

Laughing All the Way to the Bank: The Joint Roles of Shared Coping Humor and Entrepreneurial Team-Efficacy in New Venture Performance

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Abstract

Why are some new venture teams (NVTs), but not others, able to effectively cope with the demands of environmental uncertainty? Addressing this question from an intrateam dynamics perspective, we draw from the transactional theory of stress to delineate when NVTs' use of shared coping humor and level of entrepreneurial team-*efficacy* might conditionally influence the relationship of perceived environmental uncertainty with new venture performance. Results from a national (USA) sample of startups found shared coping humor to positively moderate the relationship of environmental uncertainty with firm performance. Moreover, this moderated relationship was enhanced when entrepreneurial team-*efficacy* was high.

Keywords

entrepreneurship, human agency, new venture teams, stress, uncertainty, upper-echelons

Introduction

Humor is the great thing, the saving thing. The minute it crops up, all irritations and resentments slip away and a sunny spirit takes their place.

–Mark Twain

New venture teams (NVTs) comprise the set of individuals that is chiefly responsible for the strategic decision-making and ongoing operations of a startup (Klotz et al., 2014). Accordingly, NVTs hold ultimate accountability for the development and performance of their startup firms. One of the most daunting tasks faced by NVTs is navigating environmental uncertainty (Alvarez

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& Barney, 2005), which is characterized by the degree of unpredictable change occurring in the external business environment (Milliken, 1987).¹ Indeed, as Loch et al. (2008: 28) express, “How to cope with unforeseen, unpredictable factors, also referred to as unknown unknowns, is critical for new ventures.” Somewhat paradoxically, environmental uncertainty can present both advantages and disadvantages for NVTs. On one hand, it provides a fertile context for entrepreneurial opportunities to emerge and be exploited (Kirzner, 1997). Yet, on the other hand, uncertainty can be a daunting stressor for NVTs (Bodensteiner et al., 1989; Rauch et al., 2018). It can reduce the sense of control that they have in achieving high performance for their firms because the probabilities of their strategic decisions and actions being successful are by definition unknowable (Alvarez & Barney, 2007). Therefore, effectively navigating environmental uncertainty so as to leverage its advantages while mitigating its disadvantages is likely a key factor differentiating the success of NVTs. To this end, the current research seeks to address the following question: Why are some NVTs, and not others, able to achieve high performance for their startups when managing environmental uncertainty?

The entrepreneurship literature has, to date, most extensively addressed this question through the examination of strategic processes engaged in by the leaders of startups. This includes research on opportunity recognition (Alvarez & Barney, 2007; Edelman & Yli-Renko, 2010), improvisation (Hmieleski et al., 2013; O’Toole et al., 2021), bricolage (Baker et al., 2003; Yu et al., 2020), effectuation (Sarasvathy, 2001; Peng et al., 2020; Welter & Kim, 2018), real options reasoning (McGrath, 1999; Zhang et al., 2021), and trial-and-error learning (Cope, 2005; Corbett, 2005; Politis, 2005). Yet, in order to engage in these processes, such persons need to be in the appropriate affective and cognitive states that enable them to act with agency. That is, they need to be emotionally and mentally positioned to approach uncertainty from a “fight” orientation rather than withdrawing from the uncertainty they face in a “flight” orientation. With few exemptions (e.g., Atuahene-Gima & Li, 2004; Breugst & Shepherd, 2017), comparatively less research has considered affective and cognitive factors enabling NVTs to cope with perceived uncertainty and achieve high levels of performance for their firms. Attempting to partly fill this gap, the current research draws from logic based in the transactional theory of stress (Lazarus & Folkman, 1984) to specify key intrateam affective (viz., shared coping humor) and cognitive (viz., entrepreneurial team-efficacy) features that we believe can assist NVTs to leverage the advantages of environmental uncertainty, while mitigating its more stressful aspects.

The primary contribution of the present study is to theoretically and empirically extend the conversation on uncertainty in the entrepreneurship literature. Whereas prior research has studied the strategic processes and behaviors employed (downstream) by entrepreneurs to adapt their firms to such conditions, we shed light on the foundational (upstream) roles that affective and cognitive states play in terms of how uncertainty affects NVTs. More specifically, in order to effectively adapt their firms in response to uncertainty, we contend that NVTs must be endowed with the emotional and cognitive states that enable them to take an approach-oriented perspective toward work tasks and express the behavioral control that is necessary to sustain focused collective effort—agentic factors that are needed for effective performance in such environments (Bandura, 1997; Christian et al., 2017; Lyubomirsky et al., 2005).

With the above in mind, our study makes additional contributions by introducing empirical work on the shared coping humor of NVTs and entrepreneurial team-efficacy. The role of affect and emotions has received much attention when studying individual entrepreneurs (Foo et al., 2009; Nikolaev et al., 2020; Welpe et al., 2012), yet little consideration has been given to understanding how shared emotional states influence NVTs as a whole (for exceptions see: Breugst & Shepherd, 2017; Cardon & Forster, 2017). Such a lack of understanding is unfortunate, as Klotz et al. (2014) have argued that the emotional states of NVTs and how they may subsequently affect collective decision-making are likely to have greater influence on outcomes than are the affective

dispositions or temporary emotional states of *individual* team members. In a similar vein, even though a great deal of empirical research has been conducted on the self-efficacy of individual entrepreneurs (e.g., Burnette et al., 2020; Miao et al., 2017), the efficacy beliefs of NVTs have received surprisingly little scholarly attention (Klotz et al., 2014). We reason this to be an important oversight in the entrepreneurship literature insofar as (a) the self-efficacy of individual team members is conceptually and empirically distinct from the construct of overall NVT efficacy (see, e.g., Bandura, 1986) and (b) NVTs as collective units are the primary source of strategic decision-making for high potential new ventures (Beckman, 2006).

Finally, our work tangentially contributes to the body of knowledge regarding the transactional theory of stress. Research based on this theory has generally shown emotional forms of coping to mitigate losses by refocusing the attention of individuals or teams in a more positive light (Lazarus, 1999), but has less commonly demonstrated how such coping can provide a basis for the productive achievement of gains. Our study demonstrates specific contingencies through which such coping is indeed related to performance gains.

Transactional Theory of Stress and New Venture Teams

The transactional theory of stress provides a framework for understanding how individuals and teams cope with environmental stressors (Lazarus & Folkman, 1984). According to the theory, when a potential stressor is encountered, it is first appraised as being: positive and creating an opportunity for gain (i.e., a challenge), negative and likely to cause loss (i.e., a threat), or irrelevant. When a stressor is interpreted as being relevant (e.g., plays an important factor in goal attainment as a challenge or threat), it is then determined if sufficient resources are available for effective coping and/or environmental adaptation. If adequate resources are available, then adaptive gain-seeking (approach-oriented) responses will be taken (Lazarus, 1991). Otherwise, more inward and rigid (avoidant-oriented) responses will ensue to minimize resource loss while waiting for uncertainty to reduce (Lazarus, 1999). Importantly, throughout his work on the transactional theory of stress, Lazarus focused his articulation of appraising as a verb in order to clarify that the appraisal process is always ongoing as continued transactions (or interactions) taking place between individuals/team and their environment (Dillard, 2019).

There are three main reasons why the transactional theory of stress provides a useful basis for developing our conceptual model. First, the theory is fundamentally based on the interface (or ongoing transactions) of individuals and teams with their external or observable environment (Lazarus, 2012; Wanzer et al., 2005). Second, it specifies that stressful environmental conditions can be appraised as having both advantages and disadvantages (referred to as challenges and/or threats; Lazarus & Folkman, 1984). Third, the theory addresses the roles that emotions and cognitions play in terms of how stressors are approached and ultimately impact the obtainment of relevant goals (Lazarus, 1999).

Drawing from the transactional theory of stress, we develop a model examining shared coping humor (an emotional team feature) and entrepreneurial team-efficacy (a cognitive team feature) as important boundary conditions on NVTs' ability to convert perceived environmental uncertainty into performance advantages for their startup firms. Applying this theoretical lens, environmental uncertainty is a relevant stressor for NVTs since the industry environment plays a direct role in their firm's ability to achieve high performance (Rauch et al., 2018). Shared coping humor contributes to the degree to which NVTs interpret environmental uncertainty positively as a challenge, rather than a threat to their firm's survival. In addition, entrepreneurial team-efficacy provides NVTs with the confidence that they have the necessary resources (e.g., ability) to "come out on top." Respectively, shared coping humor and entrepreneurial team-efficacy reflect emotional and cognitive states that are durable over time (e.g., Morgeson & Hofmann, 1999) and,

therefore, act as relatively stable intrateam resources enabling NVTs to manage uncertainty while working to achieve success for their firms. In the following sections we more fully delineate the relationships comprising our conceptual model (see Figure 1).

The Double-Edged Nature of Environmental Uncertainty for NVTs

Environmental uncertainty is defined as the degree of unexpected change occurring in the external business environment (e.g., Duncan, 1972; Miles & Snow, 1978; Miller, 1992). Notably, our definition corresponds with the Knightian view of uncertainty in that it reflects “unpredictability” of change in the external industry environment (Alvarez & Barney, 2007; Knight, 1921; York & Venkataraman, 2010). This form of uncertainty is often referred to as *unknown* and is differentiated from *risk*—which characterizes situations in which the outcome is unknown, but the probabilities of achieving a specific outcome are known (e.g., a known unknown, such as the odds of drawing an ace of spades from a full deck of cards). The Knightian view of uncertainty dovetails with the concept of dynamism (Hmieleski et al., 2015). Indeed, the close relationship between these two terms has long been noted in the literature. For example, when defining dynamism, Miller and Friesen (1983, p. 222) state “...dynamism (often called uncertainty) which is characterized by the rate of change and innovation in the industry as well as the unpredictability of competitors and customers.” Building from the Knightian perspective, entrepreneurship studies have operationalized environmental uncertainty as dynamism, both in terms of objective (e.g., Edelman & Yli-Renko, 2010) and subjective (e.g., Breugst & Shepherd, 2017) measures. As such, dynamism is a form of uncertainty (Miller & Friesen, 1983), but—unlike dynamism—not all uncertainty is unpredictable. We, therefore, adopt the Knightian perspective of uncertainty via a lens of dynamism since *unpredictable* uncertainty is likely to prove particularly stressful for NVTs (Alvarez & Barney, 2007).

In the current research, we consider environmental uncertainty from a subjective perspective. This approach is taken so as to be consistent with the transactional theory of stress (Lazarus & Folkman, 1984), which considers perceptions to be most relevant when appraising environmental stressors. Perceptions of environmental uncertainty exist when NVTs believe that they are unable to forecast future industry changes (Freel, 2005). From a transactional theory of stress perspective, perceptions of environmental uncertainty represent an exceptionally salient source of stress for NVTs. This is because effectively operating in uncertain industry environments can be highly

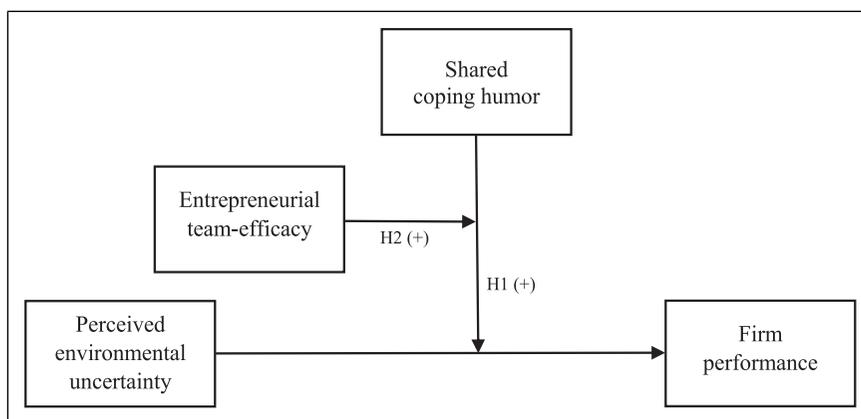


Figure 1. Conceptual model.

challenging for NVTs, with the unpredictability of the competitive landscape increasing the odds of making strategic errors that could significantly hinder, or even bankrupt, a startup. Moreover, the pressure experienced by NVTs in such situations is heightened by the fact that such teams are comprised of persons who have generally conceived and launched the startups and, thus, are ultimately responsible for any financial, social, and/or emotional losses incurred by themselves or other stakeholders (Ucbasaran et al., 2013). For these reasons, uncertainty is well-established as a primary source of stress for NVTs (Rauch et al., 2018).

