear or quadratic, for environmental munificence in our main analysis. We would like to thank an anonymous reviewer for suggesting that we examine both linear and quadratic moderation to more clearly understand the nature of our moderating relationships.

Figure 2

(A) Simple Slopes for New Venture Creation. (B) Simple Slopes for Small Business Growth



Hypothesis 3a argues that environmental munificence moderates the relationship between collective entrepreneurial optimism and new venture creation such that high munificence strengthens the relationship. In Model 6, the interaction term for munificence and collective entrepreneurial optimism is positive, but not significant ($\beta = .01$, $p = .67$). In Model 7, the interaction term is also positive, but not significant ($\beta = .03$, $p = .52$). Thus, hypothesis 3a is not supported. Hypothesis 3b argues that environmental munificence moderates the relationship between collective entrepreneurial optimism and small business growth such that high munificence strengthens the relationship. In Model 13, the interaction term for munificence and collective entrepreneurial optimism is positive, but not significant ($\beta = .02$, $p = .68$) and in Model 14 the interaction term is also positive, but not significant ($\beta = .02$, $p = .52$). Thus, hypothesis 3b is not supported. In all, four of six of our hypotheses are supported.

Robustness Check: Collective Entrepreneurial Optimism in the Media

In order to examine the convergent validity and robustness of our collective entrepreneurial optimism measure, we construct an alternate measure of collective entrepreneurial optimism using mass media data. We label this measure *media optimism* in the following analysis. Social contagion research suggests that the mass media often captures and reflects collective beliefs (Myers, 2000). As such, if collective entrepreneurial optimism

is truly a widespread collective belief then we should be able to detect such optimism in the media. The public nature of media reports allows us to perform this direct assessment.

To capture media optimism, we adapt the approach of Cardon et al. (2011), who used newspaper articles to examine regional and national attributions of entrepreneurial failure. Similar to their approach, using Lexis/Nexis Academic, we identify articles relating to entrepreneurial/small business optimism in *USA Today* published over the time frame of our study (1993–2010). We search the full text for all articles that mention terms reflecting entrepreneurial and small business activity, using search terms such as "small business" and variations of word "entrepreneur" that also utilize terms reflecting optimism as measured by reference to any of the words from the optimism dictionary created by McKenny et al. (2013). This dictionary includes 90 terms relating to the word optimism. For example, relevant searches include "entrepreneurial optimism," "small business confidence," or "entrepreneur's outlook." Each article was inspected for relevance before inclusion. Our final search yielded a total of 242 articles.

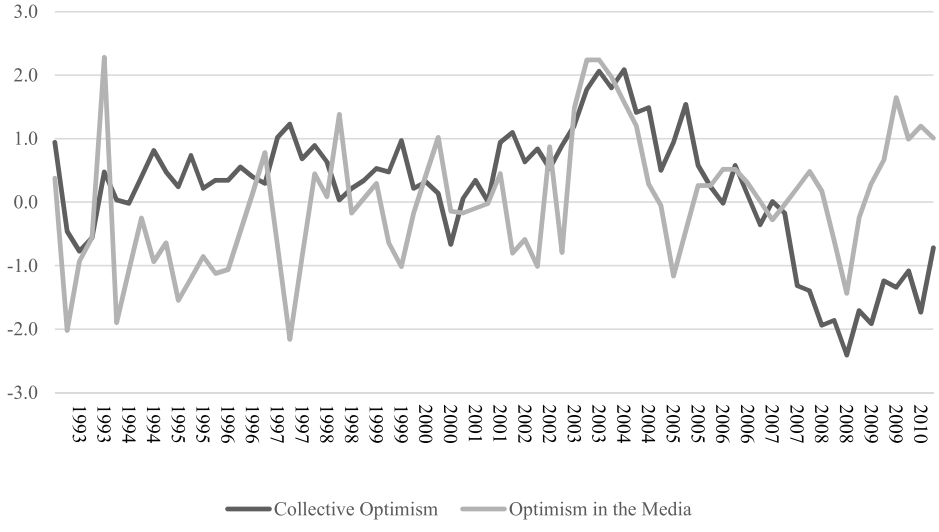
After identifying our articles, we employ computer-aided text analysis using Henry's (2008) positive and negative tone dictionaries to assist us in determining if the optimism article was generally positive or negative. For example, an article with a negative tone indicates that optimism is low or decreasing while a positive tone indicates optimism is high or increasing. A positive and negative score is computed for each article, then negative scores are subtracted from positive scores to provide us with a relative measure of positivity/negativity, and each score is standardized by dividing the score by the length of the article in words. We compute quarterly averages for each time period in our study that correspond to the quarterly structure of our data.

We then examine the relationships between our original collective entrepreneurial optimism measure and our media optimism measure. Using our time series models, we regress our collective entrepreneurial optimism measure created from NFIB survey data onto our media optimism measure. The coefficient for collective entrepreneurial optimism is positive and significant ($\beta = .35, p < .05$), suggesting that these variables are significantly related. Next, we plot the z-scores for our collective entrepreneurial optimism measure and media optimism through time in Figure 3. The figure suggests that both of these measures exhibit similar patterns over time. Finally, we insert our media optimism measure into our new venture creation and small business growth models. The media optimism quadratic terms are negative and significant in both the new venture creation ($\beta = -.03, p < .05$) and small business growth ($\beta = -.06, p < .05$) models, providing further evidence of the curvilinear relationship between collective entrepreneurial optimism and our dependent variables. However, unlike our main analysis, the hypotheses examining the moderating influence of environmental dynamism are not supported (new venture creation, $\beta = .001$, $p = .67$; small business growth, $\beta = -.009$, $p = .63$). This could be due to the statistical power in our sample paired with smaller effect sizes. While computerized content analysis measures are valuable in capturing latent constructs in texts, measurement error associated with these measures can lead to an underestimation of effect sizes (cf. McKenny et al., 2016). As such, additional power may be needed to detect moderating effects when using the media optimism measure.

