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Exploring the influence of leaders on organizational innovation

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ABSTRACT

Innovation has been traditionally recognized as one of the most important determinants of successful firms. Research exploring the antecedents to innovation has covered a wide variety of topics encompassing organizational-, process-, and individual- and group-level factors. Among these topics, the role of leaders in driving innovation efforts in their firms has received particular attention. This dissertation contributes to this important and emerging stream of research across four studies. First, a systematic literature review of the field classifies the different types of influence of top managers on innovation and proposes several avenues for future research. Subsequently, a survey of top managers in small- and medium-sized firms provides insights as to how risk propensities, perceptions of compensation, and job demands at the top management team can drive innovation decisions. Finally, a laboratory experiment uncovers how influence tactics used by leaders can induce risk taking decisions that support innovation in their firms.

CHAPTER 1. GENERAL INTRODUCTION

Innovation has been traditionally recognized as one of the most important determinants of successful firms (Schumpeter, 1942, Rosenbusch et al., 2011). Understood as the generation and implementation of new ideas (Anderson et al. 2014), innovation allows firms to compete in increasingly dynamic landscapes by renewing their most critical resources and introducing new sources of competitive advantage (Tushman and O'Reilly, 1996). Research exploring the antecedents to innovation has covered a wide variety of topics encompassing organizational-, process-, and individual- and group-level factors (Crossan and Apaydin, 2010). Among these topics, the role of leaders in driving innovation efforts in their firms has received particular attention (Jansen et al., 2009; Eggers and Kaplan, 2009; Nadkarni and Chen, 2014; Tang et al., 2015).

Fundamentally drawing on Hambrick and Mason's (1984) upper echelons theory, scholars have argued that top managers' —chief executive officers (CEOs) and their top management teams (TMTs)—demographic characteristics (Barker and Mueller, 2002), personality traits (Gerstner et al., 2013; Tang et al., 2015; Kammerlander et al 2015; Zhang et al., 2017), leadership styles (Elenkov et al., 2005; Jung et al., 2008; Jansen et al., 2009), and cognitive dispositions (Yadav et al., 2007; Eggers and Kaplan, 2009; Nadkarni and Chen, 2014) can influence their strategic decisions and behaviors in favor of innovation. In this dissertation, I plan to provide contributions to this topic and enrich the understanding of how leaders can influence innovation.

I divide this dissertation into four papers, each providing related but distinct contributions to the field. The first paper is a conceptual work, whereas the remaining three are empirical. In the first paper, I provide a comprehensive review of research on the topic and postulate a

framework to organize current knowledge and guide future research. Research on the relationship between top managers and firm innovation has proposed a wide variety of theories and mechanisms that help explain how executive dispositions play a role in promoting innovation. The main purpose of the review is to organize such theories into three proposed mechanisms of influence: discretional, architectural, and behavioral. I thoroughly explain the differences between these mechanisms and thus the importance of separating the types of influence. Additionally, I draw on Perry-Smith and Manucci's (2017) framework of the four stages of innovation to highlight the gaps and possibilities of future research. More specifically, I show that combining these three types of influence with the four stages of innovation provides a broad spectrum of research opportunities that can assist the search for a precise and detailed understanding of how top managers promote innovation.

In the second paper, I explore how CEOs' risk-taking propensities and their perception of relative compensation can influence their firms' level of innovation. Although scholars have traditionally assumed that CEOs who do not fear change, make bold decisions, or undertake risky actions are highly beneficial for firm innovation (Barker and Mueller, 2002; Galasso and Simcoe, 2011; Gerstner et al., 2013; Tang et al., 2015), I proceed to test this prediction empirically by capturing CEOs' risk-taking propensities and evaluating its relationship with firm innovation. Furthermore, I rely on the literature on managerial cognition and attention (Ocasio, 1997; Kaplan 2011), to show that CEOs' beliefs regarding their compensation relative to CEOs of similar firms can influence how their risk propensities manifest in innovation decisions. In doing so, I address an important call made by Wowak and colleagues (2017) to integrate CEOs' dispositional characteristics and compensation to predict executive behavior.

The third paper dives into the difficulties that CEOs face in their job to propose how executive job demands (Hambrick et al., 2005) can limit the flow of ideas from the TMT and subsequently impact organizational innovation. As heads of different key areas and departments of the firm, TMT members can function both as generators and channels of innovation ideas (Alexiev et al., 2010) and play a pivotal role in how CEOs get in contact with the multitude of ideas created in the firm (Cao et al., 2010). Drawing on upper echelons theory (Hambrick and Mason, 1984) and the emotions-as-social-information (EASI) model (Van Kleef, 2009), I propose how CEO's job demands influence organizational innovation through CEOs' displays of negative affect, which in turn limits the TMT's willingness to share these ideas. Additionally, I draw on the literature on emotional intelligence (Salovey and Mayer, 1990; Wong and Law, 2002) to argue that CEOs with higher emotional intelligence are better equipped to handle those perceived job difficulties and thus reduce possible displays of negative affect. This study highlights that an often overlook constrain to firm innovation is how innovative ideas meet key decision makers, and it does so while being, to the best of my knowledge the first study to explore emotions and job demands at the top managerial level.

Finally, I design an experiment to answer a highly relevant question in leader-follower interactions: how can leaders influence followers to undertake actions with various levels of risk? Numerous organizational tasks, particularly the development of innovation projects, are infused with different levels of risk that organizational members must undertake, and leaders play an important role in motivating and influencing their followers in such endeavors (Jung et al., 2008; Jansen et al. 2009). In this study, I delve into agency theory's risk-sharing problem (Eisenhardt, 1989) and rely on the literature on influence tactics (Kipnis et al., 1980; Yukl and Tracey, 1992; Lee et al., 2017) to discuss how certain behavioral mechanisms displayed by

leaders can persuade followers to assume risky actions. The experiment illustrates that the risk-sharing problem may not only be alleviated through compensation mechanisms, as is traditionally assumed in the literature (Martin et al., 2016), but that other behavioral mechanisms employed by leaders can change followers' perceptions of risk and thus persuade them to comply with risky tasks.

Together, these four papers expand existing knowledge on how leaders, and particularly CEOs, can promote innovation in the organizations they lead. I propose a framework to organize existing and develop future research, highlight the role of never-studied CEO characteristics in influencing different types of innovation, include the prominent role of TMTs and their ideas in promoting innovation, and study how leaders can influence followers to embrace risky initiatives.

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CHAPTER 2. THE STRATEGIC LEADERSHIP OF INNOVATION: PROPOSING A FRAMEWORK FOR FUTURE RESEARCH

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Abstract

The influence of top managers on organizational innovation continues to be a topic that draws significant interest from scholars. In this study, we review and synthetize research on how executives influence innovation outcomes and propose a framework to guide future research. We uncover that existing theories on this topic can be categorized as discretional, architectural, and behavioral. We discuss how a clearer theorizing following this categorization can provide a more comprehensive understanding of how executives influence innovation. Furthermore, we categorize and discuss how such theories relate to the different stages of innovation to highlight the abundance of opportunities for future research, including potential research avenues related to how an influence strength may change over time, how a top managerial characteristic can have opposing effects on innovation through different types of influence, and how the strength of such influences can be shaped by contextual factors.

Introduction

Studies of top managers, mostly under the umbrella of upper echelons theory (Hambrick & Mason, 1984; Hambrick, 2007), have placed executives as important actors in the determination of organizational-level outcomes. An underlying argument is that top managers are in charge of making strategic decisions, which in turn influence the future of the firm. For example, scholars have explored how top managers influence the firm's risk-taking behavior (Eisenman, 2002; Simsek, 2007), strategic change (Quigley and Hambrick, 2012), strategic

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flexibility (Nadkarni and Herrmann, 2010), acquisitions (Nadolska and Barkema, 2014), corporate social responsibility (CSR) actions (Petrenko, Aime, Ridge, and Hill, 2016), among others. One outcome that stands out in this literature is innovation, whose executive-level antecedents have been studied extensively. Top managers' demographic characteristics (Barker and Mueller, 2002; Wu, Levitas, and Priem, 2005), cognitive characteristics (Li, Maggitti, Smith, Tesluk, and Katila, 2013; Nadkarni and Chen, 2015), leadership styles (Elenkov, Judge, and Wright, 2005, Jung, Wu, and Chow, 2008; Jansen, Vera, and Crossan, 2009), and personality dispositions (Gerstner, Konig, Enders, and Hambrick, 2013; Tang, Li, and Yang, 2015), as well as top management team (TMT) interactions (Qian, Cao, and Takeuchi, 2013) are important precursors of firm innovation. As innovation is regarded as one of the important pathways to achieve superior performance and allow firms to achieve competitiveness in dynamic environments (Damanpour, 1991; Rosenbusch et al., 2011; Arunachalam et al., 2018), the importance of this stream of research seems undisputed.