Generalizing from the transactional theory of stress, when faced with environmental uncertainty, NVTs will process their situation and subsequently develop relational themes regarding how best to react to this stressor (i.e., approach vs. avoidant). To the extent that business conditions become overwhelming and NVTs appraise uncertainty as a prevailing threat, they may become more rigid in their decision processes, decrease short-term goal-setting, conserve resources, and wait for uncertainty to decrease (Lazarus & Folkman, 1984). There are, however, potential benefits to firms operating in uncertain industry environments, which NVTs may be able to leverage for gain. For example, there is greater opportunity to exploit information asymmetries existing between buyers and sellers in uncertain environments (Hayek, 1945; Kirzner, 1997). In addition, uncertainty can level the playing field between startups and incumbent firms (Markides & Geroski, 2005). Large and mature firms are not well-suited to adapt to unpredicted changes in their external business environment (Corbett & Hmieleski, 2007). In contrast, new ventures can adapt quickly and thus take advantage of uncertain conditions and the opportunities they hold (Barron et al., 1994; BarNir et al., 2003). Nevertheless, to realize such benefits, NVTs must not only find ways to mitigate any feelings of anxiety or distress associated with the environmental uncertainty stressor, but also be confident in their ability to exert control over their situation and effectively adapt their firms.

Hypothesis Development

Shared Coping Humor as a Means for NVTs to Cope with Environmental Uncertainty

Shared coping humor is defined here as the extent to which funny or comedic dialog is intentionally used among NVT members to cope with stressful situations and enhance positive affective reactions. This definition is in alignment with prior conceptualizations that have highlighted the purposeful (Cooper, 2005), positive affect enhancing (Dubinsky et al., 1995), and self-regulating (Mesmer-Magnus et al., 2012) aspects of humor. Moreover, our definition conceptualizes shared coping humor as a positive state, which implies its use as a generative intrateam mechanism as opposed to a maladaptive one involving aggression (e.g., use of sarcasm, ridicule, and teasing) or self-defeating language (e.g., use of self-disparagement to foster interpersonal relationships by amusing others). Thus, shared coping humor is reflective of the types of elements known to facilitate the adoption of approach-seeking self-regulation and the expression of human agency among NVT members.

NVT settings provide ample opportunity for members to observe each other's behavior. Thus, even though humor originates from individuals, it is capable of manifesting as a shared team property through members' mutual interactions (Kangasharju & Nikko, 2009), joint experiences (Romero & Pescosolido, 2008), and imitative social modeling (Brown et al., 1982). This is consistent with social information processing theory (Salancik & Pfeffer, 1978), which argues that a team's members will use cues in their social environment to determine the extent to which coping behavior (in the form of humor) is appropriate. These cues may originate from previously established norms and expectations, as well as in the current behavior of other team members. Moreover, attraction, selection, and attrition mechanisms may also help explain how humor

evolves into a collective or team state (Robert & Wilbanks, 2012). First, individuals who are *attracted* to the idea of developing a startup firm are likely to have some common interests (e.g., passion for a particular trade or innovation) and hold similar sets of values (e.g., a desire to create and deliver sustainable products; Ruef et al., 2003). This homogeneity is known to normalize team functioning and thus create mutual understanding of members' communicative acts—such as the use of humor (Smith et al., 2000; Wolosin, 1975). Next, individuals are often *selected* to join NVTs based on having values, social connections, knowledge, skills, and abilities that overlap with those of the founders (Felin & Knudsen, 2012). Lastly, *attrition* is likely to occur if NVT members do not feel that they are assimilating into the team and adapting to its norms (Ucbasaran et al., 2003). Over time, then, NVT members receive common social cues regarding the degree to which humor is an acceptable coping response to their shared working conditions. Thus, it is reasonable to conclude that coping humor, when in use, can spread throughout NVTs in a variety of ways, both subconsciously and consciously. For these reasons, we conceptualize the degree of shared coping humor used within NVTs to be a relatively stable team state (see Morgeson & Hofmann, 1999 for a detailed discussion).

From a transactional theory of stress perspective, NVTs' use of shared coping humor is likely to increase their odds of achieving high firm performance when operating within uncertain industry conditions. The use of shared coping humor should help NVTs develop positive relational themes regarding transactions between them and their environment (Horan et al., 2012). According to the transactional theory of stress, when making sense of an environmental stressor, emotions are a critical indicator of whether relational themes of approach versus avoidance are formed (Lazarus, 1999). Specifically, the use of shared coping humor encourages a positive tone within NVTs and thereby lessens any feelings of anxiety and fear that could otherwise result from the uncertainty stressor. We further reason that the application of shared coping humor by NVTs will help to generate a positive outlook, such that it is possible to turn their situation into an advantage. In support of this logic, prior research has found humor to induce positive affect within teams (Romero & Pescosolido, 2008) and promote an approach-orientation toward goal attainment (Martineau, 1972). In contrast, those NVTs that fail to engage in adaptive coping strategies, to include shared coping humor, should be more adversely affected by the uncertainty stressor (Lazarus & Folkman, 1984). To this end, such NVTs would likely appraise environmental uncertainty as an insurmountable threat to their firms' survival. In line with the transactional theory of stress, it follows that NVTs failing to engage in shared coping humor will likely adopt an avoidance-orientation that causes them to turn inward as they attempt to avoid losses rather than seek gains. In sum, NVTs that more frequently use humor as a form of shared coping are also more likely to develop positive relational interpretations of their environment; thus, they will appraise the uncertainty stressor as a challenge or obstacle that can be overcome as opposed to those NVTs lower in shared coping humor, who will be less likely to mitigate the experienced strains associated with the uncertainty stressor.

Additionally, shared coping humor should act as an enabler of generative processes that help NVTs to adapt their firms in ways that productively leverage environmental uncertainty. Shared coping humor not only provides relational information for interpreting perceived stressors as challenges rather than threats, the positive tone it generates among team members also builds generative resources that NVTs can marshal toward the achievements of gains for their firms (Cheng & Wang, 2015). For example, it has been shown that positive emotions widen thought and action repertoires and facilitate behavioral flexibility (Fredrickson & Losada, 2005). Moreover, this sense of openness to possibilities for gain encourages adaptive routines that will enable NVTs to effectively manage uncertain conditions (Barsade & Gibson, 2012). To this end, NVTs engaging in the use of shared coping humor are more likely to realize the potential benefits of

industry uncertainties and achieve higher performance for their firms than those that do not engage in such coping behavior.

Finally, when NVTs operate in a business context that they perceive to be low in uncertainty, they have interpreted an important aspect of their environment to be non-stressing. Thus, the collective need to engage in adaptive coping, such as shared humor, is less relevant for NVTs as they pursue the achievement of high firm performance (Lin et al., 2018). In other words, since predictable business environments (i.e., low environmental uncertainty) do not require significant adaptation and are less likely to be appraised by NVTs as stress inducing, coping processes (such as shared coping humor) are unlikely to be activated. Thus, based on extant research findings and logic derived from the transactional theory of stress, we offer our first hypothesis:

Hypothesis 1: The relationship between environmental uncertainty and new venture firm performance will be more positive for startups led by NVTs that are high, as opposed to low, in their use of shared coping humor.

The Enhancing Role of Entrepreneurial Team-Efficacy

Team-efficacy is the shared confidence members have in the team's ability to successfully perform specific roles and tasks that are required to achieve its goals (Rapp et al., 2014). Likewise, we define *entrepreneurial team-efficacy* as the degree of confidence that an NVT has in its ability to effectively perform the roles and tasks of entrepreneurship. Importantly, team-efficacy is more than simply the sum of beliefs that individual members have about their own ability to perform well on tasks. For example, members could individually be high in their efficacy to perform a task without believing the NVT can collectively perform the same task very well. Moreover, individual members may believe they do not have the skills to perform specific tasks, but may nonetheless be confident in the NVT's collective ability to perform those same tasks. Thus, our conceptualization of entrepreneurial team-efficacy is focused on the confidence of the NVT, rather than of its individual members as the focal referent (see, e.g., Wallace et al., 2016).

Team-efficacy is a cognitive state that develops through mastery experience, vicarious learning, and verbal persuasion (Bandura, 1997). These mechanisms build team-efficacy beliefs primarily via collective team experiences. The degree to which team members observe each other contributing to their success, learning and improving their skills, and supporting each other in their work, the more confidence the team builds in its ability to collectively function at high levels (Tasa et al., 2007). Such confidence in turn serves as information to teams when evaluating their ability to take on new challenges and overcome threats—influencing goals-setting, effort, and persistence (Gully et al., 2002). To this end, team-efficacy acts as a generative team property enabling upward spirals of gains that beget further gains (Stajkovic et al., 2009). Considering the critical need for collaboration and interdependence of work among NVT members (e.g., Ensley et al., 2006), it is likely that NVTs' sense (or level) of entrepreneurial team-efficacy will quickly form and stabilize (see Morgeson & Hofmann, 1999).

Domain-specific confidence plays an important role within the transactional theory of stress (Lazarus & Folkman, 1984). Indeed, it is positioned as a primary source of information when teams are in the process of determining how best to respond to environmental stressors (Dillard, 2019). Within this framework, NVTs with relatively high levels of entrepreneurial team-efficacy possess the motivation to respond adaptively when operating in uncertain environments—maintaining or even increasing the difficulty of their goals, and focusing their energy and attention on achieving or exceeding performance expectations (Bandura, 1986). In contrast, NVTs that are low in entrepreneurial team-efficacy are more likely to act rigidly when faced with uncertainty—adjusting their goals downward, and lowering their effort and performance

expectations (Gully et al., 2002). Studies within the entrepreneurship literature have indeed supported the general notion that when faced with high environmental uncertainty, entrepreneurs confident in their domain-specific abilities are prone to engaging in adaptive processes. For example, confidence in entrepreneurial abilities has been found by Engel et al. (2014) to relate to engagement in the use of effectuation under uncertainty. Similarly, Schmitt et al. (2018) found such confidence to be associated with greater exploration and opportunity identification when perceived environmental uncertainty is high.

There is strong reason to believe that entrepreneurial team-efficacy will enhance the positive role that shared humor plays on NVTs' ability to cope with environmental uncertainty and thus achieve high firm performance. Specifically, the use of shared humor by NVTs might have limited value as an effective coping mechanism if such teams do not possess confidence in their ability to perform at a high level and, by extension, adaptively exert control over their current situation. While shared coping humor can help NVTs to reframe the uncertainty stressor in a positive light and create an openness to engage in adaptive processes, without sufficient levels of entrepreneurial team-efficacy, NVTs may fail to respond with the degree of sustained effort and persistence that is necessary to translate environmental uncertainty into gains for their firms. Indeed, since uncertain business contexts commonly lack indicators of performance feedback (St. John et al., 2003), NVTs must possess a shared confidence in their entrepreneurial abilities so as to sustain efforts made toward adapting their firms. In summary, we predict that shared coping humor, as an emotional self-regulating response to the perceived uncertainty stressor, will aid to mitigate or buffer the stressor's potentially damaging effects, whereas entrepreneurial team-efficacy provides NVTs with the confidence and belief that they hold the required capabilities to effectively navigate the unknown unknowns and thus achieve high performance for their firms. In this way, we reason that shared coping humor and entrepreneurial team-efficacy are complementary states that can jointly operate to help NVTs positively reframe the uncertainty stressor and—in turn—adaptively execute in such a way as to maximize the gains that can be achieved when operating new ventures in uncertain and stressful conditions. In other words, the positive emotional reframing that takes place through the usage of shared coping humor may be *necessary* in order to view uncertainty as a challenge rather than as a threat, but not *sufficient* for NVTs to persist in their efforts to adapt their firms in accordance to environmental changes without possessing high levels of entrepreneurial team-efficacy. Therefore, we propose the following hypothesis:

Hypothesis 2: The moderating effect of NVTs' shared coping humor on the relationship of environmental uncertainty with the firm performance of their new ventures will be more positive for teams that are high, as opposed to low, in entrepreneurial team-efficacy.