Taken together, the similarities between our media optimism and collective entrepreneurial optimism measures suggest that these measures are representative of the same underlying phenomenon: collective entrepreneurial optimism in the United States. Our analysis also provides additional evidence of the convergent validity of our NFIB survey-based measure of collective entrepreneurial optimism and suggests that this measure is not just reflective of NFIB members or another population subset. Last, our analysis

Figure 3

Collective Entrepreneurial Optimism versus Media Optimism



suggests that scholars wishing to conduct future research on collective entrepreneurial optimism could operationalize this construct using data extracted from the mass media.

Additional Robustness Checks

We perform two additional robustness checks on our results. A common issue with historical time series analysis is that data often exists over only limited time frames. While our analysis covers a 17-year time period, the quarterly reporting of the dependent variables limits the overall sample size of our study. Resampling techniques enable researchers to manage these limitations and reduce potential estimation biases that may result from smaller samples (e.g., Beck & Katz, 1995). To check the robustness of our results, we utilize a jackknife resampling technique, which is particularly useful for estimating the robustness of autoregressive models (Chambers, 2013). The results from our jackknife estimations are very similar to the original results—providing confidence in the original estimations. These results are available from the authors upon request.

We also took steps to rule out concerns of reverse causality in our models using Granger causality tests. Granger causality tests are used to determine if one time series predicts another time series (Granger, 1988). Thus, we can use Granger[2] causality tests to further determine if collective entrepreneurial optimism provides statistically significant information about the future values of new venture creation and small business growth, and test for the reverse, which might indicate an issue with reverse causality. Our Granger

2. To calculate a Granger causality test, we first estimated a vector auto-regression model (VAR). VAR models are multivariate times series techniques where one dependent variable is regressed on another dependent variable and vice versa while correcting for auto correlation. The values are then used to compute the Granger causality tests.

causality tests suggest that collective entrepreneurial optimism predicts new venture creation ($\chi^2 = 17.84$, $p < .01$) and small business growth ($\chi^2 = 8.41$, $p < .01$). We found no evidence of the reverse: new venture creation ($\chi^2 = .35$, $p = .55$) and small business growth ($\chi^2 = .02$, $p = .89$). As such, our new venture creation and small business growth models do not suffer from reverse causality.

Post Hoc: The Influence of Changes in Collective Entrepreneurial Optimism

To lend additional support to the contagion arguments in our hypotheses, we investigate the influence of past changes in collective entrepreneurial optimism on our dependent variables. Social contagion occurs, in part, because individuals update their beliefs to coincide with the changing beliefs of a collective (Young, 2009). This implies that the changing beliefs of the collective alter the current situation (i.e., beliefs) of the individuals in that collective. Individuals are often more sensitive to changes in their current situation than to the particular situation itself (Tversky & Kahneman, 1974). This occurs because beliefs typically have a reference point upon which they are anchored (Hogarth & Einhorn, 1992). One may not be overtly aware of this reference point until something alters the current situation. When a change does occur, it invokes a cognitive response to examine deviation from the reference point (Hogarth & Einhorn).

Time series models allow researchers to examine how the magnitude of past changes in variables affects outcomes. This can be accomplished by introducing lagged differences over several periods into the model (e.g., Enders, 2008). We utilize this feature and introduce lagged differences of our collective entrepreneurial optimism measure that cover the course of an entire year. This creates a model that includes both the current level as well as recent changes in collective entrepreneurial optimism. These models provide different types of information to researchers. In our case, the first collective entrepreneurial optimism coefficient captures the change from the previous quarter to the present time period. However, this term is mathematically equivalent to a coefficient for the current level of collective entrepreneurial optimism. This term can be interpreted like a standardized regression coefficient. The remaining terms capture the changes in collective entrepreneurial optimism from one quarter to the next. When interpreting these change terms, the first coefficient serves as a control for the current level of collective entrepreneurial optimism, allowing the other change coefficients to be interpreted purely as previous changes in collective optimism that are independent of the current level of collective entrepreneurial optimism. These terms indicate that the current values of the dependent variables are functions of both the current level of optimism and past changes in optimism.

The results for our *post hoc* tests are presented in Table 4. We also provide models that include lagged changes of the interaction terms. Unfortunately, we could not provide a model including both interaction terms in the same model. The inclusion of lagged changes of both interaction terms in one model causes collinearity to become very high and leads to coefficient instability. Consistent with social contagion logic, the results of our *post hoc* analysis indicate that past changes in collective entrepreneurial optimism play a significant role in predicting current venture creation and small business growth when controlling for the current level of collective entrepreneurial optimism. These results suggest that to understand the complete influence of collective entrepreneurial optimism on entrepreneurial phenomena, one must be cognizant of the current level as well as the magnitude of past changes in collective entrepreneurial optimism.

Our analysis also yields some evidence supporting hypothesis 3a. In Model 17 we found that the interactions are positive with the first change approaching significance

Table 4

Changing Collective Optimism on New Venture Creation and Growth

Variables	New ventures	New ventures and dynamism	New ventures and munificence	Firm growth	Firm growth and dynamism	Firm growth and munificence
Model	15	16	17	18	19	20
Unemployment rate	−.32**	−.32**	−.31**	−.75**	.70**	−.72**
Real Interest rate	−.02	−.02	−.03	−.16	.04	.00
Trade weighted exchange rate	−.02	−.01	−.01	−.11	−.07	−.04
Consumer price index	.22**	.23**	.23**	−.49**	−.45**	−.43**
First change	.13**	.09†	.14**	.25*	−.04	.12
1st lagged change	.09†	.06	.10*	.20	.00	.07
2nd lagged change	.12**	.08†	.11*	.38**	.14	.30*
3rd lagged change	.04	.01	.04	.07	.05	.02
Munificence			.12			.32
Optimism × munificence			.04†			−.05
1st lagged change			.02			.00
2nd lagged change			.01			−.03
3rd lagged change			.05*			.12
Dynamism		−.01			−.05	
Optimism × dynamism		.05*			.21*	
1st lagged change		.03			.21†	
2nd lagged change		.03			.23*	
3rd lagged change		.04			.03	
Constant	−.09*	−.12**	−.10**	−.17	−.17*	−.12
AR term	.55**	.60**	.58**	.56**	.47**	.30
Chi square	145.68	214.12	178.31	235.57	310.05	270.65
N	68	68	68	68	68	68

†$p < .10$, *$p < .05$, **$p < .01$

($\beta = .04$, $p = .06$) and the last change is significant ($\beta = .05$, $p < .05$). Thus, we found some support that munificence strengthens the impact of collective entrepreneurial optimism on new venture creation.