In the present study, we aim to synthetize this active stream of research and build a framework of executive influence on innovation that guides future studies. We focus on a critical review of existing theories and propose a variety of concrete and general suggestions to continue developing this topic. Our review uncovers two main findings. First, the theories that have explained the influence of top managers on innovation indicate that such influence occurs in different, complex ways. While some studies argue that top managers' characteristics and decisions influence followers to become more innovative (e.g. Jansen et al., 2009; Jung et al., 2009; Vaccaro et al., 2012), other studies consider top managers as the primary responsible actors for the detection and pursuit of innovation opportunities (e.g., Barker and Mueller, 2002; Smith, Collins, and Clark, 2005; Tang et al., 2015). This suggests that while top managers can

rely on their position to influence innovation in the firm directly through their decisions and abilities, they can also influence organizational members to support and participate in innovation. We categorize these mechanisms and propose that executives influence innovation in *discretional*, *architectural*, and *behavioral* ways. We argue that providing a clear outline of the mechanisms through which top managers influence innovation represents a key endeavor to fully understand executives' role in how ideas are turned (or fail to be turned) into useful applications in the organization.

Second, by reviewing the literature in light of the four-stage innovation process proposed by Perry-Smith and Mannucci (2017) (generation, elaboration, championing, and implementation), we find that theories relating top managers to innovation usually focus on one or multiple innovation stages but tend to use broad conceptualizations and measurements of the entire innovation process. We encourage scholars to use our framework to design studies that extend knowledge on how executives affect specific stages of the innovation process through a given type of influence. This effort can not only improve our understanding of how top managers affect their organizations but also underscore our need to incorporate the complexity of the innovation process in future studies. We present our framework in figure 1.

Our article is organized as follows. First, we describe our article selection criteria and our inductive process to extract the framework. Second, we explain the three proposed types of influence and their relationships with the four innovation stages. Third, we explore potential research avenues derived from our framework by discussing how an influence strength may change over time (transitioning effects), how a top managerial characteristic can have opposing effects on innovation through different types of influence (conflicting effects), and how the strength of such influences can be shaped by contextual factors (contingent effects). Finally, we

close by discussing the relevance of our framework and providing general recommendations for future research.

Selection and review of studies

First, we searched top-tier management journals—*Journal of Management, Academy of Management Journal, Strategic Management Journal, Administrative Science Quarterly, Organization Science, Journal of Management Studies, Leadership Quarterly, and Journal of Product Innovation Management*—for studies that had terms referring to top managers (CEO, executives, top managers, top management team, TMT) in their title or abstract. Among this resulting vast number of articles studying executives, we searched for articles whose theories focused specifically on the influence of top managers on innovation. We also included articles from other recognized journals if they were referenced in the primary search and showed clear fit with our criteria. This search led to 37 articles whose theories focused on innovation and its executive antecedents. Most of these articles were published during the most recent decade (2008-2018), although some prior work showed relevance and fit with our search criteria. The relative newness of the topic highlights a good opportunity to synthetize the work, emphasize general themes, and provide guidance for future research through our framework.

It is important to note that the primary purpose of this review is to highlight the theoretical mechanisms linking top managers to innovation, as opposed to summarizing empirical findings and offering generalizations about the phenomenon. Although the review touches on the latter aspect, it focuses on identifying relationships and surveying the plausible explanations demonstrated in the literature.

Some of the dependent variables used to capture innovation in our resulting sample of studies are used in additional studies linking top managers to other firm-level outcomes. For

example, Lim and McCann (2014) use R&D expenditures divided by sales to capture firm risk taking, or Li and Tang (2010) use investments on new high-technology projects to capture firm risk taking. However, we do not include such studies in our review as they do not contribute to our purpose of surveying and categorizing the theoretical mechanisms that explain executive influence on innovation. Furthermore, discussing the similar operationalization of different constructs falls outside the scope of our work.

The extraction of our framework and categorization of theories was an inductive process that involved careful reading of each article's theoretical mechanisms explaining the link between top managerial characteristics and firm innovation. This was an iterative process in which we read each article several times, extracted the main theoretical arguments in each paper, and discussed the commonalities observed in these mechanisms. We categorized these theoretical mechanisms to obtain the different types of executive influence on innovation. Subsequently, we reviewed the theoretical mechanisms of each article again to uncover the underlying innovation stage to which each theory was referring. We mention most of these articles in the text to illustrate the literature and derive our framework. In Table 1, we present all of the articles categorized by their studied constructs, innovation measurements, and the underlying type of influence and innovation stage explained in their theoretical mechanisms.

Delineating the influences of top managers on innovation

Discretional influence

Multiple theories explain top managerial influence on innovation through the exercise of authority and strategic decision making. Top managers have an important discretion level in terms of how their decisions are relevant for the firm's future (Hambrick and Mason, 1984). Compared to other employees of the firm, top managers' position allows them to have decision-

making power over which ideas receive more attention and which ideas are pursued (Stock et al., 2018). Although their discretion may vary according to environmental or organizational characteristics (Hambrick and Finkelstein, 1987), top managers can make decisions and engage in actions directly related to the firm's innovation endeavors. For example, they might decide what idea to develop and/or to promote, elaborate an existing idea to improve its fit with the organization, or support a difficult implementation with their knowledge. We found research implicitly supporting top managers' discretional role in innovation efforts (e.g. Li et al., 2013; Nadkarni and Chen, 2014; Gerstner et al., 2013). In this view, top managers' characteristics or dispositions drive them to influence innovation in direct ways, while usually the role of other organizational members in these efforts is not explicitly considered. In these studies, executives are portrayed as active contributors of new product ideas, selectors of preferred innovation alternatives, or carriers of important experience to lead successful innovation. Thus, top managers use their authority and their position to lead ideas through innovation stages while the role of their subordinates is passive or merely executional.

Attention patterns that allow executives to detect innovation opportunities are one pathway through which they influence innovation directly (Yadav et al., 2007; Nadkarni and Chen, 2014). Depending on executives' temporal focus (placing attention to the past, present, or future) (Nadkarni and Chen, 2014), their external focus (placing attention on the firm's external environment) (Yadav et al., 2007), or their information search patterns (search selection and search intensity) (Li et al., 2013), executives search for and process information that allows them to detect innovative ideas and support the development of those ideas. The role of top managers in terms of defining and elaborating ideas is more active and direct in such cases. Studies exploring executive personality have also explained this influence. For example, narcissistic

CEOs make important strategic commitments, such as the adoption of a discontinuous technology, because they want to attract attention and maintain their positive self-view (Gerstner et al., 2013). Similarly, hubristic or overconfident CEOs emphasize innovation because they are attracted to its payoffs and tend to ignore its associated uncertainties and challenges (Tang et al. 2015; Kashmiri et al., 2017).

The next two types of influence, architectural and behavioral, manifest through the organizational context. As we will explain, top managers can change firms' contextual conditions that, in turn, determine how organizational members are involved with innovation. We follow Johns' (2006) definition of organizational context as the set of situational opportunities and constraints that affect the occurrence of organizational behavior. We further categorize organizational context as explicit and implicit to specify the influence of top managers on innovation as has been explained in the reviewed articles. The *explicit organizational context* refers to specific and defined opportunities and constraints that shape behavior, such as the availability and allocation of resources, the establishment of pecuniary incentives, job design guidelines, or organizational structure and processes. In turn, the *implicit organizational context* refers to tacit and undefined opportunities and constraints that shape behavior in the organization. The implicit nature of these constraints or opportunities implies that they are not clearly documented but can affect organizational members' behavior. These implicit opportunities and constraints can be motivational, cognitive, affective, relational, among others.