Methods

Data Collection Procedures

A national (USA) stratified sample of 2000 new ventures was drawn from the *Dun and Bradstreet's Market Identifiers* database. The sample was stratified based on firm age (i.e., the firms had to be in business for three years or less) and size (i.e., the firms had to employ four or more persons). The database included the names and mailing addresses of the firms and members of their top management. Following prior research (e.g., Simsek et al., 2005), we used chief executive officers (CEOs) as the primary respondents for our research since they tend to possess the most knowledge about their firms, the current state of the industry environment, and the dynamics within their NVTs. According to Kozlowski and Klein (2000), the use of a single expert to serve as

an informant is valid when the characteristics of interest are observable or when the informant has access to relevant information.

A research packet including a letter requesting participation, copy of the study questionnaire, and pre-paid return envelope was sent to each CEO in our sample of firms during the year of 2008. We received a total of 183 completed questionnaires from CEOs (i.e., primary respondents) in our sample. Out of this set of completed questionnaires, responses from 4 firms were excluded (2 due to incomplete data and 2 because of respondents indicating they were the only executive within their firm, having no other NVT members). In addition, 484 research packets were returned due to non-deliverable addresses. The number of non-deliverable mailings is not unusual considering that, according to *Dun and Bradstreet*, each year nearly 20% of the companies in their database switch addresses. Therefore, the final response rate for our sampled firms was 11.8%. This response rate is similar to other studies that have sampled the top management of firms (e.g., Carter et al., 2003; Ling et al., 2008).

Although asking CEOs to rate attributes relating to their firms is a relatively common research design (e.g., Daft et al., 1988; Hitt et al., 1982), we are cognizant of the fact that using a single key informant may introduce measurement concerns relating to reliability and rater accuracy. We therefore applied validating procedures used by Datta et al. (2005). Once we received a completed questionnaire from a “primary” informant (i.e., the CEO), an identical set of survey packets was sent to the responding CEO for distribution to other members of their NVT. We received completed questionnaires from 91 secondary informants, representing 35 different firms (i.e., 2 secondary informants from 18 firms, 3 secondary informants from 13 firms, and 4 secondary informants from 4 firms). Data from the secondary informants (i.e., NVT members) were used along with data from the primary informants (i.e., CEOs) to generate interrater agreement (IRA) statistics. The observed IRA results suggest that responses among both the primary informants (i.e., the CEOs) and the secondary informants (i.e., NVT members) were highly consistent.² Moreover, firms with secondary informants did not significantly differ from those having only a primary informant with respect to firm size or firm performance. Taken together, these findings suggest that no systematic bias exists regarding the primary informants’ responses (as compared to those of the available secondary informants). Therefore, we concluded that the data supplied by the primary respondents were suitable for testing our hypotheses.³

Sample

The primary respondents (i.e., CEOs) were mostly founders of their firm (67%), averaged 48 years of age, and were largely male (76%). On average, a firm had been in business for 2 years ($mean = 2.03$, $SD = 0.63$, $median = 2.00$) and had about 50 employees ($mean = 48.05$, $SD = 196.49$, $median = 15.00$).⁴ The participating firms in our sample were based in 42 states and represented 97 industries (i.e., at the 4-digit designation of the NAICS). We investigated the representativeness of our firms using secondary data from *Dun and Bradstreet*. We found that the firms in our sample were not significantly different from the overall population in which they were drawn from in terms of age, number of employees, annual revenue, and sex of the CEOs. Collectively, these findings help to allay potential concerns about sample representativeness.

Measures

Each survey measure was rated using a five-point scale in which response options ranged from *very inaccurate* (1) to *very accurate* (5). The shared coping humor and entrepreneurial team-efficacy items were framed with the NVT as the referent (i.e., referent-shift composition model)

rather than the behaviors or attitudes of individuals. Survey items for the focal measures described below are provided in [Appendix A](#).

Firm performance. The performance of firms was measured as a ratio of sales-per-employee ([Hmieleski & Sheppard, 2019](#)), which is a common indicator of how well a firm is managed and is arguably the closest available metric to profit that can be generated for privately held firms when using secondary data ([Soriano & Castrogiovanni, 2012](#)). Companies with higher sales-per-employee ratios tend to operate with greater efficiency and generate more value than firms with lower scores on this metric ([Walter et al., 2006](#)). This is a particularly useful performance indicator for new ventures because it: (a) relates to their ability to maintain positive cash flow, (b) increases their likelihood of remaining self-sustaining, and (c) reduces their need to take on new or additional debt ([Hupalo, 2004](#)). To compute sales-per-employee, we acquired sales and employment data from *Dun and Bradstreet* at a one-year lag from the time in which the study questionnaire was administered. The focal outcome variable was created by dividing the sales data by the employment data, with higher scores indicating greater firm performance.

Environmental uncertainty ($\alpha = .77$). Following [Breugst and Shepherd \(2017\)](#), we operationalized perceived environmental uncertainty using five items from [Miller and Friesen \(1982\)](#) that measure the unpredicted rate of change in the industry environment. We used a perceptual, rather than objective, measure because the transactional theory of stress ([Lazarus & Folkman, 1984](#)) is focused on coping reactions to identified environmental factors as opposed to those that might exist beyond the recognition of team members. Given long-held methodological concerns with the use of semantic differential scales (e.g., [Bynner & Coxhead, 1979](#); [Heise, 1969](#)) and to maintain consistency with the other measures used in our survey, the items were converted for use with a Likert-type response scale. Responses were averaged such that higher scores indicate a greater level of perceived environmental uncertainty.

Shared coping humor ($\alpha = .84$). This variable was measured by modifying four items from [Avolio et al. \(1999\)](#) such that the referent was shifted from the individual to the team. A fifth item from the original measure regarding the use of “wit to make friends of the opposition” was not included in our survey. We judged the use of wit as being too conceptually distinct from the use of humor. Responses were averaged such that higher scores indicate a greater use of shared coping humor. Within the context of the transaction theory of stress, the measure represents a form of coping that is intended to elicit a positive affective state within the team, thus, widening the range of thought and action repertoires through which the team may employ toward managing perceived environmental stressors.

Entrepreneurial team-efficacy ($\alpha = .89$). This variable was measured by adapting six items from an inventory of entrepreneurial self-efficacy developed by [De Noble et al. \(1999\)](#). The measure developed by [De Noble et al. \(1999\)](#) is based on earlier research by [Chandler and Jensen \(1992\)](#), who identified six different abilities that are important for entrepreneurs to possess (i.e., developing new product and market opportunities, building an innovative environment, initiating investor relationships, defining core purpose, dealing with unexpected challenges, and developing critical human resources). The items adapted for use in our study were most representative of “having confidence” in each of the six abilities, thus maintaining balanced representation (i.e., one item per ability) of the [De Noble et al. \(1999\)](#) measure. Once again, we shifted the referent from the individual to the team. Responses were averaged such that higher scores indicate greater level of entrepreneurial team-efficacy. From a transaction theory of stress perspective, domain-specific confidence in the ability of the team is a leading factor determining the team’s beliefs regarding

whether they are equipped with the resources necessary to effectively cope with perceived environmental stressors (Dillard, 20019).

Control variables. Data relating to six covariates were used as statistical controls. *Team interdependence* is a determining feature of team processes, structure, and effectiveness (Mathieu et al., 2008). For this reason, Kozlowski & Bell (2003: 363) have indicated that “given its demonstrated importance, new research that fails to consider the effects of task interdependence for the team phenomenon in question has little relevance to building knowledge in the work groups and teams literature.” We therefore assessed team interdependence using six items from Van der Vegt & Janssen (2003). Participant responses to the six items were averaged ($\alpha = .75$), such that greater scores reflect a higher degree of team interdependence. *NVT size* was included as a control due to larger teams generally having greater access to resources (e.g., advisors, funders, and volunteers) that can increase resource slack and make it easier for NVTs to manage uncertainty and achieve high performance (Kozlowski & Bell, 2003). Firm age, firm size (i.e., employment and revenue totals from the year of the survey administration), and prior firm performance were also employed as statistical controls. These variables were included so as to account for their potential confounding effects with our lagged measure of firm performance (Keats & Hitt, 1988). Firms that are older tend to have acquired a greater amount of resources and larger firms often benefit from economies of scale. *Firm age* was measured as the age of the firm (number of years since its founding date) at the time in which the study survey was administered. Due to the empirical overlap (correlation) between firm employment and revenue totals for the year in which the survey was administered ($r = .97$), these variables were standardized and then summed to create a variable that we called *firm size*. We controlled for prior firm performance by calculating the amount of sales-per-employee for the year prior to administration of the study survey. Data for the firm-level controls were obtained from *Dun and Bradstreet*. Finally, three *industry* dummy variables (D1 = retail, wholesale, and service industries; D2 = manufacturing industries; and D3 = all other industries) were coded following the work of Chrisman et al. (2009) and Carr and Hmieleski (2015) and were included as controls to account for potential industry differences in firm performance.

Measurement Model

We assessed our measurement model using a confirmatory factor analysis (CFA) that considered each of the three focal variables as distinct constructs (i.e., shared coping humor, entrepreneurial team-efficacy, and perceived environmental uncertainty). The measurement model demonstrated generally good fit ($\chi^2 = 118.504$, $df = 87$, RMSEA = .045 with a 90% confidence interval of .021–.064, CFI = .970, and SRMR = .047). As evidence of convergent validity (also see Appendix A): the average standardized factor loading is .71 (range = .41 to .82), the average composite reliability (CR) is .83 (range = .76 to .89), and the mean average variance extracted (AVE) is .51 (range = .40 to .57). In support of divergent validity: the average maximum shared variance (MSV) is .13 (range = .04 to .17), and in each case the AVE > MSV. Overall, these results provide a wide range of support for the convergent and discriminant validity of our focal variables (Hair et al., 2010; Fornell & Larcker, 1981).

Data Analyses

Moderated regression analysis was used to examine the study hypotheses.⁵ Following our key informant approach, primary informant data (CEO ratings) were exclusively used for all hypothesis testing and the available secondary informant data (NVT member ratings) were used only

in post hoc analyses (in combination with primary informant data) as robustness checks. The variables were mean-centered prior to creating the interaction terms (Cohen et al., 2003). The interaction relating to each hypothesis was plotted at one standard deviation above and below the mean for the respective focal and moderating variable(s), and the significance of the simple slopes were tested at these points (Dawson & Richter, 2006). Finally, regions of significance for the interactions were considered using the Johnson-Neyman output from PROCESS (Hayes, 2018; Pollack et al., 2012).

Results

Table 1 includes the means, standard deviations, and bivariate correlations for all study variables. In addition to a visual inspection of the correlation matrix, we employed multiple tests to examine the possibility of multicollinearity. No variance inflation score for any regression model was greater than 2.12 and each conditional index score was less than 4.40. Both of these values are well below standard thresholds scores (Neter et al., 1989), indicating that multicollinearity is unlikely to meaningfully influence the results.