Post Hoc: Geographic Heterogeneity in Collective Entrepreneurial Optimism

Because geographic heterogeneity may result in differences in collective entrepreneurial optimism, we again follow the process used by Cardon et al. (2011), who examined articles published by major newspapers in different regions of the United States to investigate cultural attributions of entrepreneurial failure. We select the primary daily newspapers in six major metropolitan areas—Atlanta, Austin, Chicago, New York, San Jose, and Washington, DC—that provide exemplars of the Deep South, Southwest, Midwest, East Coast, West Coast, and Mid-Atlantic regions. Our final search yielded a total of 604 regional articles over the time frame of our study (1993–2010). Unlike our national data using *USA Today*, our regional data exhibit several time gaps where data may be

Table 5

Comparison of Regional Media Optimism

	Austin	Atlanta	Chicago	New York	San Jose	Washington	USA
Austin	.01						
Atlanta	.66	.13					
Chicago	2.66**	1.47	.01				
New York	3.77**	2.40*	1.11	.01			
San Jose	1.14	.24	−1.50	−2.60*	.01		
Washington	2.44*	1.35	−.08	−1.14	1.35	.01	
USA	−1.97	−.97	.53	1.58	−.89	.43	.01

*$p < .05$, **$p < .01$

missing for some quarters, which make comparisons over time difficult. Therefore, we use the moving averages to impute the data for any missing time gaps in order to provide a balanced comparison across all newspapers (cf. Montgomery, Jennings, & Kulahci, 2015).

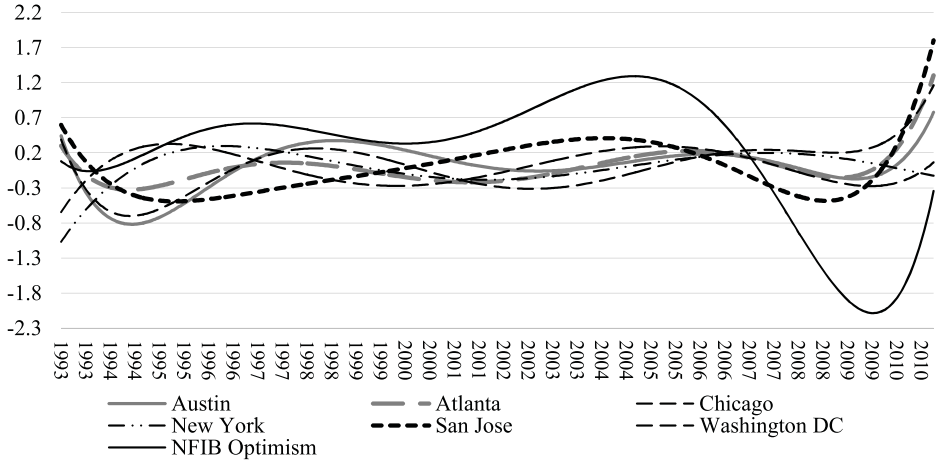
To identify differences among the geographic regions, we conduct mean comparison *t*-tests of the net tone scores for each region and plot the polynomial trend lines for each region over time alongside our national-level collective entrepreneurial optimism measure using NFIB data. We provide the mean comparisons in Table 5, where the diagonal provides the mean relative tone score for each region and below the diagonal provides the *t*-value for each test. The mean comparisons show that 5 of the 15 regional comparisons tests are statistically significant, while the other 10 are not. In addition, none of the regions were significantly different from our national media optimism measure using *USA Today* data. In Figure 4, we also plot the polynomial trend lines for each region alongside the trend line for our measure using NFIB survey data. It does not appear that changes in optimism are dramatically different among regions. However, these regions do not move in perfect lockstep with each other either, suggesting that some geographic differences exist. Overall, we conclude that while there was some evidence of heterogeneity, collective entrepreneurial optimism was not so heterogeneous across regions that our examination of U.S. collective entrepreneurial optimism is not meaningful.

Discussion

While optimism has played a key role in understanding the impact of entrepreneurial cognitions on new venture creation, our work extends our understanding of entrepreneurial optimism in several ways. First, we extend entrepreneurial optimism to the collective level of analysis. In doing so, we lay the foundation for a collective entrepreneurial optimism construct. Second, we draw from the social contagion perspective to explain how collective entrepreneurial optimism manifests among entrepreneurs and influences the decision to launch or grow a new venture. Consequently, we answer calls to further explore the role of entrepreneurs' expectations in new venture creation (e.g., Townsend, Busenitz, & Arthurs, 2010). Third, we show how an existing economic measure of entrepreneur and small business sentiment (i.e., the NFIB Optimism Index) can be adapted so

Figure 4

Trend Lines of Optimism Scores by Region



that it more closely aligns with theoretical conceptualizations of optimism in the management and entrepreneurship literatures. We compare our collective entrepreneurial optimism measure created from NFIB survey data to a measure created from examining mass media publications. Our results provide evidence of the validity of our adaptation of NFIB Optimism Index to represent aspects of collective entrepreneurial optimism in the United States.

Our findings were generally supportive of collective entrepreneurial optimism's curvilinear relationship with entrepreneurial activity. We also found that dynamism moderated this relationship. However, we did not detect a moderating relationship of environmental munificence on the collective entrepreneurial optimism–entrepreneurial activity relationships. We did, however, find some support for Hypothesis 3a in our *post hoc* analysis when munificence was lagged. This discrepancy in findings may be due to the time it takes for resources to be acquired and deployed (cf. Maritan & Peteraf, 2011). Without resources, even an optimistic entrepreneur cannot launch or expand a firm. However, given the resource intensity of launching or expanding a firm, entrepreneurs need to begin identifying these resources in advance of the launch or expansion. Thus, the environmental munificence in the quarters leading up to the intended entrepreneurial action is likely to influence whether the entrepreneur is able to execute. If this time period coincides with hostile conditions (i.e., low environmental munificence), the entrepreneur is less likely to successfully acquire sufficient resources, decreasing their ability to take action on their optimism at the end of this window. This finding is consistent with previous research investigating how munificence may influence the use and timing of resources (e.g., Bradley et al., 2011).