Architectural influence

The architectural influence of top managers on innovation manifests through decisions that shape and modify the firm's explicit organizational context. Thus, top managers' decisions alter explicit opportunities and constraints that determine how organizational members are

involved with or participate in innovation. Top managers can promote innovation through an architectural influence by setting structures and processes (Elenkov and Manev, 2005), allocating resources (Barker and Mueller, 2002; Cummings and Knott, 2017), setting rewards and monitoring schemes (Jansen et al., 2009; Vaccaro et al., 2012), or controlling organizational design features that encourage innovation (Wu et al., 2005).

Top managers' decision to allocate resources to research and development (R&D), a proxy for innovation that has been widely used in the field (see Wang et al., 2016), is an example of executives employing an architectural influence. Executives make the strategic decision of allocating resources to R&D with the expectation that organizational members efficiently manage those resources to increase innovation outputs. Thus, they enable explicit opportunities for organizational members to innovate. Research has shown that executives' demographic characteristics such as age or tenure, leadership styles such as transformational leadership, or personality dispositions such as narcissism are associated with increases in resource allocation to R&D (Barker and Mueller, 2002; Jung et al., 2008; Gerstner et al., 2013). Additional ways in which executives can influence explicit opportunities and constraints in the organization is by setting rewards and clear performance objectives. Jansen and colleagues (2009) found that executives portraying transactional leadership styles tend to build exchange-based relationships centered on contingent rewards that promote exploitative innovation while discouraging the risk taking and experimentation required for exploratory innovation.

Behavioral influence

The behavioral influence of top managers on innovation manifests through behaviors displayed by top managers that shape and modify the firm's implicit organizational context. Thus, these behaviors alter implicit opportunities and constraints that determine how

organizational members are involved with or participate in innovation. Although executives, especially in large firms, may not have frequent (or any) interactions with all organizational members, executives' behaviors can have a cascading influence in the lower echelons as a result of repetition of patterns in the different levels of management (Bass et al., 1987). Thus, top managers can influence innovation through interpersonal interactions with immediate subordinates and at subsequent levels through a cascading effect (Davis and Eisenhardt, 2011).

Jansen and colleagues (Jansen et al., 2009: 7), for example, argued that top managers support innovation "by displaying behavioral repertoires that foster consistency, stability, and control, as well as passion, risk-taking, and creativity". They can engage in effective communication to mobilize commitment, provide ideological explanations to identify followers with the firm's vision, increase followers' intrinsic motivation, or stimulate followers to think out of the box (Jansen et al., 2009). These behaviors are displayed by top executives and then perceived by other members of the firm. Unlike the case of architectural influence, no explicit decisions are made by the upper echelons that shape the context, but rather a set of interactions and behaviors that implicitly encourage innovation at the different levels of management. Jung et al. (2008) argued that transformational executives could increase firm innovation by empowering and motivating employees to exceed performance expectations, enabling unconventional thinking, and increasing commitment. A behavioral influence may also manifest in how executives lead subordinates to devote attentional resources to a particular area. For example, Gerstner and colleagues (2013) found that narcissistic top executives could increase other managers' attention to discontinuous technologies.

To further differentiate the architectural and behavioral influences, consider executives who are interested in improving employee voice so that ideas originated at different levels can

flow in an upward direction and be communicated effectively. Executives could set a particular structure or create organizational processes that favor that flow of ideas, such as avoiding centralization or extreme formalization (Fredrickson, 1986). In that case, executives exert an architectural influence by making an explicit change in the firm's context. In contrast, executives can also show appreciation for the ideas that they receive, offer feedback, communicate (verbally or digitally) how valuable those ideas are for them, and can continue to request for more ideas. In this case, executives' behaviors are implicitly promoting a context in which subordinates perceive that communicating new ideas is valuable and expected. We will further highlight the importance of this distinction in the following sections and in our proposed research directions.

Exploring the influences on the stages of innovation

The discretional, architectural, and behavioral influences we draw from the literature show that top managers' characteristics manifest organizational innovation in different ways. However, these mechanisms become complex as we take into consideration that innovation is a process instigated by the generation of an idea and finalized by the successful materialization of that idea (Anderson et al., 2014). Scholars in the innovation literature have acknowledged the notion that innovation has different stages (Amabile et al., 1996; Crossan and Apaydin, 2010; Kanter, 1988; Perry-Smith and Mannucci, 2017). For example, an extensive body of research focusing on creativity (for a review, see Anderson et al., 2014) regards idea generation as the initial step for the innovation process. Other important stages of the innovation process are championing, i.e. the gathering of support for innovative ideas (Markham, 1998; Howell and Boies, 2004; Walter, Parboteeah, Riesenhuber, and Hoegl, 2011), and implementation, i.e. turning ideas into applications (Fidler and Johnson, 1984; Klein and Knight, 2005). Scholars have also explored different antecedents of the various stages (Ng and Lucianetti, 2016) or how

different stages are connected, i.e. how creativity results in implementation (Somech and Drach-Zahavy, 2013; Škerlavaj, Černe, and Dysvik, 2014).

Recently, Perry-Smith and Mannucci's (2017) provided a framework for the different stages that connect creativity to innovation (idea generation, elaboration, championing, and implementation), and argued that an idea has to travel through these stages to bring creative concepts into tangible outcomes. We rely on this model and elaborate on how executives' discretional, architectural, and behavioral influences on innovation can operate throughout these four steps of the innovation process. In doing so, we present the emerging variety of research opportunities for the field.

Idea Generation

Top managers can influence idea generation in a discretional way by generating and bringing innovation ideas to the firm. Personal dispositions such as patterns of attention allocation can shape how top managers detect opportunities and bring them into the organization (Shepherd, McMullen, and Ocasio, 2016). Studies by Li et al. (2013), Nadkarni and Chen (2014) or Yadav et al. (2007) show that executives play a major role in detecting opportunities based on how they search for information and knowledge. Considering executives' demography, larger TMTs can have potential for greater volume of ideas, and executives' diversity opinions coming from heterogeneity in background and expertise can stimulate creativity (Boone et al., 2019; Srivastava and Lee 2005). Overall, executives' discretional influence on idea generation lies on their ability to be creative and find useful ideas. An underlying premise is that executives' position in the firm can allow them to integrate knowledge on market opportunities with the firm's strategic direction to generate ideas that fit the firm's existing capabilities. To improve our understanding on how executives generate new ideas, future studies can explore the content and

quality of such ideas. Some executives may not have a constant flow of new ideas and/or might not engage in information search frequently, but might occasionally generate key ideas that improve their firm's status substantially. Executive characteristics (and contextual conditions) that allow them to generate these key ideas can be studied further.

Top managers might also influence contextual conditions that induce creativity in the firm (Oldham and Cummings, 1996), thus supporting their architectural and behavioral influences on idea generation. Conditions that encourage creativity at different organizational levels are crucial antecedents of the emergence of innovation ideas. From an architectural influence perspective, top managers can rely on their authority to design changes in terms of resource allocation and organizational structure (Barker and Mueller, 2002; Miller, De Vries, and Toulouse, 1982; Wei and Ling, 2015). Structural attributes such as formalization and centralization can become important constraints for creative expression (Hirst, Van Knippenberg, Chen, and Sacramento, 2011). Highly centralized decision-making reduces employees' participation in the firm and their incentives to contribute with new ideas, whereas formally prescribed rules and procedures constrain employees' latitude of engaging in alternative courses of action, negatively affecting creativity (Hirst et al., 2011). For example, Wei and Ling (2015) argued that outsider CEOs (hired in an open competition) of Chinese firms are motivated to allocate resources efficiently and restructure their businesses to enable the discovery of opportunities. From a behavioral influence perspective, behaviors displayed by strategic leaders can shape implicit contextual conditions that might foster or constrain creativity. For example, transformational CEOs can increase their followers' intrinsic motivation (Jung et al., 2008; Jansen et al., 2009), an important precursor of creativity (Amabile, 1983). Top managers may also spend more time accentuating to their employees the importance of individual contributions

at all firm levels and encouraging new ways of approaching existing situations (Ling et al., 2008). Frequent interactions highlighting such conditions, in conjunction with leaders' cascading influence (Bass et al. 1987), can shape how organizational members perceive positive consequences of formulating ideas.

In short, according to their characteristics, top managers can generate innovation ideas or they can shape organizational opportunities and constraints (explicit and implicit) to affect how other organizational members generate ideas. Future research can explore whether top managers are more likely to exercise one type of influence more strongly than other types, or whether one type of influence is better-suited for idea generation under certain industry or environmental conditions.