Hypothesis 1 predicted that the relationship between environmental uncertainty and firm performance will be more positive when NVTs' use of shared coping humor is high, as opposed to low. As shown in Model 2 of Table 2, the cross-product of shared coping humor with environmental uncertainty on firm performance is significant ($B = 182,798.76, p < .01$). The graph of this interaction (see Figure 2(a)) shows that the simple slope of environmental uncertainty on firm performance is positive and significant ($t = 2.43, p < .05$) when shared coping humor is high (+1 *SD*) and non-significant ($t = -1.62, p > .05$) when it is low (-1 *SD*). Moreover, analyses based on the Johnson-Neyman technique (Hayes, 2018) using a 95% confidence interval (see Figure 2(b)) shows that the relationship between perceived environmental uncertainty and firm performance is positive and significant at any value of shared coping humor of 0.50 units above the mean (i.e., 0.64 *SD* above the mean) and is negative and significant at or below -1.09 units below the mean (i.e., 1.40 *SD* below the mean). Overall, these results support H1.

Hypothesis 2 predicted that the moderating effect of NVTs' shared coping humor on the relationship of environmental uncertainty with firm performance will be more positive for teams that are high, as opposed to low, in entrepreneurial team-efficacy. As shown in Model 3 of Table 2, the interaction of environmental uncertainty x shared coping humor x entrepreneurial team-efficacy on firm performance is significant ($B = 185,222.79, p < .05$). The graph of this interaction (see Figure 3(a)) shows that the simple slope of environmental uncertainty on firm performance is: (1) positive and significant ($t = 4.07, p < .01$) when shared coping humor is high (+1 *SD*) and entrepreneurial team-efficacy is high (+1 *SD*), (2) non-significant ($t = -1.41, p > .10$) when shared coping humor is high (+1 *SD*) and entrepreneurial team-efficacy is low (-1 *SD*), (3) non-significant ($t = -0.68, p > .10$) when shared coping humor is low (-1 *SD*) and entrepreneurial team-efficacy is high (+1 *SD*), and (4) negative and significant ($t = -2.37, p < .05$) when shared coping humor is low (-1 *SD*) and entrepreneurial team-efficacy is low (-1 *SD*). Further, the Johnson-Neyman technique (Hayes, 2018) using a 95% confidence interval (see Figure 3(b)) reveals that the interaction of perceived environmental uncertainty x shared coping humor on firm performance is non-significant when entrepreneurial team-efficacy is more than -0.09 units below the mean (i.e., -0.12 *SD* below the mean) and is positive and significant when entrepreneurial team-efficacy is -0.09 or greater. These results suggest that shared coping humor has a positive moderating effect on the relationship between perceived environmental uncertainty and firm performance only when entrepreneurial team-efficacy is at approximately average levels or greater. In sum, the results provide support for H2.

Table 1. Descriptive Statistics and Variable Intercorrelations.

Variable	M	SD	r															
			1	2	3	4	5	6	7	8	9	10	11					
1. Firm age	2.03	0.63																
2. Firm size	0.00	1.98	.13															
3. Team size	4.80	2.76	-.14	.18*														
4. Team interdependence	4.26	0.55	.04	-.05	-.01													
5. Industry dummy 1	0.48	0.50	-.03	-.08	.02	-.09												
6. Industry dummy 2	0.30	0.46	-.09	.13	-.04	.09	-.62**											
7. Industry dummy 3	0.22	0.42	.13	-.04	.01	.01	-.52**	-.35**										
8. Perceived env. uncertainty	2.44	0.78	-.02	.02	.06	-.27**	.08	-.03	-.06									
9. Shared coping humor	3.55	0.78	.02	-.00	-.03	.08	-.09	.09	.01	.02								
10. Entrepreneurial team-efficacy	3.79	0.75	-.01	.01	.02	.29**	.06	-.07	.00	-.17*	.33**							
11. Firm performance (T1)	336,620.78	1,056,903.19	.06	.68**	.03	-.01	-.05	.03	.03	-.02	-.03	-.00						
12. Firm performance (T2)	249,086.61	577,068.43	-.02	.26**	.02	-.07	.08	-.04	-.05	.06	.03	-.07	.44**					

N = 1179. Industry dummy 1 = retail, wholesale, and service; Industry dummy 2 = manufacturing; Industry dummy 3 = other. *p < .05; **p < .01.

Table 2. Hierarchical Regression Models of Firm Performance.

Variable	Firm Performance (Time 2)		
	Model 1	Model 2	Model 3
	B (SE)	B (SE)	B (SE)
<i>Controls</i>			
Industry dummy 1 (retail, wholesale, and service)	124554.01 (100751.61)	144969.58 (99481.16)	125413.76 (95673.03)
Industry dummy 2 (manufacturing)	31879.39 (112274.04)	38017.81 (110434.53)	8433.40 (106886.94)
Firm age	-27094.92 (65117.15)	-21909.43 (63976.21)	-21921.27 (61570.93)
Firm size	-23807.43 (28405.85)	-22359.47 (27906.45)	-20016.14 (26721.75)
Firm performance (Time 1)	.28** (.05)	.27** (.05)	.28** (.05)
Team size	3556.87 (14907.21)	-83.93 (14714.51)	-7287.25 (14265.60)
Team interdependence	-61043.32 (72417.66)	-67418.40 (74229.51)	-68586.14 (73962.64)
<i>Main effects</i>			
Perceived env. uncertainty (PEU)		22264.51 (51094.43)	-22409.91 (53864.38)
Shared coping humor (SCH)		30760.59 (49655.31)	66653.09 (50882.53)
Ent. team-efficacy (ETE)			-20017.72 (56397.05)
<i>Two-way interactions</i>			
PEU x SCH		182798.76** (63654.37)	154614.84* (71953.64)
PEU x ETE			205376.58* (78853.09)
SCH x ETE			191323.04** (64165.03)
<i>Three-way interaction</i>			
PEU x SCH x ETE		182,798.76	185222.79* (86613.22)
F-ratio	6.70**	5.81**	6.02**
R ²	.22	.26	.34
Adjusted R ²	.18	.21	.28

N = 179. *p < .05; **p < .01.

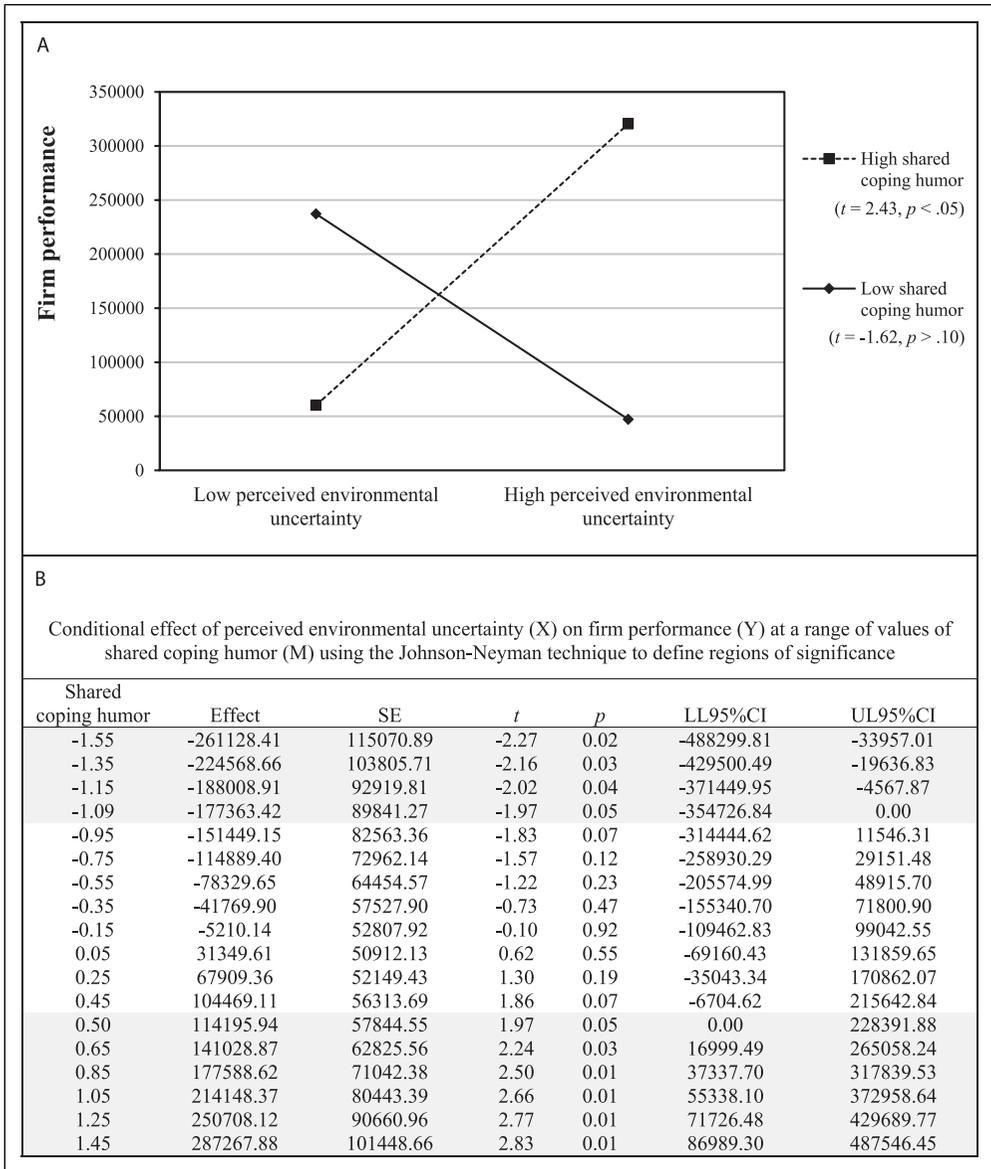


Figure 2. (a) Interaction graph of perceived environmental uncertainty with shared coping humor on firm performance and (b) Johnson-Neyman regions of significance.