Another explanation for why munificence did not moderate the relationship of collective entrepreneurial optimism with entrepreneurial activity in our main hypotheses test might arise from the push hypothesis of entrepreneurship (i.e., Storey, 1991). The push hypothesis suggests that in hostile environments, individuals who are unemployed or may soon become unemployed will be more likely to launch a new venture to provide some

income for the individual and their family (Storey). Given the scarcity of external resources, these individuals are likely to use bootstrapping to launch their ventures. Further, the need to launch a new venture may make collective entrepreneurial optimism less relevant to the decision to launch. In such cases, there is no reason for collective entrepreneurial optimism and environmental munificence to jointly influence the launch of a new business. However, the survival and performance implications of starting a venture when the entrepreneurial community is not optimistic is not well understood. Future research might use survival analysis to examine the accuracy of collective entrepreneurial optimism during times of low environmental munificence by examining the survival of bootstrapped ventures launched during recessions.

Future Research

In this study, we used social contagion research to better understand the relationship between collective entrepreneurial optimism and entrepreneurial activity. In doing so, we respond to calls for cross-level research involving entrepreneurial phenomena (e.g., Hmieleski & Baron, 2009; Shepherd, 2011). Future research might advance our understanding of collective entrepreneurial optimism's role in entrepreneurial phenomena by extending other cross-level social psychological theories. For instance, social exchange theory suggests that individuals engage in a cost-benefit analysis in their interactions with both other individuals and collectives (Flynn, 2005). Because optimism shapes an individual's beliefs about future outcomes, collective optimism at the firm level is likely to shape the exchange relationships within the venture, influencing the development of organizational culture, the willingness of employees to be led by the entrepreneur, and ultimately new venture performance.

We conceptualize collective entrepreneurial optimism as a fuzzy composition construct, suggesting that the nomological networks of individual and collective optimism may differ (cf. Bliese, 2000). However, because collective optimism influences and is influenced by the individual-level optimism of the collective's members, there is likely to be considerable overlap among the constructs' nomological networks. Future research should examine what relationships from individual optimism research also hold for the collective optimism construct. In particular, since individual optimism influences actions through cognitive mechanisms, it would be valuable to compare the extent to which cognitive or social mechanisms mediate the relationship between collective entrepreneurial optimism and entrepreneurial outcomes.

Entrepreneurship scholars have called for further investigation into the motivational antecedents of entrepreneurial decision making and action (Shepherd, Williams, & Patzelt, 2015). Consistent with research suggesting that optimism contains a strong motivational component (e.g., Peterson, 2000), our study indicates that collective entrepreneurial optimism is strongly associated with new venture creation and small business growth. Future research could extend our findings by exploring the relationships between changes in collective entrepreneurial optimism and other motivational antecedents of entrepreneurship. For example, entrepreneurs with a prosocial motivation frequently attempt to address troubling social problems rather than pursuing solely commercial ventures (e.g., Elkington & Hartigan, 2013). Given the difficulty of addressing social problems through entrepreneurship, it is possible that recurring exposure to barriers to social change may erode motivation toward solving this problem over time, inducing a feeling of learned helplessness. However, research has found that optimism can alleviate this feeling of learned helplessness by reducing feelings of depression and encouraging resilience (Seligman, 2011). Accordingly,

future research might examine the role of collective optimism in the persistence of social entrepreneurs in alleviating social problems.

This study indicates that collective entrepreneurial optimism predicts entrepreneurial entry. However, recently scholars have called for more attention to be given to entrepreneurial exit (e.g., DeTienne, 2010). Future studies could address this call by examining trends in optimism and their influence on the decision of when to exit a firm. For instance, experienced entrepreneurs are more likely to exit when the firm is performing well, such as harvesting the firm for profit (Wennberg, Wiklund, DeTienne, & Cardon, 2010). By contrast, less experienced entrepreneurs are more likely to exit when the firm is performing poorly in order to avoid failure (Wennberg et al.). This suggests that changes in collective entrepreneurial optimism may be interpreted differently among experienced and inexperienced entrepreneurs. Experienced entrepreneurs might view increases in collective entrepreneurial optimism as an opportunity to cash in on inflated expectations. Inexperienced entrepreneurs might be more likely to exit when collective entrepreneurial optimism is decreasing, interpreting this as a signal of increasing chance for failure. A future study might test this notion by comparing the timing of exits of novice and serial entrepreneurs with respect to the level of collective entrepreneurial optimism.

Implications for Practice

It is common for policy makers to champion the promotion of policies favorable to entrepreneurs and small business owners (cf. Shane, 2009). Our results suggest that if policy makers want to promote entrepreneurial activity, finding ways to increase collective optimism through policy may be an effective means for accomplishing this. However, promoting entrepreneurship may not always be good public policy in the long run (e.g., Shane). High optimism often hurts the performance of entrepreneurial organizations in the long run as it can lead to poor decision making (e.g., Hmieleski & Baron, 2009). For example, if collective entrepreneurial optimism is artificially inflated by policy makers, entrepreneurs may prematurely make significant resource commitments to launch or grow a venture. If the future is less positive than expected by entrepreneurs, this can result in financial troubles for these ventures who would not have acted without the policy maker's action. Accordingly, promoting policies that increase collective entrepreneurial optimism may increase start ups and firm growth in the short term, but may lead to an increase in company failures and wasted resources in the long term.