Idea Elaboration

Top managers influence idea elaboration discretionally by evaluating and developing innovative ideas to pursue. Idea elaboration is an essential stage of the innovation process because it concludes with the idea(s) that will receive additional attention and investment (Kornish & Hutchison-Krupat, 2016; Perry-Smith and Manucci, 2017). The invested authority of top managers' position is noticeably an effective tool to make these decisions (Hambrick and Mason, 1984), especially in firms whose executives have greater latitude of action, e.g. small- and medium-sized firms (Lubatkin et al., 2006). The discretional influence on idea elaboration has been explored mostly from the perspective of TMTs. For example, compared to smaller TMTs, large TMTs can process information comprehensively and are more capable of evaluating the benefits and risks of innovation initiatives (Heavey and Simsek, 2013). Similarly, greater levels of education and knowledge diversity can facilitate TMTs' ability to discern among available options, interpret available information, and make comprehensive decisions (Boone et

al., 2019; Srivastava and Lee, 2005). CEO characteristics that facilitate or impede elaboration and selection of ideas remains, however, largely unexplored. Future research can study, for example, whether risk-seeking executives are consistently biased toward elaborating and selecting ideas that involve significant exploration activities and departure from existing knowledge, making them ignore ideas of an exploitative nature. Scholars can also study characteristics that lead executives to avoid thoughtful evaluation of ideas and engage in rapid decision-making, to have challenges selecting ideas from a set of existing ideas, or to base their elaboration process on criteria not related to the merits and strategic fit of the idea. This particular process of how executives evaluate the strategic fit of innovation ideas seems largely understudied.

Architectural and behavioral influences of top managers on idea elaboration have received little attention. One possible reason for this overlook can be the challenge of describing contextual characteristics that are *specifically* related to the elaboration of ideas. For example, Caridi-Zahavi et al. (2015) argued that CEOs' visionary innovation leadership was positively related to a context of connectivity. This connectivity, described as a relational mechanism that enables the integration of knowledge, is an important antecedent of not only the elaboration of ideas, but also of the entire innovation process. Contextual factors that capture how organizational members work on, develop, and select *existing* ideas, and the executive characteristics that precede such contextual factors, remains a rather unexplored opportunity. Future research could explore top managerial characteristics associated with structural arrangements or job design changes that enforce employee autonomy to select and pursue new initiatives for further development. Top executives may also establish evaluation and compensation schemes that reward departments for proposing and advancing innovation

initiatives. Google serves as an example of such explicit context for innovation (Iyer and Davenport, 2008), where employees are allowed to elaborate and pursue their own innovative ideas through an established innovation system. In turn, a behavioral influence on idea elaboration could manifest on interactions in which top managers provide developmental feedback on existing ideas, communicate the firm's vision to help organizational members evaluate fit of existing ideas, or promote a culture in which criticisms of ideas are accepted and embraced.

Idea Championing

Top managers can influence championing discretionally, acting as champions of the idea, i.e. actively promoting the idea to key players of the process (Perry-Smith & Manucci, 2017). Howell and Boies (2004) point out that championing implies demonstrating enthusiastic support for an idea, relating the innovation to positive outcomes, and using informal selling processes continuously. Idea championing, particularly for executives, can happen both inside and outside the firm. For example, Wei and Ling (2015) explored how CEOs' focus on political ties is highly important for innovation initiatives that require government approval. Number of ties to other external actors (e.g. outside board members or trade associations) can also assist championing, as these networks help executives obtain resources, support, and legitimacy for new entrepreneurial initiatives (Heavey and Simsek; 2013). Inside the firm, transformational CEOs can gather support for innovation initiatives, especially when those initiatives challenge the status quo and represent important risks (Jansen et al., 2009). Considering that executives act as the image of the firm and have multiple interactions with external stakeholders, future research can explore executives' championing process outside the firm's boundaries.

Executives influence idea championing architecturally or behaviorally by setting an organizational context that encourages organizational members to act as champions of innovation ideas. Champions can arise from all levels of the organization and can gather support for ideas by, for example, engaging in network building, persisting under adversity, or taking responsibility for ideas (Markham & Aiman-Smith, 2011; Walter et al., 2011). Support for innovation champions is highly important for ideas to travel through the organization in multiple directions and gather the support they require to be accepted and implemented (Burgelman, 1983; Ettlie, Bridges, and O'keefe, 1984). Employees who act as champions can convince other organizational members, including executives, of pursuing a certain idea. From an architectural influence standpoint, top managers can provide time and space for champions to share ideas and reward individuals who take charge of an innovative initiative. From a behavioral influence perspective, executives might also emphasize the importance of sharing and owning ideas that can contribute to the firm, provide direct guidance to key innovation players in the firm, or communicate in the organization that ideas championed by other employees are to be critically supported. In turn, executives might also resist the appearance of champions and seek means to discourage individuals that attempt to advance their ideas. Future research could explore with greater detail the organizational conditions that support championing and how top managerial characteristics influence those conditions.

Idea Implementation

In this stage, the innovation idea is converted into a tangible outcome that can be used (Perry-Smith & Manucci, 2017). Top managers can affect the implementation stage discretionally by, for example, making specific decisions on the implementation process or by offering suggestions to emerging concerns and problems. This might especially be the case for

SMEs, where top managers can play both strategic and operational roles (Lubatkin et al., 2006). Executive involvement on the implementation stage might also be salient in situations in which top managers have specific and valuable knowledge regarding firm processes and activities. For example, executives with certain experience or educational backgrounds can possess a variety of skills and perspectives that involve them in the innovation process (Barker and Mueller, 2002; Srivastava and Lee, 2005; Boone et al., 2019). Such involvement might translate in concrete implementation decisions and even micro management styles that shape the success and timing of the implementation stage. The characteristics that drive executives to influence implementation discretionally and the subsequent success of those efforts is, however, an understudied area of research.

From an architectural perspective, transformational CEOs are believed to set monitoring and reward systems for accomplished objectives or set particular structures or processes that support implementation (Elenkov & Manev, 2005; Jansen et al., 2009). Executives' temporal leadership can be an important antecedent of successful implementation, as it involves effective management of temporal coordination and the allocation of temporal resources for subordinates (Chen and Nadkarni, 2017). Executives with temporal leadership abilities can provide time structures to help subordinates synchronize activities and manage extra time for unexpected errors and adjustments that ensure smooth implementation (Chen and Nadkarni, 2017). Because project managers play a critical role in the successful outcome of an innovation (Mollick, 2012), top managers could also influence how developing teams are organized by assigning or relocating project managers. Future studies can explore key executive characteristics driving personnel or resource allocation decision-making processes that enforce or hinder implementation.

The implementation of innovation is acknowledged as a challenging process that entails persistence and trial and error (Klein and Knight, 2005). Top managers attempting to influence implementation behaviorally could interact with their employees in such ways that overall perceptions of room for error and the constant encountering of obstacles are increasingly acknowledged as acceptable (or unacceptable). Such interactions can shape how employees are motivated to pursue implementation challenges and how they handle those challenges when encountered. Overall, a line of research on executive antecedents on idea implementation might shed light into why many innovation initiatives fail. One explanation behind the challenges of introducing new ideas may not always be the lack of opportunities detected by the firm (idea generation), but rather the firm's failure to bring those ideas into tangible outcomes. The discretional, architectural, and behavioral role that top managers play in this process can be critical for such implementation efforts.

In **Table 2**, we provide a summary of executive influence on the four stages of innovation and possible research directions.

Influence dynamics

We have explained how top managers can have three different types of influence on each of the four stages of innovation. In the next sections, we argue that additional opportunities for understanding executives' influence on innovation reside at exploring the interplay and dynamics of different influences. More specifically, we explore how the strength of an influence might change over time (transitioning effects), how one executive characteristic might affect an innovation stage through different influences (conflicting effects), or how contingencies affect the activation and strength of an influence (contingent effects).

Transitioning effects

Overtime, a certain top managerial characteristic might change from a predominant type of influence to another. For example, a characteristic can manifest on innovation through a discretional influence, but architectural and/or behavioral influences might become prominent as other organizational or environmental conditions change. We use a CEO's experience with their position (i.e. tenure) to illustrate this effect.