Post Hoc Analysis: Sensitivity Tests of Team Data

Even though key informant sampling is a routine practice in the management literature (e.g., Carpenter et al., 2004; Datta et al., 2005), we acknowledge the concern that the obtained key informant data may not adequately represent the opinions of the entire NVT. We therefore conducted a number of sensitivity analyses to empirically address this concern. Given that the key informant (i.e., CEO) and secondary informant (i.e., other NVT members) ratings are highly similar or interchangeable (as demonstrated by interrater agreement in Footnote 2), we aggregated key informant and secondary informant ratings on the focal variables and used these aggregated

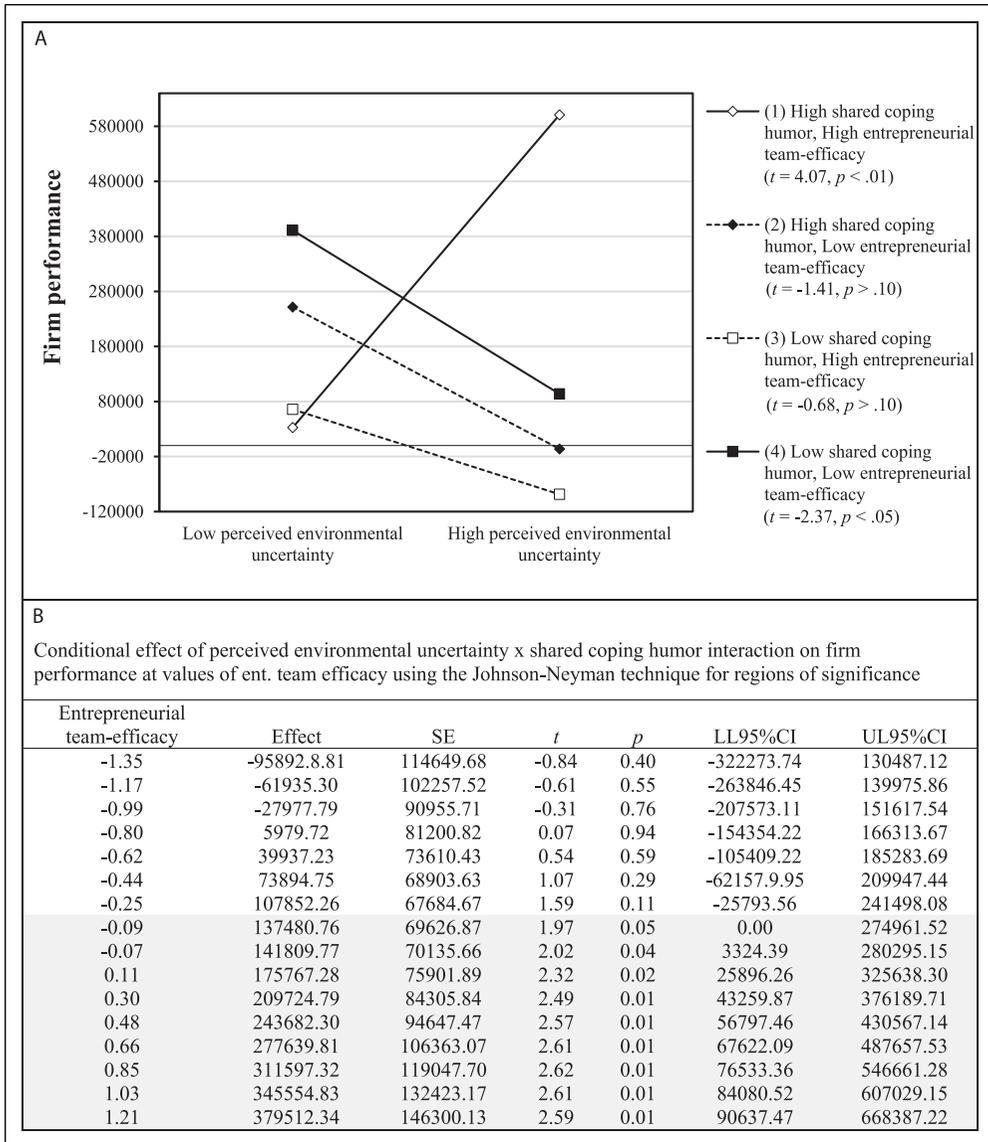


Figure 3. (a) Interaction graph of perceived environmental uncertainty with shared coping humor and entrepreneurial team-efficacy on firm performance and (b) Johnson-Neyman regions of significance.

data to retest our study hypotheses. The regression equations were essentially identical to those presented in Table 2. The results using the aggregated data demonstrate a similar pattern in terms of direction and significance, thus supporting *H1* ($p = 0.005$) and *H2* ($p = 0.035$).

In a second set of sensitivity analyses, we adopted a missing data technique (developed specifically for teams) that can be used for probing whether the team variables derived from less-than-complete team data have biased our findings. Following the procedures outlined in Hirschfeld et al. (2013), we replaced team member missingness by imputing data for non-responding team members and quantitatively adjusting their individual-level responses to reflect survey noncompliance (see p. 460 for a detailed description of the approach). Notably, Hirschfeld et al.’s (2013) imputation

procedure can be used when there are no data available on the missing team members (as in the present case) and essentially “manages” the potential systematic bias that can occur from the “worst form of missingness” (i.e., data missing not at random; Hirschfeld et al., 2013: 460).

As recommended, we first computed team-level mean scores (using the data provided by primary and secondary respondents) for perceived environmental uncertainty, shared coping humor, and entrepreneurial team-efficacy. Next, these mean values were quantitatively adjusted at two levels of systematic missingness varying from a moderate amount ($d_{miss} = .30$) to an extreme amount ($d_{miss} = .60$). Then, in the individual-level (disaggregated) dataset, these adjusted mean values were imputed for any NVT members who did not complete the survey. This series of steps were performed on a team-by-team basis. Given the conceptual nature of our focal constructs, we needed to quantitatively lower missing team members’ scores at -0.30 (moderately adjusted) and -0.60 (extremely adjusted) for optimistically oriented constructs (i.e., shared coping humor and entrepreneurial team-efficacy) and quantitatively increase missing team members’ ratings at $+0.30$ (moderately adjusted) and $+0.60$ (extremely adjusted) for pessimistically oriented constructs (i.e., perceived environmental uncertainty).

Specifically, the approach to retesting our hypotheses was as follows. We first averaged the individual survey responses from the key informants, the secondary informants (when present), and the moderately adjusted ($d_{miss} = .30$) imputed data for non-responding NVT members. We then used this aggregated and adjusted but complete dataset for the ensuing analyses. Results of this sensitively analysis were consistent with those reported in our main results—i.e., the cross-product terms and nature of the interactions continued to support *H1* ($p = 0.024$) and *H3* ($p = 0.003$). Finally, we reran our regression analyses using the highly adjusted ($d_{miss} = .60$) and complete dataset in place of the moderately adjusted dataset, and found the results to once again support *H1* ($p = 0.026$) and *H2* ($p = 0.004$). Overall, the outcomes of the post hoc analyses suggest our findings based solely on key informant data are relatively robust given the sensitivity analyses yielded a pattern of similar results. Hence, we can conclude with greater confidence that the potential for systematic bias due to team member missingness is not undermining the accuracy or integrity of our findings.

Discussion

Consistent with our predictions, a positive relationship between perceived environmental uncertainty and firm performance was observed for NVTs that were high, but not low, in shared coping humor. Moreover, the positive effect of shared coping humor on the relationship between environmental uncertainty and firm performance was further enhanced when NVTs were high, as opposed to low, in entrepreneurial team-efficacy. Thus, NVTs operating in uncertain and stressful business environments were particularly effective at achieving high levels of firm performance when high in *both* shared coping humor and entrepreneurial team-efficacy. We now discuss the theoretical and practical implications of these findings, review constraints of generality for our study, describe limitations and directions for future research, and end with some concluding thoughts.

Shared Coping Humor and Entrepreneurial Team-Efficacy as Key Resources for NVTs

Environmental uncertainty has long been a foundational construct in the entrepreneurship literature (Alvarez & Barney, 2005) and one that confers both advantages and disadvantages to new ventures (Rauch et al., 2018). In addition, it is well-established that a majority of startups are founded and led by NVTs (Klotz et al., 2014). Yet, there has been a relative dearth of research considering why some NVTs, and not others, are able to achieve high performance for startups operating in business contexts characterized by unpredictable uncertainty. Moreover, the research that has been conducted

on how entrepreneurs manage uncertainty has focused on adaptive processes (e.g., opportunity recognition, improvisation, bricolage, effectuation, real options reasoning, and trial-and-error learning), with substantially less consideration given to the emotional and cognitive states that materialize in team contexts. This is a potentially important oversight in the entrepreneurship literature insofar as agentic emotional (e.g., shared coping humor) and cognitive (e.g., entrepreneurial team-efficacy) states are core theoretical components for all teams-based research in applied psychology and organizational behavior (Marks et al., 2001). Nevertheless, entrepreneurship is a unique context, making it somewhat unclear as to what extent available theory from other literature streams can be merged with entrepreneurship theory and its empirical findings. It is for this reason that scholars have encouraged entrepreneurship research to import relevant theory and existing constructs and empirically test their relevance when examined in the situated context of new venture creation and development (Rauch et al., 2018).

With the above in mind, we drew from the transactional theory of stress (Lazarus & Folkman, 1984) to develop and test a set of hypotheses that sought to explain why NVTs, despite operating in uncertain business contexts ripe with challenges, are capable of achieving performance gains for their firms. In so doing, this theoretical perspective considers the perception of environmental uncertainty as a stressor and a *potentially* salient threat to the survival of startups. As such, the transactional theory of stress further posits logic suggesting that NVTs will engage in an appraisal process as they begin to cope with the uncertainty stressor and decide how best to respond to it. We thus adopt this theoretical perspective in our own work while also incorporating literature on work teams (Marks et al., 2001) to inform our theorizing about how NVTs are not only able to cope with the uncertainty stressor but also realize performance gains while doing so. Specifically, our study findings indicate that shared coping humor and entrepreneurial team-efficacy respectively represent emotional and cognitive resources that enable NVTs to effectively navigate uncertain business environments. These findings contribute to the entrepreneurship literature by shedding light on the moderating contingencies through which perceived environmental uncertainty affects new ventures' performance—thus, adding to the conversation in the entrepreneurship literature on environmental uncertainty and how best to leverage its potential benefits while minimizing its potentially hindering disadvantages.

Our work makes distinct contributions by focusing on NVTs as opposed to individual entrepreneurs, which has been the primary focus for entrepreneurship-based research (Klotz et al., 2014). For example, the role of affect and emotions has received scholarly attention at the individual-level (Foo et al., 2009; Nikolaev et al., 2020; Welpe et al., 2012), yet little consideration has been given to NVTs and how shared emotional states influence the functioning and effectiveness of the NVTs (for exceptions see: Breugst & Shepherd, 2017; Cardon & Forster, 2017). This is conceptually and practically important because how NVTs utilize emotional expressions is argued to have greater influence on entrepreneurial outcomes than are similar expressions of individual team members (Klotz et al., 2014). Thus, as we have demonstrated, there seems to be clear potential for shared coping humor to inform and expand what is known regarding NVT functioning. Importantly, humor is considered to be a relational construct. Even though it can occur in isolation (e.g., laughing at one's self), it tends to most often take place between individuals. In fact, laughter is thirty times more likely to occur within groups or teams than by individual persons in isolation (Johnson, 2007). The use of shared humor by NVTs is seemingly a particularly effective coping response to the unknown unknowns of uncertain business environments—that is, NVTs in our sample that were just slightly above the mean (i.e., 0.64 *SD* above the mean) on shared coping humor accrued meaningful performance benefits. Given the fact that the initial development of most all new ventures is an incredibly stressful event (Rauch et al., 2018), we hope future studies will consider the role of coping humor in their conceptual models.

In addition, even though much empirical research has been conducted regarding the entrepreneurial self-efficacy of individuals (e.g., Burnette et al., 2020; Hmieleski & Baron, 2008; Miao et al., 2017), the efficacy construct has received surprisingly little attention at the NVT level of analysis.⁶ This is an important point since the self-efficacy of individual team members does not necessarily reflect the collective efficacy of teams (Bandura, 1986) and because the collective action of NVTs is critical to the overall performance of startups (Beckman, 2006). To be sure, the collective confidence in a team's abilities is widely acknowledged in several theoretical frameworks—to include the transactional theory of stress (Lazarus & Folkman, 1984) and social cognitive theory (Bandura, 1997) among others—and meta-analytic evidence in other disciplines has repeatedly demonstrated its positive effects on various team outcomes (Gully et al., 2002). In the present instance, entrepreneurial team-efficacy further amplified the beneficial moderating effects of NVTs' use of shared coping humor. The current study is the first to empirically demonstrate the advantageous effects of entrepreneurial team-efficacy when NVTs are faced with navigating uncertain environmental conditions, and we hope subsequent NVT research follows suit by considering the critical role of entrepreneurial team-efficacy.