Limitations

Our findings should be understood in the context of our study's limitations. First, while our results are consistent with social contagion theory and work suggesting that collective optimism informs individual decision making (e.g., Angst et al., 2010; Bennett, 2011), we cannot directly observe the decision processes of the entrepreneurs or small business owners who choose to launch or grow a venture. As such, we cannot determine exactly how these individuals are using or interpreting collective entrepreneurial optimism. Future research could directly examine how collective entrepreneurial optimism influences decisions by observing the responses of entrepreneurs to media reports that indicate either an increase or decrease in collective entrepreneurial optimism. Second, our sample is drawn from a population of entrepreneurs in the United States. This is valuable because of the prevalence of entrepreneurship in the United States and because U.S. entrepreneurs often share similar attitudes, aspirations, and perspectives with non-U.S.

entrepreneurs (e.g., Dodd, 2002). However, the results of our study may not generalize to all countries (e.g., Mueller & Thomas, 2001). For instance, the United States' economic and legal structures allow entrepreneurs to act on their optimism. In more restrictive countries, optimism may play less of a role in new venture creation due to institutional constraints. Further, institutional or cultural pressures may dampen collective entrepreneurial optimism even if the entrepreneurs do have the freedom to act. Future research might examine the generalizability of and extend our findings by comparing the relative strength of individual and collective entrepreneurial optimism in cultures with varying levels of national collectivism and types of collectivism (e.g., patriotism and nationalism, familism and localism).

Conclusion

Uncovering the antecedents of new venture creation and growth is a cornerstone of entrepreneurship research. We extend our knowledge of entrepreneurial optimism by demonstrating the importance of collective entrepreneurial optimism to new venture launch and small business growth. For entrepreneurship scholars, this suggests that a broader perspective of entrepreneurial optimism involving the beliefs of others should be taken to further unpack the optimism–entrepreneurship relationship. For practitioners, our findings suggest that entrepreneurs should be aware of the presence of collective forces that may impact their decision to engage in venture creation and growth.

Appendix: Small Business Survey Questions Used to Construct Collective Optimism Measure

1. Do you think the next three months will be a good time for small business to expand substantially? Why?
2. About the economy in general, do you think that six months from now general business conditions will be better than they are now, about the same, or worse?
3. Were your net earnings or "income" (after taxes) from your business during the last calendar quarter higher, lower, or about the same as they were for the quarter before? If higher or lower, what is the most important reason?
4. Overall, what do you expect to happen to real volume (number of units) of goods and/or services that you will sell during the next three months?
5. Do you expect to find it easier or harder to obtain your required financing during the next three months?

REFERENCES

Aarstad, J., Haugland, S.A., & Greve, A. (2010). Performance spillover effects in entrepreneurial networks: Assessing a dyadic theory of social capital. *Entrepreneurship Theory and Practice*, *34*(5), 1003–1019.

Acs, Z.J. & Szerb, L. (2007). Entrepreneurship, economic growth and public policy. *Small Business Economics*, *28*(2–3), 109–122.

Alon, I., Qi, M., & Sadowski, R.J. (2001). Forecasting aggregate retail sales: A comparison of artificial neural networks and traditional methods. *Journal of Retailing and Consumer Services*, *8*(3), 147–156.

Alvarez, S.A. & Barney, J.B. (2005). How do entrepreneurs organize firms under conditions of uncertainty?. *Journal of Management*, *31*(5), 776–793.

Angst, C.M., Agarwal, R., Sambamurthy, V., & Kelley, K. (2010). Social contagion and information technology diffusion: The adoption of electronic medical records in US hospitals. *Management Science*, *56*(8), 1219–1241.

Aral, S. & Walker, D. (2011). Creating social contagion through viral product design: A randomized trial of peer influence in networks. *Management Science*, *57*(9), 1623–1639.

Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, *18*(1), 105–123.

Avey, J.B., Luthans, F., & Mhatre, K.H. (2008). A call for longitudinal research in positive organizational behavior. *Journal of Organizational Behavior*, *29*(5), 705–711.

Bandura, A. (1998). Personal and collective efficacy in human adaptation and change. In J. G. Adair, D. Belanger, & K. L. Dion (Eds.), *Advances in psychological science*, *Vol. 1: Personal, social and cultural aspects* (pp. 51–71). Hove, UK: Psychology Press.

Beck, N. & Katz, J.N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review*, *89*(03), 634–647.

Bénabou, R. (2012). Groupthink: Collective delusions in organizations and markets. *The Review of Economic Studies*, *8*(2), 1–48.

Bennett, O. (2011). Cultures of optimism. *Cultural Sociology*, *5*(2), 301–320.

Bennett, K.K. & Elliot, M. (2005). Pessimistic explanatory style and cardiac health: What is the relation and the mechanism that links them? *Basic and Applied Social Psychology*, *27*(3), 239–248.

Bernanke, B.S. (1981). Bankruptcy, liquidity, and recession. *The American Economic Review*, *71*(2), 155–159.

Bernanke, B. (2004). *The great moderation in the Taylor rule and the transformation of monetary policy*. Washington, DC: Institutions Press Publication Hoover.

Biggs, M. (2003). Positive feedback in collective mobilization: The American strike wave of 1886. *Theory and Society*, *32*(2), 217–254.

Bliese, P.D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multi-level theory, research and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). San Francisco, CA: Jossey-Bass.

Bond, R.M., Fariss, C.J., Jones, J.J., Kramer, A.D., Marlow, C., Settle, J.E., et al. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, *489*(7415), 295–298.

Bradley, S.W., Shepherd, D.A., & Wiklund, J. (2011). The importance of slack for new organizations facing "tough" environments. *Journal of Management Studies*, *48*(5), 1071–1097.

Braun, M.R. & Latham, S.F. (2009). When the big "R" hits home: Governance in family firms during economic recession. *Journal of Strategy and Management*, *2*(2), 120–144.

Bruderl, J. & Schussler, R. (1990). Organizational mortality: The liabilities of newness and adolescence. *Administrative Science Quarterly*, *35*(3), 530–547.

Burt, R.S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, *92*(6), 1287–1335.

Busenitz, L.W. & Barney, J.B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, *12*(1), 9–30.

Cardon, M.S., Stevens, C.E., & Potter, D.R. (2011). Misfortunes or mistakes? Cultural sensemaking of entrepreneurial failure. *Journal of Business Venturing*, *26*(1), 79–92.

Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, *19*(2), 261–283.

Cassar, G. (2010). Are individuals entering self-employment overly optimistic? An empirical test of plans and projections on nascent entrepreneur expectations. *Strategic Management Journal*, *31*(8), 822–840.