CEOs with little firm experience (short-tenured) start with a fixed paradigm composed of interpretations on how the environment behaves, possible strategic options for the firm, and a vision of how the firm should be managed (Miller and Dröge, 1986, Hambrick and Fukutomi, 1991). Executives with short tenures are more energetic and risk-seeking than their long-tenured counterparts, who become "stale in the saddle" as they gain more experience in office (Miller, 1991). Furthermore, boards select new CEOs in an effort to appoint individuals with the required competencies to manage the firm facing a particular set of conditions (Finkelstein and Hambrick, 1996). These ideas suggest that executives starting their tenure can bring a relatively large collection of ideas to apply in the firm and thus influence the idea generation stage discretionally. However, as the external environment changes and the CEOs' initial paradigm no longer fits new conditions (Henderson et al., 2006), the CEO ability to bring new ideas to the firm might be impaired, and thus their discretional influence on idea generation reduced.

On the contrary, as suggested by Simsek (2007), CEOs with higher experience gain more tacit and idiosyncratic knowledge of the firm and its environment. Over time, CEOs might be more willing to encourage risk-taking behavior in their TMTs and other organizational members as they grow more confident and competent in evaluating and supporting new ideas. As their own ideas run scarce and their knowledge of the firm and its environment stagnates, CEOs might

start setting additional processes and engaging in more frequent interactions that promote the generation of ideas from other organizational levels. The resulting relationship is that CEOs early in their tenure influence idea generation discretionally by bringing their own mindsets and paradigms to the firm, but as their paradigms become obsolete in dynamic industries, some CEOs eventually influence idea generation architecturally and behaviorally by shaping an organizational context where the generation of innovation ideas by other organizational members is encouraged. Therefore, CEOs might influence idea generation discretionally early in their tenure and then increase architectural and behavioral influences as they spend more time in office.

Future research could explore additional characteristics beyond tenure that show similar transitioning effects. The consideration of time is not restricted to top managers' characteristics, but covers other time-associated changes in organizational or industry conditions that alter the mechanisms of influence through which top managers affect innovation.

Conflicting effects

A top managerial characteristic might influence innovation in various directions depending on the exerted mechanism of influence and the affected innovation stage. For example, a certain characteristic might allow top managers to generate more ideas and uncover opportunities (exerting a positive influence on idea generation) while hindering organizational members' ability to succeed in implementation stages (exerting a negative influence on idea implementation). Given the three types of influence and the various requirements to succeed at each innovation stage, these conflicting effects are very likely to occur in organizations. We use executive narcissism to illustrate these effects.

The term narcissist is employed to describe individuals with an extremely positive yet fragile self-view, who strongly believe in themselves, are constantly worried about proving their value to the world, and have need to capture others' attention (Gerstner et al., 2013; Kashmiri et al., 2017). Narcissistic leaders have been identified both as powerful change agents and as inattentive to follower feedback (Campbell, Hoffman, Campbell, and Marchisio, 2011). On the one hand, they are leaders capable of creating compelling visions for the future to attract subordinates into their path (Maccoby, 2000) and they are willing to take substantial risks by committing themselves to change and effectively allocating resources to do so (Campbell et al., 2011). On the other hand, they are leaders who have been associated with displays of arrogance, lack of empathy, and excessive need for admiration (Rosenthal and Pittinsky, 2006). They have been found generally unwilling to learn from others and are inclined toward not listening to the needs of their subordinates (Maccoby, 2000).

A narcissistic personality at the executive level has been associated with individuals who prefer risky investments or initiatives (Gerstner et al., 2013; Zhang et al., 2017) and devote less attention to objective performance indicators and more attention to social praise (Chaterjee and Hambrick, 2007). Thus, it is likely that an increasingly narcissistic CEO will be more inclined toward searching and selecting risky, innovative initiatives that can create admiration and praise from other organizational members and external stakeholders. However, if highly narcissistic executives are inattentive to feedback (Campbell et al., 2011), frequently display arrogance (Rosenthal and Pittinsky, 2006), and tend not to listen to their subordinates (Maccoby, 2000), it is likely that organizational members under their command might not generate and share idea suggestions to the firm's upper echelons as much as they would with a less narcissistic executive. An organizational context under the influence of a narcissistic top manager may not encourage

employees to contribute and elaborate upon ideas. Employees might recognize that risky ideas are perceived more favorably, but the narcissistic CEO's need of admiration and taking credit for any new initiative might also impede employees to share the idea, knowing that their contribution may not be rewarded. In other words, although narcissistic top managers are generally searching for and elaborating innovative ideas to pursue in their firms, they might negatively affect idea generation from other organizational members by crafting an organizational context unsupportive of idea generation. Hence, a top manager's narcissistic personality might have a positive discretional influence on idea generation and elaboration, but such personality trait might also inhibit organizational members' willingness to contribute to these stages, thus showing a negative behavioral influence on idea generation.

Characteristics related to information processing and cognition can also be interesting avenues to explore conflicting effects. Top managers who tend to place their attention on the future and outside the firm's boundaries, specifically in dynamic environments, are more likely to detect innovation opportunities and better able to deploy the offerings originated from those opportunities (Yadav et al., 2007; Nadkarni and Chen, 2014). Top managers with these tendencies are more likely to exert a discretional influence on the generation of ideas by detecting promising innovation opportunities for the firm through their attention allocation patterns. It is also likely that the importance executives place on attending the future and the environment influences other organizational members through the innovation context. For instance, from a behavioral influence standpoint, top managers can direct the attention of other organizational members by constantly emphasizing and giving importance to issues they deem important (Gerstner et al., 2013). However, this attention focus that seems to benefit idea generation might create problems for the idea elaboration stage. If top managers successfully

generate innovation opportunities and promote an organizational context in which followers contribute to the generation of those opportunities, it is crucial for organizational members to be able to elaborate and select the most promising innovation ideas for the firm. An excess of ideas that is not matched with a clear elaboration and selection process can force managers to devote less attention to the ideas and have less details on their feasibility (Kornish & Hutchison-Krupat, 2016). Because idea selection is a difficult prediction task by itself, top managers who encourage generation of innovation opportunities need to be aware of the number of ideas flourishing and the systems through which ideas are discarded. Selecting innovation opportunities for development without clear elaboration can lead to multiple development and future market risks for the firm. If top managers with such attentional dispositions are not aware of the possible consequences of having a large number of ideas and have not improved elaboration procedures to evaluate strategic fit, it is possible that top managerial external and future attentional focus promote idea generation while inhibiting idea elaboration through discretional and behavioral mechanisms.

Other personality dispositions, cognitive characteristics, or leadership styles hold promising avenues for future research if we consider how these might affect the stages of innovation in various ways depending on exerted influences. Such conflicting effects acknowledge that top managers' role in the firm is highly complex, and that their effects on innovation requires further understanding of the specific mechanisms that trigger them.

Contingent effects

Top managers might have stronger or weaker influences on the stages of innovation depending on organizational or environmental contingencies. For firms with certain characteristics, top managers might have more chances of influencing innovation discretionally

than through the organizational context. The opposite can be true for firms whose characteristics reduce the strength of a discretional influence. In such cases, architectural or behavioral influences might become the main path through which top managers affect innovation stages. Managerial discretion, for example, is a well-known concept that relates directly to top managers' discretional influence on innovation. Top managers however, may not always have complete latitude of action (Lieberson and O'Connor, 1972). When the discretion hold by leaders is restricted, their characteristics are less important and other organizational or environmental factors become more determinant for strategy and performance (Hambrick and Finkelstein, 1987). Some of the factors that affect discretion can be the type of industry, government regulation, competitive market structures, organizational inertia, organizational size, resource availability, among others (Finkelstein and Hambrick, 1990). If managers' discretion is high, their discretional influence is likely to have stronger effects on innovation stages compared to architectural and behavioral influences. With greater latitude of action, top managers might not see the necessity to shape the firm's organizational context, leading to a clear manifestation of their characteristics in the stages of innovation as a consequence of their authority. Thus, high levels of top managerial discretion might show a stronger influence of top managers' characteristics on the stages of innovation through discretional mechanisms than through architectural or behavioral mechanisms.

Another condition shaping the strength of different influences is firm size, which affects how leaders can influence innovation (Vaccaro et al., 2012). Because top managers' behaviors can have a cascading influence in the different levels of management (Bass et al., 1987), the behavior of a top manager, even in large organizations, can flow from the upper to the lower echelons and have the intended effect on innovation through the implicit organizational context.