Contributions to Research on the Transactional Theory of Stress

The findings of our study reciprocally contribute to the large body of knowledge regarding the transactional theory of stress. First, a majority of research drawing on the transactional theory of stress—and even more broadly, studies of coping in general—have primarily focused on individuals rather than workplace groups or teams. Building on the central nature of affect and cognition to the theory (Lazarus, 1999), we demonstrated the value of shared coping humor (i.e., an affective state) and team-efficacy (i.e., a cognitive state) in terms of effective adaptation to perceived uncertainty (i.e., a common environmental stressor). Second, within the scope of the transactional theory of stress, affective forms of coping have traditionally been considered effective in terms of avoiding losses (e.g., reducing allostatic load by redirecting attention away from the stressor; Peters et al., 2017), but not in terms of achieving gains (Lazarus & Folkman, 1984). The findings of the current research illustrate a contingency through which an affective form of coping (i.e., shared coping humor) can not only mitigate losses, but can also aid in producing financial gains for new ventures.

Implications for Practice

Our findings indicate that shared coping humor and entrepreneurial team-efficacy play key roles when NVTs are attempting to make sense of and react to unanticipated changes in their business environments. From a practical perspective, this study's findings are important for a number of reasons. First, how NVTs appraise and cope with environmental stressors can impact their ability to successfully run their firms and realize high performance. When NVT members begin to experience anxiety or psychological distress, it may be worth taking a moment to step back and use humor to reframe any perceived stressors in a more positive, and less threatening, light. The recent COVID-19 pandemic may serve as a good example. Even though the data collection for the current research was concluded prior to the pandemic, our results suggest that the use of coping humor during times that involve great uncertainty could enable NVTs to effectively respond and adapt their firms. In other words, when encountering an environmental jolt such as a pandemic that generates significant uncertainty, NVTs with established coping mechanisms that facilitate agentic behavioral responses might be more likely to view their circumstances as a challenge—rather than a hindrance—and rise to the occasion. Second, even though the use of shared coping humor resulted in performance gains, those NVTs that likewise believed in their entrepreneurial

capabilities enjoyed even larger performance gains than NVTs who reported using shared humor but reported relatively low levels of entrepreneurial efficacy. Given the apparent benefits of shared coping humor and entrepreneurial team-efficacy, a natural question that follows is how can NVTs more fully develop these emotional and cognitive states? Fortunately, there is ample evidence demonstrating that interventions can be developed and implemented to effectively train team members on both the value and use of humor, as well as how to increase the level of confidence they have in their collective abilities (McGhee, 2010).

Some individuals (or team members) have an inherently better sense of humor than others (Deaner & McConatha, 1993). Nonetheless, evidence suggests that with deliberate practice, any individual can enhance his or her ability to effectively use humor in a group setting (Romero & Cruththirds, 2006). Examples include (a) intentionally trying to look at the funny side of everyday events, (b) learning simple jokes, (c) role modeling the behavior of persons who are considered to be funny, (d) paying attention to how children manage to find humor in basic situations, (e) attending comedy performances, and (f) practicing funny facial expressions (Farkas, 2015; McGhee, 2010). Finding ways in which NVT members can practice these exercises or experience humor-related team building events may help to advance their overall ability to effectively engage in coping humor within the shared context of their work.

Much like entrepreneurial self-efficacy (Gielnik et al., 2015), entrepreneurial team-efficacy can also be developed through training interventions. Bandura (1986) argued that the development of team-efficacy, similarly to self-efficacy, emerges from four distinct sources. *Mastery experience* refers to a team's past experience at performing specific tasks and, thus, relates most directly to the perceived confidence that it has in its skills and abilities. *Vicarious experience* is a form of social comparison in which one team observes how another team performs a role or task in hopes of improving the observing team's confidence in such a way that the team believes "if they can do it, we can do it." *Social persuasion* involves realistic encouragement from teammates (e.g., a pep talk) that the team can perform effectively. Finally, *physiological arousal* has to do with the affective tone of the team influencing confidence in its abilities. Importantly, each of these sources can operate independently, but often act in conjunction (Ronglan, 2007). Following intervention protocols established for individuals (Gielnik et al., 2015), training programs could be created that apply these four sources of efficacy development to the context of NVTs.

Constraints of Generality

There are constraints regarding the degree to which appropriate inferences of our findings can be made to broader populations. Even though our use of the *Dun and Bradstreet Market Identifiers* database carries with it many advantages (e.g., extensive breadth of firms, names and addresses of top management, and objective data such as annual revenue and employment totals), it is also known to underrepresent certain types of firms. In particular, Aldrich et al. (1989) report that nascent firms often fail to enter the database until they are established to the point of needing to generate a credit report. Moreover, research by Busenitz and Murphy (1996) indicates that home-based businesses occasionally fall absent from the database. Consequently, it is unclear whether our findings would generalize to early-stage nascent firms and home-based businesses as they are not fairly represented in our sample of firms. In addition, our focus on startups based in the United States constrains the generalizability of our findings to NVTs of startups operating in this country and should therefore be used with caution for understanding startups in other countries—and particularly those in Eastern cultures (see, e.g., Abe, 1994). Finally, due to our focus on sampling new ventures, we cannot fully speak to the question of whether the same set of relationships identified in our findings would necessarily hold for top management teams (TMTs) of large, established organizations.

Limitations and Directions for Future Research

In addition to constraints of generalizability, the current research has some limitations that should be addressed. To begin, data used for our formal hypothesis tests were provided by CEOs of the participating new ventures (the exception being the objective performance outcome). Although the ideal scenario would have been to have all members of the NVTs complete the study questionnaire, this is not a feasible goal from a practical perspective. Nesterkin and Ganster (2015), for example, have suggested that it is nearly impossible to obtain a within-team participation rate of 100% across all teams in a field research sample. Moreover, the use of key informants to capture the behavior and characteristics of top management is relatively common in upper-echelons research and has been determined to be a valid methodological approach for conducting research on work teams (e.g., Datta et al., 2005; Kumar et al., 1993; Smith et al., 2005). Nonetheless, one may still question whether the obtained data adequately represent the views of the entire new venture team. Cognizant of this issue, we took multiple steps to ensure that our use of CEO responses (primary informant data) did not unduly influence our results. For instance, we used the secondary informant (i.e., other NVT members) data to compute interrater agreement and found team members' responses were essentially interchangeable with the CEOs' ratings. We also applied a missing data technique specifically developed for teams research (Hirschfeld et al., 2013), demonstrating through post hoc analyses that our findings were not biased by noncompliant missing team member data. Together, these findings provided us with a reasonable level of confidence that our hypothesis tests using key informant (i.e., CEO) data were robust with respect to the possibility of being perceptually skewed (e.g., overestimated to make the firm look good).

Another potential limitation of the study is the relatively low response rate, which was 11.8% of those who were contacted and asked to participate. This participation rate is less than optimal, although it is not out of line with other studies of top management that have used samples drawn from *Dun and Bradstreet* (Ling et al., 2008), and is likely to be partly due to the increasing difficulties of gaining research participation from such individuals (Agle et al., 2006). Importantly, research by Schalm and Kelloway (2001) has demonstrated that study results are unlikely to be biased by low response rates. Specifically, a systematic analysis of the literature by these authors found a non-significant association of response rates with effect sizes.

As noted in the methods section, the measures used to tap each focal independent variable were slightly modified from their original version. For instance, we omitted one item from the coping humor measure and we needed to shift the focal referent of the items from the individual to the team for our measures of coping humor and entrepreneurial efficacy. Even though the adapted items maintained theoretical consistency with the original measures in order to ensure parallel content validity, we acknowledge that such changes can present potential minor challenges in terms of comparing our findings to those from work using the original measures (Heggestad et al., 2019).

Even though we made extensive arguments regarding how levels of humor usage are likely to normalize among NVT members (e.g., through members' mutual interactions, joint experiences, and imitative social modeling), such processes were not directly examined in the current research. Future studies may seek to specifically investigate how and when humor's use among NVT members emerges as an ambient team-level property. For instance, it could prove fruitful to study whether team faultlines hinder the shared use of humor. Whereas founding NVT members might value the use of humor as a coping mechanism, as the firm develops, more experienced leaders may be brought on board who view the use of humor as being unprofessional. Such a scenario may create a faultline within the NVT (i.e., original members vs. new members) that affects a previously established norm of using humor as a means to cope with stressors. This type of research could benefit from emerging methods from neuroscience, wherein the relationships between individual and team thought patterns and emotions are examined. One example would be the use

of wireless electroencephalography (EEG) to study when and how individual humor among team members manifests as a shared team property (Massaro et al., 2021).

As a final limitation, the current study lacks consideration of proximal outcome variables. Our focus was on firm performance as the dependent variable because it is reflective of the degree to which NVTs are achieving their primary goals regarding the successful development of their ventures (Klotz et al., 2014). Yet, in so doing we failed to evaluate other potential meaningful outcomes such as the health and well-being of the team (Breugst & Shepherd, 2017), engagement in specific adaptive team behaviors (Baker et al., 2003; Sarasvathy, 2001), the development of organizational culture (Shepherd et al., 2010), or the emergence of dynamic capabilities (Corner & Wu, 2012).

Conclusions

Entrepreneur and author Tim Ferriss has famously noted that “Uncertainty and the prospect of failure can be very scary noises in the shadows. Most people will choose unhappiness over uncertainty.” New venture teams—particularly those launching a startup in uncertain industry environments—appear to be an exception, often pursuing their dreams even though the odds of success may be unpredictable. For such teams, our research findings suggest that shared coping humor and entrepreneurial team-efficacy are key resources that can potentially tip the scales of chance in their favor.

Appendix A

Survey Measurement Items and Standardized Factor Loadings for Confirmatory Factor Analysis.

Constructs and Items	Standardized Factor Loading	CR	AVE
<i>Shared coping humor</i> (adapted from Avolio et al., 1999)		.84	.57
Team members use humor to take the edge off during stressful periods	.65		
Team members use funny stories to turn arguments in their favor	.75		
Team members make us laugh at ourselves when we are too serious	.77		
Team members use amusing stories to defuse conflicts	.82		
<i>Entrepreneurial team-efficacy</i> (adapted from De Noble et al., 1999)		.89	.57
Team members are confident in their ability to see market opportunities for new products/services	.69		
Team members are confident in their ability to develop a work environment that encourages innovation	.81		
Team members are confident in their ability to develop and maintain relationships with potential investors	.67		
Team members are confident in their ability to inspire others to embrace the vision and values of the firm	.81		
Team members are confident in their ability to deal with unexpected changes in business conditions	.81		
Team members are confident in their ability to attract and develop key personnel	.74		
<i>Perceived environmental uncertainty</i> (adapted from Miller & Friesen, 1982)		.76	.40
Our firm must frequently change its marketing practices	.41		

(continued)

(continued)

Constructs and Items	Standardized Factor Loading	CR	AVE
The rate at which products/services become obsolete within our industry is high	.66		
The actions of our competitors are unpredictable	.61		
The demand for our products/services is difficult to predict	.66		
The modes of production/service change often in major ways within our industry	.75		

Note. CR = composite reliability; AVE = average variance extracted.

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Notes

1. When discussing uncertainty within the bounds of the conceptual model that is developed and examined in the current research, our focus is on the industry environment as opposed to other potential sources of uncertainty.
2. IRA statistics indicate the absolute level of agreement in responses given by a set of participants. Therefore, we computed IRA to determine the degree to which ratings of primary and secondary informants are equivalent (or interchangeable) with respect to their absolute value (LeBreton & Senter, 2008). IRA statistics were calculated for each team construct (i.e., environmental uncertainty, shared coping humor, entrepreneurial team-efficacy, and team interdependence) using a range of distributions (Biemann et al., 2012). Since participants were informed that the data they provide would only be used for research purposes only, we first assumed that their ratings were unbiased. For this reason, we began by calculating IRA using a uniform distribution ($\sigma E2 = 2.0$). The results demonstrated a high level of agreement between primary and secondary respondents for all four variables, indicated by median $r_{wg(j)}$ statistics ranging from .90 to .96. We then recomputed IRA statistics but assumed that the respondents' ratings may have been slightly skewed ($\sigma E2 = 1.34$). These results also indicated high agreement for each variable, with median $r_{wg(j)}$ statistics ranging from .82 to .93.
3. Hypotheses 1 and 2 were tested using the primary informant responses only. In an exploratory fashion, we re-estimated our regression models using an aggregated sample that averaged the scores of primary respondents with those of secondary respondents. The exploratory results reflected the same pattern of findings as reported in our Results (based solely on primary informants).
4. Two firms in the sample had more than 500 employees, which pulled the mean much higher than the median for the total number of employees. As a sensitivity analysis, we ran all regression models with these two firms removed. The results dovetailed those using the full sample. We therefore used the full sample for hypothesis testing.