Chambers, M.J. (2013). Jackknife estimation of stationary autoregressive models. *Journal of Econometrics*, *172*(1), 142–157.

Chambers, J.R. & Windschitl, P.D. (2004). Biases in social comparative judgments: The role of nonmotivated factors in above-average and comparative-optimism effects. *Psychological Bulletin*, *130*(5), 813.

Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, *83*(2), 234.

Chandler, G.N., Honig, B., & Wiklund, J. (2005). Antecedents, moderators, and performance consequences of membership change in new venture teams. *Journal of Business Venturing*, *20*(5), 705–725.

Chang, E.P., Chrisman, J.J., & Kellermanns, F.W. (2011). The relationship between prior and subsequent new venture creation in the United States: A county level analysis. *Journal of Business Venturing*, *26*(2), 200–211.

Chauvet, M. & Piger, J. (2008). A comparison of the real-time performance of business cycle dating methods. *Journal of Business & Economic Statistics*, *26*(1), 42–49.

Chen, G., Mathieu, J.E., & Bliese, P.D. (2004). A framework for conducting multi-level construct validation. In F. J. Yammarino & F. Dansereau (Eds.), *Research in multilevel issues: Multilevel issues in organizational behavior and processes* (Vol. 3, pp. 273–303). Oxford, UK: Elsevier

Choi, J.J. & Prasad, A.M. (1995). Exchange risk sensitivity and its determinants: A firm and industry analysis of US multinationals. *Financial Management*, *2*(3), 77–88.

Chow, M.J. & Dunkelberg, W.C. (2011). The small business sector in recent recoveries. *Business Economics*, *46*(4), 214–228.

Cooper, A.C., Woo, C.Y., & Dunkelberg, W.C. (1988). Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, *3*(2), 97–108.

Coviello, N.E. & Jones, M.V. (2004). Methodological issues in international entrepreneurship research. *Journal of Business Venturing*, *19*(4), 485–508.

Covin, J.G. & Lumpkin, G.T. (2011). Entrepreneurial orientation theory and research: Reflections on a needed construct. *Entrepreneurship Theory and Practice*, *35*(5), 855–872.

Crane, F.G. & Crane, E.C. (2007). Dispositional optimism and entrepreneurial success. *The Psychologist-Manager Journal*, *10*(1), 13–25.

Dahlgren, P. & Sparks, C. (1994). Communication and citizenship: Journalism and the public sphere in the new media age. *Media Culture and Society*, *16*(2), 362–362.

De Jong, J.P. (2013). The decision to exploit opportunities for innovation: A study of high-tech small business owners. *Entrepreneurship Theory and Practice*, *37*(2), 281–301.

Dennis, W.J. (2009). Opinions of NFIB members and the small business population: Is there a difference? Small Business Impact Studies. *NFIB Research Foundation*. Available at http://www.nfib.com/Portals/0/PDF/AllUsers/research/Opinions%20of%20NFIB%20Members%20and%20the%20Small%20Business%20Population.pdf

Dess, G.G. & Beard, D.W. (1984). Dimensions of organizational task environments. *Administrative Science Quarterly*, *29*(1), 52–73.

DeTienne, D.R. (2010). Entrepreneurial exit as a critical component of the entrepreneurial process: Theoretical development. *Journal of Business Venturing*, *25*(2), 203–215.

Dodd, S.D. (2002). Metaphors and meaning: A grounded cultural model of US entrepreneurship. *Journal of Business Venturing*, *17*(5), 519–535.

Douglas, E.J. (2013). Reconstructing entrepreneurial intentions to identify predisposition for growth. *Journal of Business Venturing*, *28*(5), 633–651.

Douglas, E.J. & Shepherd, D.A. (2002). Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice*, *26*(3), 81–90.

Dunkelberg, W.C., Scott, J.A., & Dennis, W.J. (2003). Small business indicators of macroeconomic activity. *NFIB Research Foundation*. Available at http://www.nfib.com/Portals/0/PDF/AllUsers/Small%20Business%20Indicators%20of%20Macroeconomic%20Activity.pdf

Dunkelberg, W.C. & Wade, H. (2014). NFIB small business economic trends. *NFIB Research Foundation*. Available at http://www.nfib.com/Portals/0/PDF/sbet/sbet201412.pdf

Dushnitsky, G. (2010). Entrepreneurial optimism in the market for technological inventions. *Organization Science*, *21*(1), 150–167.

Elkington, J. & Hartigan, P. (2013). *The power of unreasonable people: How social entrepreneurs create markets that change the world*. Boston, MA: Harvard Business Press.

Enders, W. (2008). *Applied econometric time series*. Hoboken, NJ: Wiley.

Everett, J. & Watson, J. (1998). Small business failure and external risk factors. *Small Business Economics*, *11*(4), 371–390.

Felin, T., & Zenger, T.R. (2009). Entrepreneurs as theorists: On the origins of collective beliefs and novel strategies. *Strategic Entrepreneurship Journal*, *3*(2), 127–146.

Flynn, F.J. (2005). Identity orientations and forms of social exchange in organizations. *Academy of Management Review*, *30*(4), 737–750.

Fraser, S. & Greene, F.J. (2006). The effects of experience on entrepreneurial optimism and uncertainty. *Economica*, *73*(290), 169–192.

Gao, H. (2010). Market misvaluation, managerial horizon, and acquisitions. *Financial Management*, *39*(2), 833–850.

Gino, F., Ayal, S., & Ariely, D. (2009). Contagion and differentiation in unethical behavior the effect of one bad apple on the barrel. *Psychological Science*, *20*(3), 393–398.

Ginwright, S.A. (2007). Black youth activism and the role of critical social capital in Black community organizations. *American Behavioral Scientist*, *51*(3), 403–418.

Gorman, M. & Sahlman, W.A. (1989). What do venture capitalists do? *Journal of Business Venturing*, *4*(4), 231–248.

Granger, C.W. (1988). Some recent development in a concept of causality. *Journal of Econometrics*, *39*(1), 199–211.

Granger, C.W. & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of Econometrics*, *2*(2), 111–120.