However, the influence in large organizations might be even stronger if the explicit organizational context is shaped by architectural decisions made at the upper-level. These decisions might have a stronger impact on how followers do their jobs and how they interact with other followers. Such changes in the explicit innovation context through architectural decisions might be more visible and effective than attempting to influence followers merely through displayed behaviors and interactions, particularly because it will be increasingly difficult for top managers to have continuous and interactive contact with all followers as firm size increases. Therefore, as firm size increases, the influence of top managers' characteristics on the stages of innovation might be stronger through architectural mechanisms than through behavioral mechanisms.

Another possible contingent factor is executive job demands, or the degree to which executives perceive their job as challenging (Hambrick et al., 2005a). When executives experience great demands, they might vacillate in their strategic decisions, show more extreme strategic behaviors, and show high levels of stress (Hambrick et al., 2005a). Higher levels of stress, in turn, might narrow the perception of top managers and lead them to consider fewer choice alternatives (Ganster, 2005). Although this can undermine how they evaluate innovation alternatives and how they decide which alternatives to follow, high demands might have important implications for architectural and behavioral influences. Top managers experiencing high demands might delegate decision-making authority and transfer their demands to other organizational members, shaping their job responsibilities and altering the explicit innovation context. These top managers might also show an increased frequency of negative affective reactions due to the high levels of stress (Ganster, 2005), which might cause effects in the implicit context as other organizational members interact with those top managers showing

negative emotions. Therefore, executive job demands might increase top managers' influence on organizational innovation through architectural and behavioral mechanisms while perhaps reducing it through discretional mechanisms.

In Table 3 we synthetize transitioning, conflicting, and contingent effects and provide selected research suggestions.

Discussion

Based on a review of research on top managers' influence on innovation, we have proposed that the relationship between top managerial characteristics and organizational innovation can be explained through three different types of influence: discretional, architectural, and behavioral. Additionally, we categorize this research according to the generation, elaboration, championing, and implementation stages of the innovation process (Perry-Smith and Manucci, 2017) that were underlying in each study's theory. This framework increases the complexity and richness of how we understand the mechanisms through which top managers relate to organizational innovation and its various stages. It allows questioning the multiple avenues through which a single top managerial characteristic is likely to cause different effects on the stages of innovation. Furthermore, it considers how executives' influence on innovation emanates not only through their authority and position but also through other organizational members by considering top managers' influence on the organizational context.

Our framework contributes to upper echelons theory (Hambrick & Mason, 1984; Hambrick, 2007) by describing how the influence of top managers on a critical organizational-level outcome can take multiple avenues and by providing an outline to expand this field empirically. In their review of upper echelons research, Carpenter et al. (2004) pointed out that more attention should be devoted to mediators between top managerial characteristics and

organizational outcomes, a point still echoed recently by Wang et al. (2016), Bromiley and Ray (2016), and Wowak et al. (2017). We provide insights to this call by arguing that different mechanisms can explain the influence of top managers on firm innovation. Furthermore, our framework suggests that while the common conception of top managerial influence on organizational outcomes through strategic choice remains highly relevant, additional mechanisms connect managers to firm-level outcomes and could be explored in future research.

Our framework also contributes to existing literature on the leadership of innovation (Hughes, Lee, Tian, Newman, and Legood, 2018; Mumford et al., 2004; Rosing et al., 2011). Authors have argued that a single leadership characteristic can have conflicting effects on innovation or that leaders need to show flexible behaviors to adapt to innovation's changing requirements (Rosing et al., 2011; Zhang et al., 2017). This framework offers a perspective to view these points by highlighting how leadership characteristics can influence innovation in different ways depending on the type of influence and the affected innovation stage. We also point out that leadership of innovation at the executive level can have unique characteristics not covered by leadership at subsequent levels of the firm (for a review of supervisory leadership of innovation, see Hughes et al., 2018). As theorized by several studies in our review, executives not only have a behavioral influence on their subordinates, but also shape other characteristics of the organizational context and influence innovation in ways that are unique to their position.

Below, we conclude our review by providing general research recommendations and emphasizing the relevance that our framework's future theoretical and empirical development can provide to managers.

General directions

First, arguably the most promising opportunity for future studies is to develop clear theoretical mechanisms that explain executive influence on specific innovation stages and attempt to develop/measure those mechanisms clearly. Several studies tend to theorize by describing executives' tendencies and behaviors and linking them to broad antecedents of firm innovation through a "laundry list" of mechanisms. We believe that this pattern results in two major drawbacks for this topic in particular, and the field of upper echelons in general. First, the emerging accumulation of theories that describe executive influence on innovation through different and wide-ranging mechanisms challenges our ability to synthetize this research and build a nuanced understanding of how executives influence innovation. Furthermore, as we have proposed, different mechanisms may cause distinctive effects on an organizational outcome. Mixing these various mechanisms indistinctively to theorize executive influence obstructs refining the subtleties of these relationships. Second, theorizing using broad antecedents of innovation not only displays a blurred conceptualization of innovation but also creates an important mismatch between theories and measurements. While we acknowledge that innovation has multiple definitions and is a complicated process (Anderson et al., 2014; Perry-Smith and Manucci, 2017), we encourage scholars to focus on specific stages of innovation, develop theories around the executive influence on those stages using concrete and consistent mechanisms, and use measures that clearly operationalize those innovation stages.

Second, the variety of measures used to capture innovation (see Table 1) do not always fit underlying theories and capture inputs and outputs of innovation broadly. Measures such as new product introductions, revenue attributable to new offerings, or patent citations are focused on the number or impact of realized ideas. Measures on innovative capabilities (product/process or

exploratory/exploitative innovation capabilities) capture a firm's overall ability to generate and implement ideas. Furthermore, measures such as R&D spending capture innovation-intended resource allocation broadly. Thus, we miss getting a firms' ability to generate, discard and select, develop, promote, or transform developed ideas into tangible outcomes. Naturally, there are challenges associated with capturing innovation with reliable measures (Adams et al., 2006) and operationalizing the stages of innovation can be a noticeable challenge. However, we believe that designing studies around more specific steps of the innovation process (i.e. the stages) can help scholars to devise these alternative innovation measurements. In doing so, can build an increasingly comprehensive body of knowledge on how executives influence each stage of the innovation process.

Third, if one study aims to focus on executives' discretional influence on innovation, we encourage scholars to place more attention on relevant mediators between top managerial characteristics and innovation stages. Uncovering mediators between executives and firm-level outcomes, i.e. the "black box" (Hambrick, 2007; Wowak et al., 2017), is an essential step to advance strategic leadership research. For example, if the study is based on how executives make decisions that subsequently impact an innovation stage, it is worthy to capture those decisions and their characteristics. Recent studies show the important and relevant insights obtained from capturing timing, quality, and other characteristics of strategic decisions (Lin and Rababah, 2014; Musaji, Schulze, and De Castro, in press).

Fourth, if a study focuses on executives' architectural and behavioral influences on innovation, we encourage scholars to theorize and capture organizational context mediators. This follows recent calls by Liu, Fisher, and Chen (2018) to build rich sequential models relating executive characteristics to firm-level outcomes. These endeavors are likely to cause challenges

associated with mediation analyses and other research design complexities, for example capturing executive characteristics, organizational-level variables, and innovation stages from different sources and different times (Aguinis, Herman, and Bradley, 2017). However, an example study by Ou et al., (2014) shows that conducting these studies is rewarded with a rich understanding of the sequential effects of a top managerial characteristic on the organizational context.

Practitioner relevance

To run successfully innovative firms, top managers should consider how their decisions and behaviors influence different innovation stages (Moore, 2004), what type of influence they perceive as weak or dominant in their organizations, and which of these stages requires additional attention and development. We believe that the future development of our framework promises to uncover insights for these issues and help top managers build organizations that consistently generate ideas and bring them to reality.

Furthermore, scholars have argued that executives might need to adapt their characteristics to meet innovation's changing requirements (Zhang et al., 2017). This, however, is a source of cognitive dissonance and represents a challenging task for any manager (Festinger, 1962). Instead, we argue that executives can manage these complexities by employing different types of influence and overseeing different innovation stages. As leaders of the firm, top managers can attempt to gather an overall assessment of how the firm is performing in each of the stages of innovation and assess their influence on those stages. If top managers realize that some decisions and behaviors are having a negative effect on one of the stages through a certain influence, they can perhaps attempt to compensate such effect by employing another influence, thus avoiding the challenging task of adapting personal characteristics.