5. Following suggested best practices (Becker, 2005), separate regression analyses were run with and without control variables. The pattern of findings was the same in both cases. We test the hypotheses and present the results using the full models with the control variables included.
6. A few notable exceptions exist. DeTienne et al. (2008) incorporated entrepreneurial team-efficacy into a scenario that was part of a conjoint analysis study on understanding why underperforming startups persist. More recently, Aguinis and Lawal (2012) used entrepreneurial team-efficacy (for illustrative purposes) when describing how to design and conduct a study using online platforms (i.e., eLancing).

References

- Abe, G. (1994). The perception of humor in Japan and the US. In Paper presented at the international society of humor study conference, Ithaca, NY.
- Agle, B. R., Nagarajan, N. J., Sonnenfeld, J. A., & Srinivasan, D. (2006). Does CEO charisma matter? An empirical analysis of the relationships among organizational performance, environmental uncertainty, and top management team perceptions of CEO charisma. *Academy of Management Journal*, *49*, 161-174.
- Aguinis, H., & Lawal, S. O. (2012). Conducting field experiments using eLancing's natural environment. *Journal of Business Venturing*, *27*, 493-505.
- Aldrich, H., Kalleberg, A., Marsen, P., & Cassell, J. (1989). In pursuit of evidence: Sampling procedures for locating new businesses. *Journal of Business Venturing*, *4*, 367-386.
- Alvarez, S. A., & Barney, J. B. (2005). How do entrepreneurs organize firms under conditions of uncertainty? *Journal of Management*, *31*, 776-793.
- Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, *1*, 11-26.
- Atuahene-Gima, K., & Li, H. (2004). Strategic decision comprehensiveness and new product development outcomes in new technology ventures. *Academy of Management Journal*, *47*, 583-597.
- Avolio, B. J., Howell, J. M., & Sosik, J. J. (1999). A funny thing happened on the way to the bottom line: Humor as a moderator of leadership style effects. *Academy of Management Journal*, *42*, 219-227.
- Baker, T., Miner, A. S., & Eesley, D. T. (2003). Improvising firms: Bricolage, account giving and improvisational competencies in the founding process. *Research Policy*, *32*, 255-276.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- BarNir, A., Gallagher, J. M., & Auger, P. (2003). Business process digitization, strategy, and the impact of firm age and size: The case of the magazine industry. *Journal of Business Venturing*, *18*, 789-814.
- Barron, D. N., West, E., & Hannan, M. T. (1994). A time to grow and a time to die: Growth and mortality of credit unions in New York City, 1914-1990. *American Journal of Sociology*, *100*, 381-421.
- Barsade, S. G., & Gibson, D. E. (2012). Group affect: Its influence on individual and group outcomes. *Current Directions in Psychological Science*, *21*, 119-123.
- Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, *8*, 274-289.
- Beckman, C. M. (2006). The influence of founding team company affiliations on firm behavior. *Academy of Management Journal*, *49*, 741-758.
- Biemann, T., Cole, M. S., & Voelpel, S. (2012). Within-group agreement: On the use (and misuse) of r_{WG} and $r_{WG(j)}$ in leadership research and some best practice guidelines. *The Leadership Quarterly*, *23*, 66-80.
- Bodensteiner, W. D., Gerloff, E. A., & Quick, J. C. (1989). Uncertainty and stress in an R&D project environment. *R&D Management*, *19*, 309-322.
- Breugst, N., & Shepherd, D. A. (2017). If you fight with me, I'll get mad! A social model of entrepreneurial affect. *Entrepreneurship Theory and Practice*, *41*, 379-418.

- Brown, G., Dixon, P., & Hudson, J. (1982). Effect of peer pressure on imitation of humor response in college students. *Psychological Reports, 51*, 1111-1117.
- Burnette, J. L., Pollack, J. M., Forsyth, R. B., Hoyt, C. L., Babij, A. D., Thomas, F. N., & Coy, A. E. (2020). A growth mindset intervention: Enhancing students' entrepreneurial self-Efficacy and career development. *Entrepreneurship Theory and Practice, 44*, 878-908.
- Busenitz, L. W., & Murphy, G. B. (1996). New evidence in the pursuit of locating new businesses. *Journal of Business Venturing, 11*, 221-231.
- Bynner, J., & Coxhead, P. (1979). Some problems in the analysis of semantic differential data. *Human Relations, 32*, 367-386.
- Cardon, M. S., & Forster, C. P. W. R. (2017). Team entrepreneurial passion: Its emergence and influence in new venture teams. *Academy of Management Review, 42*, 283-305.
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management, 30*, 749-778.
- Carr, J. C., & Hmieleski, K. M. (2015). Differences in the outcomes of work and family conflict between family- and non-family businesses: An examination of founding CEOs. *Entrepreneurship Theory and Practice, 39*, 1413-1432.
- Carter, N., Brush, C., Greene, P., Gatewood, E., & Hart, M. (2003). Women entrepreneurs who break through to equity financing: the influence of human, social and financial capital. *Venture Capital, 5*, 1-28.
- Chandler, G., & Jensen, E. (1992). The founder's self-assessed competence and venture performance. *Journal of Business Venturing, 7*, 223-236.
- Cheng, D., & Wang, L. (2015). Examining the energizing effects of humor: The influence of humor on persistence behavior. *Journal of Business and Psychology, 30*, 759-772.
- Chrisman, J.J., Chua, J.H., & Kellermanns, F.W. (2009). Priorities, resource stocks, and performance in family and non-family firms. *Entrepreneurship Theory and Practice, 33*, 739-760.
- Christian, J. S., Christian, M. S., Pearsall, M. J., & Long, E. C. (2017). Team adaptation in context: An integrated conceptual model and meta-analytic review. *Organizational Behavior and Human Decision Processes, 140*, 62-89.
- Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis in the behavioral sciences* (3rd ed.). Routledge.
- Cooper, C.D. (2005). Just joking around? Employee humor expression as an ingratiation behavior. *Academy of Management Journal, 30*, 765-776.
- Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice, 29*, 373-397.
- Corbett, A. C. (2005). Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice, 29*, 473-491.
- Corbett, A. C., & Hmieleski, K. M. (2007). The conflicting cognitions of corporate entrepreneurs. *Entrepreneurship Theory and Practice, 31*, 103-121.
- Corner, P. D., & Wu, S. (2012). Dynamic capability emergence in the venture creation process. *International Small Business Journal, 30*, 138-160.
- Daft, R. L., Sormunen, J., & Parks, D. (1988). Chief executive scanning, environmental characteristics, and company performance: An empirical study. *Strategic Management Journal, 9*, 123-139.
- Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter. *Academy of Management Journal, 48*, 135-145.
- Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology, 91*, 917-926.
- De Noble, A. F., Jung, D., & Ehrlich, S. B. (1999). Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurial action, P. Reynolds (Ed.), *Frontiers of Entrepreneurship Research*. Babson College.

- Deaner, S. L., & McConatha, J. T. (1993). The relation of humor to depression and personality. *Psychological Reports, 72*, 755-763.
- DeTienne, D. R., Shepherd, D. A., & De Castro, J. O. (2008). The fallacy of "only the strong survive": The effects of extrinsic motivation on the persistence decisions for under-performing firms. *Journal of Business Venturing, 23*, 528-546.
- Dillard, D. M. (2019). The transactional theory of stress and coping: Predicting posttraumatic distress in telecommunicators [ProQuest Information & Learning]. Dissertation Abstracts International: Section B: The Sciences and Engineering (Vol. 80(8). B(E).
- Dubinsky, A. J., Yammarino, F. J., & Jolson, M. A. (1995). An examination of linkages between personal characteristics and dimensions of transformational leadership. *Journal of Business & Psychology, 9*, 315-335.
- Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly, 17*, 313-327.
- Edelman, L., & Yli-Renko, H. (2010). The impact of environment and entrepreneurial perceptions on venture-creation efforts: Bridging the discovery and creation views of entrepreneurship. *Entrepreneurship Theory and Practice, 34*, 833-856.
- Engel, Y., Dimitrova, N. G., Khapova, S. N., & Elfring, T. (2014). Uncertain but able: Entrepreneurial self-efficacy and novices' use of expert decision-logic under uncertainty. *Journal of Business Venturing Insights, 1*, 12-12.
- Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *The Leadership Quarterly, 17*, 217-231.
- Farkas, R. (2015). *How to be funny: A guide to developing your sense of humour and funny comment delivery to lighten the mood and make people laugh*. CreateSpace Independent Publishing Platform.
- Felin, T., & Knudsen, T. (2012). A theory of nascent entrepreneurship and organization. *Managerial & Decision Economics, 33*, 409-426.
- Foo, M. D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology, 94*, 1086-1094.
- Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*, 39-50.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist, 60*, 678-686.
- Freel, M. S. (2005). Perceived environmental uncertainty and innovation in small firms. *Small Business Economics, 25*, 49-64.
- Gielnik, M. M., Frese, M., Kahara-Kawuki, A., Katono, I. W., Kyejjusa, S., Ngoma, M., Munene, J., Namatovu-Dawa, R., Nansubuga, F., Orobias, L., Oyugi, J., Sejjaaka, S., Sserwanga, A., Walter, T., Bischoff, K. M., & Dlugosch, T. J. (2015). Action and action-regulation in entrepreneurship: Evaluating a student training for promoting entrepreneurship. *Academy of Management Learning & Education, 14*, 69-94.
- Gully, S. M., Incalcaterra, K. A., Joshi, A., & Beaubien, J. M. (2002). A meta-analysis of team-efficacy, potency, and performance: Interdependence and level of analysis as moderators of observed relationships. *Journal of Applied Psychology, 87*, 819-832.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate data analysis* (7th ed.). Prentice-Hall.
- Hayek, F. A. (1945). The use of knowledge in society. *American Economic Review, 35*, 519-530.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.
- Heggstad, E. D., Scheaf, D. J., Banks, G. C., Monroe Hausfeld, M., Tonidandel, S., & Williams, E. B. (2019). Scale adaptation in organizational science research: A review and best-practice recommendations. *Journal of Management, 45*, 2596-2627.