Greve, A. & Salaff, J.W. (2003). Social networks and entrepreneurship. *Entrepreneurship Theory and Practice*, *28*(1), 1–22.

Heeley, M.B., King, D.R., & Covin, J.G. (2006). Effects of firm R&D investment and environment on acquisition likelihood. *Journal of Management Studies*, *43*(7), 1513–1535.

Henry, E. (2008). Are investors influenced by how earnings press releases are written? *Journal of Business Communication*, *45*(4), 363–407.

Hmieleski, K.M. & Baron, R.A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, *52*(3), 473–488.

Hogarth, R.M. & Einhorn, H.J. (1992). Order effects in belief updating: The belief-adjustment model. *Cognitive Psychology*, *24*(1), 1–55.

Huberman, G. & Regev, T. (2001). Contagious speculation and a cure for cancer: A nonevent that made stock prices soar. *The Journal of Finance*, *56*(1), 387–396.

Issler, J.V. & Vahid, F. (2006). The missing link: Using the NBER recession indicator to construct coincident and leading indices of economic activity. *Journal of Econometrics*, *132*(1), 281–303.

Iyengar, R., Van den Bulte, C., & Valente, T.W. (2011). Opinion leadership and social contagion in new product diffusion. *Marketing Science*, *30*(2), 195–212.

Kirchhoff, B.A. & Phillips, B.D. (1988). The effect of firm formation and growth on job creation in the United States. *Journal of Business Venturing*, *3*(4), 261–272.

Krueger, N.F., Reilly, M.D., & Carsrud, A.L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, *15*(5), 411–432.

Latham, S. (2009). Contrasting strategic response to economic recession in start-up versus established software firms. *Journal of Small Business Management*, *47*(2), 180–201.

Lee, J.H. & Venkataraman, S. (2006). Aspirations, market offerings, and the pursuit of entrepreneurial opportunities. *Journal of Business Venturing*, *21*(1), 107–123.

Leonidou, L.C. (2004). An analysis of the barriers hindering small business export development. *Journal of Small Business Management*, *42*(3), 279–302.

Levanon, G. (2011). Forecasting recession and slow-down probabilities with Markov switching probabilities as right-hand-side variables. *Business Economics*, *46*(2), 99–110.

Li, J. (2008). Asymmetric interactions between foreign and domestic banks: Effects on market entry. *Strategic Management Journal*, *29*(8), 873–893.

Liñán, F. & Chen, Y.W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, *33*(3), 593–617.

Lofstrom, M., Bates, T., & Parker, S.C. (2014). Why are some people more likely to become small-businesses owners than others: Entrepreneurship entry and industry-specific barriers. *Journal of Business Venturing*, *29*(2), 232–251.

Lucey, B.M. & Dowling, M. (2005). The role of feelings in investor decision-making. *Journal of Economic Surveys*, *19*(2), 211–237.

Ludvigson, S.C. (2004). Consumer confidence and consumer spending. *The Journal of Economic Perspectives*, *18*(2), 29–50.

Macpherson, A. & Holt, R. (2007). Knowledge, learning and small firm growth: A systematic review of the evidence. *Research Policy*, *36*(2), 172–192.

Manigart, S. (1994). The founding rate of venture capital firms in three European countries (1970–1990). *Journal of Business Venturing*, *9*(6), 525–541.

Maritan, C.A. & Peteraf, M.A. (Eds.). (2011). *Competitive strategy*. Cheltenham, UK: Edward Elgar.

Marsden, P. (1998). Memetics and social contagion: Two sides of the same coin. *Journal of Memetics-Evolutionary Models of Information Transmission*, *2*(2), 171–185.

McKenny, A.F., Aguinis, H., Short, J.C., & Anglin, A.H. (2016). What doesn't get measured does exist: Improving the accuracy of computer-aided text analysis. *Journal of Management*. doi:10.1177/0149206316657594

McKenny, A.F., Short, J.C., & Payne, G.T. (2013). Using computer-aided text analysis to elevate constructs an illustration using psychological capital. *Organizational Research Methods*, *16*(1), 152–184.

Miller, D. & Sardais, C. (2015). Bifurcating time: How entrepreneurs reconcile the paradoxical demands of the job. *Entrepreneurship Theory and Practice*, *39*(3), 489–512.

Meade, M.L. & Roediger, H.L. (2002). Explorations in the social contagion of memory. *Memory & Cognition*, *30*(7), 995–1009.

Montgomery, D.C., Jennings, C.L., & Kulahci, M. (2015). *Introduction to time series analysis and forecasting*. Hoboken, NJ: Wiley.

Morgeson, F.P. & Hofmann, D.A. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. *Academy of Management Review*, *24*(2), 249–265.

Morrison, A., Breen, J., & Ali, S. (2003). Small business growth: Intention, ability, and opportunity. *Journal of Small Business Management*, *41*(4), 417–425.

Mueller, S.L. & Thomas, A.S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of Business Venturing*, *16*(1), 51–75.

Myers, D.J. (2000). The diffusion of collective violence: Infectiousness, susceptibility, and mass media networks. *American Journal of Sociology*, *106*(1), 173–208.

NFIB. (2008). Small business poll. 8(7). Available at http://411sbfacts.com/sbpoll-demo.php?POLLID=0071

Nieß, C. & Biemann, T. (2014). The role of risk propensity in predicting self-employment. *Journal of Applied Psychology*, *99*(5), 1000.

Olson, K.R. (2006). A literature review of social mood. *The Journal of Behavioral Finance*, *7*(4), 193–203.

Onnela, J.P. & Reed-Tsochas, F. (2010). Spontaneous emergence of social influence in online systems. *Proceedings of the National Academy of Sciences USA*, *107*(43), 18,375–18,380.

Peterson, C. (2000). The future of optimism. *American Psychologist*, *55*(1), 44–55.

Peterson, C. & Chang, E.C. (2003). Optimism and flourishing. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 55–79). Washington, DC: American Psychological Association.

Phillips, G.M. (2003). Four leading economic confidence measures: Who's optimism matters? *The Journal of Business Forecasting Methods & Systems*, *21*(4), 22.