Conclusion

Our review and framework synthetizes existing research on executives' influence on innovation. The framework serves as a basis for scholars to explore how top managerial characteristics manifest in the different stages of innovation through different types of influence, and encourages the exploration of interesting dynamics that arise when we bring more complexity into the relationship between executives and innovation.

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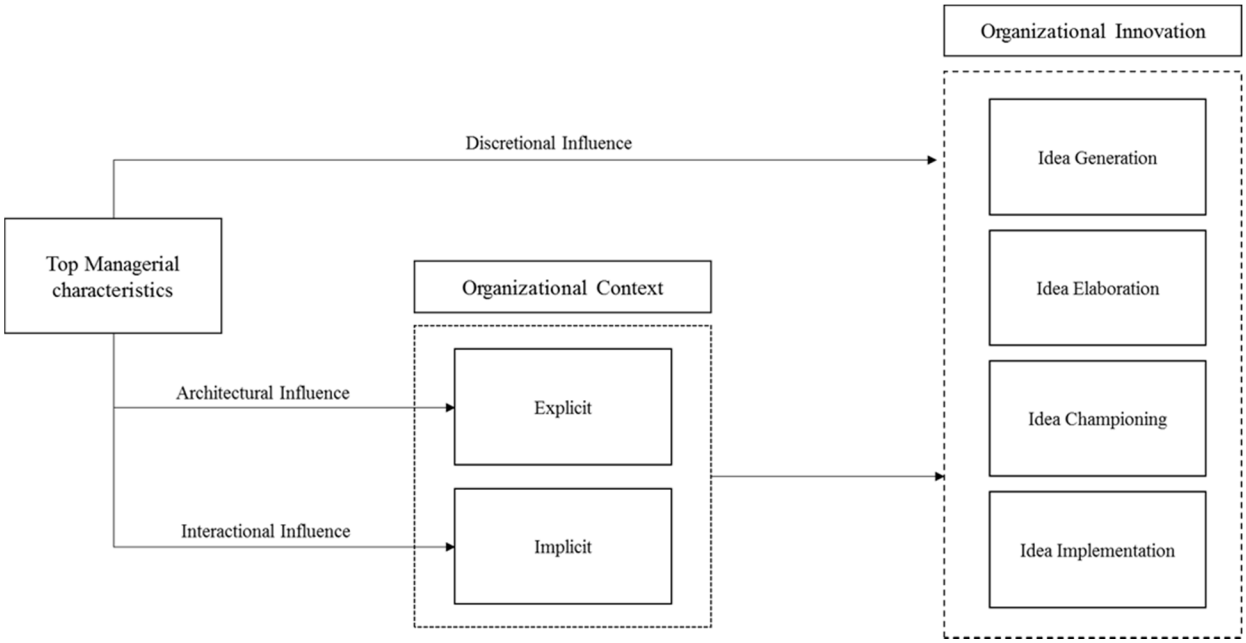

Figure 1

Framework of top managerial influence on organizational innovation

Table 1

Classification of studies by underlying types of influence and stages of innovation

Study	Characteristic of interest	Innovation measurement	Underlying type of influence	Underlying innovation stage(s)
Barker and Mueller 2002	CEO characteristics	R&D spending	Architectural	Implementation
Boone et al. 2019	TMT nationality diversity	Patent count	Discretional, Architectural, and Behavioral	Generation
Caridi-Zahavi et al. 2016	CEO visionary innovation leadership	[Survey] New product quality, development speed, new product innovation	Behavioral	Generation, Elaboration, Implementation
Chen et al. 2014	CEO transformational leadership	[Survey] Product innovation performance	Behavioral	Generation, Elaboration
Chen and Nadkarni 2017	CEO temporal dispositions and temporal leadership	[Survey] Corporate entrepreneurship (innovation, venturing, and strategic renewal)	Architectural, Behavioral	Implementation
Cummings and Knott 2017	CEO origin (outside versus internal CEOs)	R&D productivity	Architectural	Generation, Elaboration, and Implementation
Eggers and Kaplan 2009	CEO attention	Entry into new technological market (timing of product launch)	Discretional and Behavioral	Championing and Implementation
Elenkov and Manev 2005	TMT Leadership Style (transformational, transactional, and corrective-avoidant)	[Survey] Product/market and organizational innovations	Architectural and Behavioral	Generation, Championing, and Implementation
Elenkov et al 2005	TMT Leadership Style (transformational and transactional)	[Survey] Product/market and administrative innovations	Discretional, Architectural, and Behavioral	Generation and Championing
Gerstner et al 2013	CEO Narcissism	Adoption of biotechnology (alliances, acquisitions, and R&D projects)	Discretional and Behavioral	Championing and Implementation
Heavey and Simsek 2013	TMT characteristics (team size, tenure diversity, network size)	[Survey] Corporate entrepreneurship (innovation, venturing, and strategic renewal)	Discretional	Generation, Elaboration

Table 1 (continued)

Study	Characteristic of interest	Innovation measurement	Underlying type of influence	Underlying innovation stage(s)
Jansen et al 2009	CEO leadership style (transformational and transactional)	[Survey] Exploratory and exploitative innovation	Discretional, Architectural, and Behavioral	Generation, Championing, and Implementation
Jung et al 2008	CEO transformational leadership	Patent count and analysts' ratings	Architectural and Behavioral	Generation
Kang et al. 2015	CEO leadership style (transformational and transactional)	[Survey] Innovative behavior	Architectural, Behavioral	Generation, Championing, Implementation
Kashmiri et al., 2017	CEO narcissism	New product introductions; Proportion of radical innovations	Discretional, Architectural	Generation, Implementation
Li et al 2013	TMT Attention (search selection and search intensity)	New product introductions	Discretional	Generation, Elaboration, and Implementation
Ling et al. 2008	CEO transformational leadership and TMT characteristics	[Survey] Corporate entrepreneurship (innovation, venturing, and strategic renewal)	Architectural, Behavioral	Generation, Championing, and Implementation
Makri and Scandura 2010	Leadership style (operational and creative)	Patent count and patent citation (innovation quantity and quality)	Discretional and Behavioral	Generation, Championing, and Implementation
Mihalache et al 2012	TMT information diversity and shared vision	Revenue attributable to new products and services	Discretional	Generation, elaboration, and Implementation
Nadkarni and Chen 2014	CEO attention (temporal focus)	New product introductions	Discretional	Generation and Implementation
Qian et al 2013	TMT cognitive conflict and affective conflict	[Survey] number of innovations (completely/improved new products, new processes, and new management programs)	Behavioral	Implementation

Table 1 (continued)

Study	Characteristic of interest	Innovation measurement	Underlying type of influence	Underlying innovation stage(s)
Ridge et al. 2017	TMT attention	New product introductions	Discretional	Generation
Simsek 2007	CEO tenure and TMT risk-taking propensity	[Survey] Entrepreneurial initiatives (innovation, venturing, and strategic renewal)	Discretional and Behavioral	Elaboration, Championing and Implementation
Smith et al 2005	TMT knowledge stock and ego networks	Number of new products and services	Discretional	Generation and Elaboration
Srivastava and Lee 2005	TMT characteristics (education, size, tenure, and heterogeneity)	Order and timing of new product moves	Discretional	Generation, Elaboration, and Implementation
Stock et al. 2018	Top managers' positive self-regard	Product program newness	Discretional and Architectural	Generation and Championing
Talke et al 2010	TMT task-oriented diversity	[Survey] Innovation field focus and new product portfolio innovativeness	Discretional	Generation, Elaboration, and Implementation
Tang et al 2015	CEO Hubris	Revenue attributable to new products and services; Patent count and patent citation	Discretional	Championing and Implementation
Vaccaro et al 2012	CEO transformational and transactional leadership	[Survey] Management innovation (innovations in practices, processes, and structures)	Architectural and Behavioral	Generation and Implementation
Wei and Ling 2015	CEO characteristics (origin, experience, network ties)	[Survey] Corporate entrepreneurship	Discretional	Generation, Championing
Wu et al 2005	CEO tenure	Patent count	Architectural	Generation
Yadav et al 2007	CEO Attention (future and external focus)	New technology speed of detection, speed of development, and breadth of deployment	Discretional	Generation, Elaboration and Implementation

Table 1 (continued)