- Heise, D. R. (1969). Some methodological issues in semantic differential research. *Psychological Bulletin*, 72, 406-422.
- Hirschfeld, R. R., Cole, M. S., Bernerth, J. B., & Rizzuto, T. E. (2013). Voluntary survey completion among team members: Implications of noncompliance and missing data for multilevel research. *Journal of Applied Psychology*, 98, 454-468.
- Hitt, M. A., Ireland, R. D., & Palia, K. A. (1982). Industrial firms' grand strategy and functional importance: Moderating effects of technology and uncertainty. *Academy of Management Journal*, 25, 265-298.
- Hmieleski, K. M., & Baron, R. A. (2008). When does entrepreneurial self-efficacy enhance versus reduce firm performance? *Strategic Entrepreneurship Journal*, 2, 57-72.
- Hmieleski, K. M., Carr, J. C., & Baron, R. A. (2015). Integrating discovery and creation perspectives of entrepreneurial action: The relative roles of founding CEO human capital, social capital, and psychological capital in contexts of risk versus uncertainty. *Strategic Entrepreneurship Journal*, 9, 289-312.
- Hmieleski, K. M., Corbett, A. C., & Baron, R. A. (2013). Entrepreneurs' improvisational behavior and firm performance: A study of dispositional and environmental moderators. *Strategic Entrepreneurship Journal*, 7, 138-150.
- Hmieleski, K. M., & Sheppard, L. D. (2019). The Yin and Yang of entrepreneurship: Gender differences in the importance of communal and agentic characteristics for entrepreneurs' subjective well-being and performance. *Journal of Business Venturing*, 34, 709-730.
- Horan, S. M., Bochantin, J., & Booth-Butterfield, M. (2012). Humor in high-stress relationships: Understanding communication in police officers' romantic relationships. *Communication Studies*, 63, 554-573.
- Hupaló, P. I. (2004). *Thinking like an entrepreneur: How to make intelligent business decisions that will lead to success in building and growing your own company*. HCM Publishing.
- Johnson, S. (2007). *What's so friggin' funny?* *Discover magazine*. Retrieved on May 18, 2020 from <http://discovermagazine.com/2007/brain/laughter>
- Kangasharju, H., & Nikko, T. (2009). Emotions in organizations: Joint laughter in workplace meetings. *Journal of Business Communications*, 46, 100-119.
- Keats, B. W., & Hitt, M. A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal*, 31, 570-598.
- Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of Economic Literature*, 35, 60-85.
- Klotz, A. C., Hmieleski, K. M., Bradley, B. H., & Busenitz, L. W. (2014). New venture teams: A review of the literature and roadmap for future research. *Journal of Management*, 40, 226-255.
- Knight, F.H. (1921). *Risk, uncertainty, and profit*. Houghton Mifflin.
- Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and Organizational Psychology* (12, pp. 333-375). John Wiley & Sons Inc.
- Kozlowski, S.W.J., & Klein, K.J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions* (pp. 3-90). Jossey-Bass.
- Kumar, N., Stern, L.W., & Anderson, J.C. (1993). Conducting interorganizational research using key informants. *Academy of Management Journal*, 36, 1633-1651.
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. Springer.
- Lazarus, R. S. (2012). Evolution of a model of stress, coping, and discrete emotions. In V. Hill-Rice (Ed.), *Handbook of stress, coping, and health* (2nd ed., pp. 199-223). SAGE Publications.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

- LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*, 815-852.
- Ling, Y., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. (2008). Transformational leadership's role in promoting corporate leadership: Examining the CEO-TMT interface. *Academy of Management Journal, 51*, 557-576.
- Lin, S., Li, J., & Han, R. (2018). Coping humor of entrepreneurs: Interaction between social culture and entrepreneurial experience. *Frontiers in psychology, 9*, 1449.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: does happiness lead to success? *Psychological Bulletin, 131*, 803-855.
- Markides, C. C., & Geroski, P. A. (2005). *Fast second: How smart companies bypass radical innovation to enter and dominate new markets*. Jossey-Bass.
- Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*, 356-376.
- Martineau, W. H. (1972). A model of the social functions of humor. In J. Goldstein, & P. McGhee (Eds.), *The Psychology of Humor* (pp. 101-125). Academic Press.
- Massaro, S., Drover, W., Cerf, M., & Hmielecki, K. M. (2021). Using functional neuroimaging to advance entrepreneurial cognition research. *Journal of Small Business Management*. In Press. <https://doi.org/10.1080/00472778.2020.1824527>
- Mathieu, J. E., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management, 34*, 410-476.
- McGhee, P. (2010). *Humor as survival training for a stressed-out world: The 7 humor habits program*. AuthorHouse.
- McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review, 24*, 13-30.
- Mesmer-Magnus, J., Glew, D. J., & Viswesvaran, C. (2012). A meta-analysis of positive humor in the workplace. *Journal of Managerial Psychology, 27*, 155-190.
- Miao, C., Qian, S., & Ma, D. (2017). The relationship between entrepreneurial self-efficacy and firm performance: A meta-analysis of main and moderator effects. *Journal of Small Business Management, 55*, 87-107.
- Miles, R. E., & Snow, C. C. (1978). *Organizational strategy, structure and process*. McGraw-Hill.
- Miller, D (1992). Environmental fit versus internal fit. *Organization Science, 3*, 159-178.
- Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic innovation. *Strategic Management Journal, 3*, 1-25.
- Miller, D., & Friesen, P. H. (1983). Strategy-making and environment: The third link. *Strategic Management Journal, 4*, 221-235.
- Milliken, F. J. (1987). Three types of uncertainty about the environment: State, effect and response uncertainty. *Academy of Management Review, 12*, 133-143.
- 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*, 249-265.
- Nesterkin, D. A., & Ganster, D. C. (2015). The effects of nonresponse rates on group-level correlations. *Journal of Management, 41*, 789-807.
- Neter, J., Wasserman, W., & Kutner, M. H. (1989). *Applied linear regression models*. Irwin.
- Nikolaev, B., Shir, N., & Wiklund, J. (2020). Dispositional positive and negative affect and self-employment transitions: The mediating role of job satisfaction. *Entrepreneurship Theory and Practice, 44*, 451-474.
- O'Toole, J., Gong, Y., Baker, T., Eesley, D. T., & Miner, A. S. (2021). *Startup responses to unexpected events: The impact of the relative presence of improvisation*. Organization StudiesForthcoming.
- Peng, X. B., Liu, Y. L., Jiao, Q. Q., Feng, X. B., & Zheng, B. (2020). The nonlinear effect of effectuation and causation on new venture performance: The moderating effect of environmental uncertainty. *Journal of Business Research, 117*, 112-123.

- Peters, A., McEwen, B. S., & Friston, K. (2017). Uncertainty and stress: Why it causes diseases and how it is mastered by the brain. *Progress in Neurobiology, 156*, 164-188.
- Politis, D. (2005). The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship Theory and Practice, 29*, 399-424.
- Pollack, J. M., Vanepps, E. M., & Hayes, A. F. (2012). The moderating role of social ties on entrepreneurs' depressed affect and withdrawal intentions in response to economic stress. *Journal of Organizational Behavior, 33*, 789-810.
- Rapp, T. L., Bachrach, D. G., Rapp, A. A., & Mullins, R. (2014). The role of team goal monitoring in the curvilinear relationship between team efficacy and team performance. *Journal of Applied Psychology, 99*, 976-987.
- Rauch, A., Fink, M., & Hatak, I. (2018). Stress processes: An essential ingredient in the entrepreneurial process. *Academy of Management Perspectives, 32*, 340-357.
- Robert, C., & Wilbanks, J. E. (2012). The wheel model of humor: Humor events and affect in organizations. *Human Relations, 65*, 1071-1099.
- Romero, E. J., & Cruthirds, K. W. (2006). The use of humor in the workplace. *Academy of Management Perspectives, 20*, 58-69.
- Romero, E., & Pescosolido, A. (2008). Humor and group effectiveness. *Human Relations, 61*, 395-418.
- Ronglan, L. T. (2007). Building and communicating collective efficacy: A season-long in-depth study of an elite sport team. *The Sports Psychologist, 21*, 78-93.
- Ruef, M., Aldrich, H. E., & Carter, N. M. (2003). The structure of founding teams: Homophily, strong ties and isolation among U.S. entrepreneurs. *American Sociological Review, 68*, 195-222.
- Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23*, 224-253.
- Sarasvathy, S. D. (2001). Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review, 26*, 243-263.
- Schalm, R. L., & Kelloway, E. K. (2001). The relationship between response rate and effect size in occupational health psychology research. *Journal of Occupational Health Psychology, 6*, 160-163.
- Schmitt, A., Rosing, K., Zhang, S. X., & Leatherbee, M. (2018). A dynamic model of entrepreneurial uncertainty and business opportunity identification: Exploration as a mediator and entrepreneurial self-efficacy as a moderator. *Entrepreneurship Theory and Practice, 42*, 835-859.
- Shepherd, D. A., Patzelt, H., & Haynie, J. M. (2010). Entrepreneurial spirals: Deviation-amplifying loops of an entrepreneurial mindset and organizational culture. *Entrepreneurship Theory and Practice, 34*, 59-82.
- Simsek, Z., Veiga, J. F., Lubatkin, M. H., & Dino, R. N. (2005). Modeling the multilevel determinants of top management team behavioral integration. *Academy of Management Journal, 48*, 69-84.
- Smith, K. G., Collins, C. J., & Clark, K. D. (2005). Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms. *Academy of Management Journal, 48*, 346-357.
- Smith, W. J., Harrington, K. V., & Neck, C. P. (2000). Resolving conflict with humor in a diversity context. *Journal of Managerial Psychology, 15*, 606-625.
- Soriano, D., & Castrogiovanni, G. (2012). The impact of education, experience and inner circle advisors on SME performance: Insights from a study of public development centers. *Small Business Economics, 38*, 333-349.
- Stajkovic, A. D., Lee, D., & Nyberg, A. J. (2009). Collective efficacy, group potency, and group performance: Meta-analyses of their relationships, and test of a mediation model. *Journal of Applied Psychology, 94*, 814-828.
- St John, C. H., Poudier, R. W., & Cannon, A. R. (2003). Environmental uncertainty and product-process life cycles: A multi-level interpretation of change over time. *Journal of Management Studies, 40*, 513-541.
- Tasa, K., Seijts, G. H., & Taggar, S. (2007). The development of collective efficacy in teams: A multilevel and longitudinal perspective. *Journal of Applied Psychology, 92*, 17-27.

- Ucbasaran, D., Lockett, A., Wright, M., & Westhead, P. (2003). Entrepreneurial founder teams: Factors associated with member entry and exit. *Entrepreneurship Theory and Practice, 28*, 107-127.
- Ucbasaran, D., Shepherd, D. A., Lockett, A., & Lyon, S. J. (2013). Life after business failure: The process and consequences of business failure for entrepreneurs. *Journal of Management, 39*, 163-202.
- Van der Veegt, G. S., & Janssen, O. (2003). Joint impact of interdependence and group diversity on innovation. *Journal of Management, 29*, 729-751.
- Wallace, J. C., Edwards, B. D., Paul, J., Burke, M., Christian, M., & Eissa, G. (2016). Change the referent? A meta-analytic investigation of direct and referent-shift consensus models for organizational climate. *Journal of Management, 42*, 838-861.
- Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing, 21*, 541-567.
- Wanzer, M., Booth-Butterfield, M., & Booth-Butterfield, S. (2005). "If we didn't use humor, we'd cry": Humorous coping communication in health care settings. *Journal of Health Communication, 10*, 105-125.
- Welpe, I. M., Spörrle, M., Grichnik, D., Michl, T., & Audretsch, D. B. (2012). Emotions and opportunities: The interplay of opportunity evaluation, fear, joy, and anger as antecedent of entrepreneurial exploitation. *Entrepreneurship Theory and Practice, 36*, 69-96.
- Welter, C., & Kim, S. (2018). Effectuation under risk and uncertainty: A simulation model. *Journal of Business Venturing, 33*, 100-116.
- Wolosin, R. J. (1975). Cognitive similarity and group laughter. *Journal of Personality and Social Psychology, 32*, 503-509.
- York, J., & Venkataraman, S. (2010). The entrepreneur–environment nexus: Uncertainty, innovation, and allocation. *Journal of Business Venturing, 25*, 449-463.
- Yu, X., Li, Y., Su, Z., Tao, Y., Nguyen, B., & Xia, F. (2020). Entrepreneurial bricolage and its effects on new venture growth and adaptiveness in an emerging economy. *Asia Pacific Journal of Management, 37*, 1141-1163.
- Zhang, S. X., Gao, R., Odeh, N., & Leatherbee, M. (2021). A microfoundational model of real options reasoning: The roles of individual search propensity and perceived uncertainty. *Strategic Entrepreneurship Journal, 15*, 98-120.

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