Powers, J.B. & McDougall, P.P. (2005). University start-up formation and technology licensing with firms that go public: A resource-based view of academic entrepreneurship. *Journal of Business Venturing*, *20*(3), 291–311.

Sadeghi, A. (2008). The births and deaths of business establishments in the United States. *Monthly Labor Review*, *131*(12), 3–18.

Sarasvathy, S.D. (2004). The questions we ask and the questions we care about: Reformulating some problems in entrepreneurship research. *Journal of Business Venturing*, *19*(5), 707–717.

Saridakis, G., Marlow, S., & Storey, D.J. (2014). Do different factors explain male and female self-employment rates? *Journal of Business Venturing*, *29*(3), 345–362.

Scheier, M.F. & Carver, C.S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, *4*(3), 219.

Scherer, C.W. & Cho, H. (2003). A social network contagion theory of risk perception. *Risk Analysis*, *23*(2), 261–267.

Schultz, C.J.P. & Achtenhagen, L. (2013). Discouraging stereotypes? US newspaper coverage of ethnic minority entrepreneurs before the economic downturn. *Journalism*, *14*(8), 1059–1075.

Schwienbacher, A. (2007). A theoretical analysis of optimal financing strategies for different types of capital-constrained entrepreneurs. *Journal of Business Venturing*, *22*(6), 753–781.

Segerstrom, S.C. & Sephton, S.E. (2010). Optimistic expectancies and cell-mediated immunity: The role of positive affect. *Psychological Science*, *21*(3), 448–455.

Segerstrom, S.C. & Solberg Nes, L. (2006). When goals conflict but people prosper: The case of dispositional optimism. *Journal of Research in Personality*, *40*(5), 675–693.

Seligman, M.E.P. (2011). *Learned optimism: How to change your mind and your life*. New York: Random House LLC.

Shama, A. (1993). Marketing strategies during recession: A comparison of small and large firms. *Journal of Small Business Management*, *31*(3), 62.

Shane, S. (1996). Explaining variation in rates of entrepreneurship in the United States: 1899-1988. *Journal of Management*, *22*(5), 747–781.

Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, *33*(2), 141–149.

Sharfman, M.P. & Dean, J.W. (1991). Conceptualizing and measuring the organizational environment: A multidimensional approach. *Journal of Management*, *17*(4), 681–700.

Shepherd, D.A. (2011). Multilevel entrepreneurship research: Opportunities for studying entrepreneurial decision making. *Journal of Management*, *37*(2), 412–420.

Shepherd, D.A., Williams, T.A., & Patzelt, H. (2015). Thinking about entrepreneurial decision making review and research agenda. *Journal of Management*, *41*(1), 11–46.

Simpson, S.S. (1986). The decomposition of antitrust: Testing a multi-level, longitudinal model of profit-squeeze. *American Sociological Review*, *51*(6), 859–875.

Sirmon, D.G., Hitt, M.A., & Ireland, R.D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, *32*(1), 273–292.

Staw, B.M., Sandelands, L.E., & Dutton, J.E. (1981). Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, *26*(4), 501–524.

Staw, B.M. & Szwajkowski, E. (1975). The scarcity-munificence component of organizational environments and the commission of illegal acts. *Administrative Science Quarterly*, *20*(3), 345–354.

Stewart, W.H., Watson, W.E., Carland, J.C., & Carland, J.W. (1999). A proclivity for entrepreneurship: A comparison of entrepreneurs, small business owners, and corporate managers. *Journal of Business Venturing*, *14*(2), 189–214.

Stone, M.M. & Brush, C.G. (1996). Planning in ambiguous contexts: The dilemma of meeting needs for commitment and demands for legitimacy. *Strategic Management Journal*, *17*(8), 633–652.

Storey, D.J. (1991). The birth of new firms—does unemployment matter? A review of the evidence. *Small Business Economics*, *3*(3), 167–178.

Strang, D. & Soule, S.A. (1998). Diffusion in organizations and social movements: From hybrid corn to poison pills. *Annual Review of Sociology*, *24*, 265–290.

Townsend, D.M., Busenitz, L.W., & Arthurs, J.D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of Business Venturing*, *25*(2), 192–202.

Trevelyan, R. (2008). Optimism, overconfidence and entrepreneurial activity. *Management Decision*, *46*(7), 986–1001.

Tversky, A. & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131.

Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, *25*(6), 541–555.

Van den Bulte, C. & Lilien, G.L. (2001). Medical innovation revisited: Social contagion versus marketing effort. *American Journal of Sociology*, *106*(5), 1409–1435.

Wall Street Journal. (2015). Small business owners less upbeat in March, says NFIB. Available at http://blogs.wsj.com/economics/2015/04/14/small-business-owners-less-upbeat-in-march-says-nfib/

Watson, C.B., Chemers, M.M., & Preiser, N. (2001). Collective efficacy: A multilevel analysis. *Personality and Social Psychology Bulletin*, *27*(8), 1057–1068.

Wennberg, K., Wiklund, J., DeTienne, D.R., & Cardon, M.S. (2010). Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. *Journal of Business Venturing*, *25*(4), 361–375.

Wiklund, J. & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, *24*(13), 1307–1314.

Wooldridge, J.M. (2006). *Introductory econometrics: A modern approach* (3rd ed.). Mason, OH: Thomson Higher Education.

Young, H.P. (2009). Innovation diffusion in heterogeneous populations: Contagion, social influence, and social learning. *The American Economic Review*, *99*(5), 1899–1924.

Zott, C. & Amit, R. (2007). Business model design and the performance of entrepreneurial firms. *Organization Science*, *18*(2), 181–199.

Aaron H. Anglin is a PhD candidate at Division of Management & Entrepreneurship, Price College of Business, University of Oklahoma, 307 W. Brooks, Rm. 206, Norman, OK 73019-0450, USA.

Aaron F. McKenny is an assistant professor in the Department of Management, UCF College of Business Administration, PO Box 161400, Orlando, FL 32816-1400, USA.

Jeremy C. Short is the Rath Chair of Strategic Management in the Division of Management & Entrepreneurship, Price College of Business, University of Oklahoma, 307 W. Brooks, Rm. 206, Norman, OK 73019-0450, USA.