Study	Characteristic of interest	Innovation measurement	Underlying type of influence	Underlying innovation stage(s)
Yuan et al. 2017	CEO ambivalence	[Survey] Corporate entrepreneurship (innovation, venturing, and strategic renewal)	Discretional	Generation
Zhang et al. 2017	CEO humility and narcissism	[Survey] Firm innovative culture and firm innovative performance	Behavioral	Generation and Implementation

Table 2

Research opportunities – Executive influence on the four stages of innovation

Innovation stage	Stage description	Type of influence	Description	Selected research opportunities
Generation	Generating innovative ideas and detecting opportunities	Discretional	Executives generate and bring innovation ideas to the firm	How do executives generate radical or incremental innovation ideas? What is the number and type of ideas that executives should generate to maximize firm innovation performance?
		Architectural/Behavioral	Executives influence explicit/implicit opportunities to encourage generation of ideas in the organization	How can executives create a structure that supports a constant flow of new ideas? How do executives articulate visions that motivate creativity?
Elaboration	Evaluating and developing innovative ideas	Discretional	Executives elaborate upon and develop innovative ideas to pursue	How can executives evaluate the strategic fit of new ideas accurately? Are some executives biased toward pursuing ideas with certain characteristics?
		Architectural/Behavioral	Executives influence explicit/implicit opportunities for organizational members to develop existing ideas	Are executives likely to delegate the elaboration of ideas? If so, for which type of ideas?

Table 2 (continued)

Innovation stage	Stage description	Type of influence	Description	Selected research opportunities
Championing	Promoting innovative ideas to key players and gathering support	Discretional	Executives gather internal and external support for innovative ideas	Which intra- or inter-organizational ties are most effective for executives to gather idea support? How can executives, and under what conditions, be more successful at promoting ideas?
		Architectural/Behavioral	Executives influence explicit/implicit opportunities for organizational members to act and persist as champions	How do executives promote/inhibit the appearance of champions? What processes can executives modify to support the appearance and success of champions?
Implementation	Turning ideas into a tangible outcome to be used	Discretional	Executives get directly involved in the implementation process	In what conditions should executives get directly involved with the implementation of innovation initiatives? When are executives likely to inhibit implementation processes by getting involved? What type of knowledge and behaviors can help executives to successfully support implementation processes?
		Architectural/Behavioral	Executives influence explicit/implicit opportunities to support implementation processes in the organization	How do executives allocate and withdraw resources to and from ideas undergoing implementation? How can executives motivate organizational members to persist in challenging implementation processes?

Table 3

Research opportunities - Dynamics of executive influence on innovation

Type of effect	Description	Selected research opportunities
Transitions	The strength of executives' discretional, architectural, or behavioral influences on an innovation stage changes with the passage of time	How does tenure change executives' discretional influence on different innovation stages? Which influence should executives use for successful innovation during the different phases of an industry's life cycle? How can executives change and adjust the organizational context and overcome inertia after constraints and opportunities become entrenched?
Conflicts	Executives have positive and negative effects on different stages of innovation through different types of influence	Can executives compensate a lack of creativity by encouraging subordinates to generate ideas? When do executives receive and elaborate upon ideas emerging from their subordinates? Do executives require similar skills to champion ideas inside/outside the firm and to motivate subordinates to withstand challenging implementation processes?
Contingencies	Executives' discretional, architectural, or behavioral influences on an innovation stage are stronger or weaker according to organizational or environmental conditions	How does firm size affect executives' influence on innovation? Does one type of influence become more prominent and effective as firm size changes? Is executives' discretional influence challenged by ownership and/or by board composition? Does low firm performance affect executives' behavioral influence on innovation negatively? Can executives overcome such conditions?

CHAPTER 3. THE INTERACTIVE INFLUENCE OF CEO RISK AVERSION AND RELATIVE COMPENSATION ON FIRM INNOVATION

Modified from a manuscript to be submitted to the *Strategic Management Journal*

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Abstract

Recent reviews of upper echelons literature have discussed the field's general fragmentation caused by a plethora of studied constructs explaining executive behavior. In this study, we follow recent suggestions to integrate these constructs and theorize how executives' personal dispositions and compensation interact to explain executive behavior. More specifically, we use a sample of small- and medium-sized firms (SMEs) and study how CEOs' risk propensity and CEOs' perceptions of relative compensation work together to predict firm innovation. Our results indicate that it is important to study executives' personal dispositions (i.e. risk propensity) in conjunction with compensation perceptions, as they both shape executives' information processing and subsequent strategic decisions. We also discuss important implications for innovation in SMEs.

Introduction

Innovation is one of the most important organizational efforts to maintain a competitive advantage in current markets. Behind the complex process of turning creative ideas into successfully implemented outcomes (Perry-Smith and Manucci, 2017), organizational leaders and particularly chief executive officers (CEOs) have received significant attention (Tang et al., 2015; Kammerlander et al., 2015; Zhang et al., 2017). On the one hand, a large number of studies have drawn on upper echelons theory (Hambrick and Mason, 1984) to predict executives'

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actions and decisions in favor of innovation based on CEOs' dispositional characteristics (see Crossan and Apaydin, 2010; Bromiley and Rau, 2016). On the other hand, the literature on executive pay has shown how executives' compensation arrangements and relative compensation can have an important influence in executives' strategic decisions (Kini and Williams, 2012; Seo et al., 2015), particularly in terms of R&D spending (Fong, 2009). For example, CEOs with great levels of self-confidence who are likely to favor challenging and risky strategies have been associated with increased levels of firm innovation (Galasso and Simcoe, 2011; Tang et al., 2015; Kashmiri et al., 2017). The motivation of these CEOs to pursue innovation lies within their personal tendencies, as their behavior is driven to satisfy their own values and preferences (Wowak et al., 2017). In turn, CEOs might pursue risky strategies motivated by a desire to increase their pay relative to other referents (Fong, 2009). This indicates that CEOs can be motivated to favor innovation by a desire to increase their financial wealth to a point they deem satisfactory. Thus, they base their strategic decisions according to pay comparisons and can be motivated to pursue innovation by their perceptions of pay disparity (Fong, 2009).

Insights from this research suggest that executive behavior toward innovation can be predominantly driven by either their personal preferences or their desire to increase compensation. However, an important question that remains is how such motivators work together to influence executives' innovation-related decisions. What happens when CEOs who are predisposed by personal characteristics to pursue innovation are not motivated to do so from a compensation perspective? Will these CEOs reduce their tendency to favor innovative strategies, or continue to lead their firms into innovative efforts? Conversely, would risk-averse CEOs be willing to pursue risky projects when they believe their compensation should be higher, and see innovation as an opportunity to achieve this goal? In order to answer such questions,

there is a need to explore these motivators together and evaluate how CEOs' personal characteristics and their perception of relative pay can explain executive decisions to pursue innovation. The way in which such interaction manifests on innovation is an essential question for organizations because CEOs' behavior is likely driven by both their psychological attributes and their extrinsic rewards (Wowak et al., 2017).

In this study, we explore this topic by focusing specifically on CEOs' risk propensity and their perceptions of relative compensation to explain organizational innovation. We draw on upper echelons theory (Hambrick and Mason, 1984), the attention-based view (Ocasio, 1997), and equity and social comparison theories (Adams, 1965; Festinger, 1954) to propose how CEO risk propensity relates to firm innovation and how CEO relative pay can alter these relationships in interesting ways. First, we argue that CEOs' level of risk propensity influences attention to and selection of innovation projects. As their risk propensity increases, we argue that CEOs will tend to place greater attention to and be more likely to select and pursue innovation projects. Second, we argue that CEO relative compensation will modify such relationships and alter how risk propensity relates to firm innovation. More specifically, as CEOs perceive their compensation to be higher than their peers, they might be less likely to attend to and pursue innovation in their firms.

We conceptualize innovation as the generation and implementation of new ideas (Van de Ven, 1986; Anderson et al., 2014), which broadly captures the successful implementation of offerings or processes that firms perceive as new. This allows for a better comparison of innovation across firms as it captures any form of new knowledge that provides benefits to each firm (Nohria and Gulati, 1996). We specifically focus on small- and medium-sized firms (SMEs) due to top managers' greater levels of discretion, as reflected in a small number of hierarchical

levels in the firm and CEOs' participation in both strategic and operational roles (Lubatkin et al., 2006). This increases the likelihood that CEOs have an important influence on innovation efforts and that their preferences in terms of risk propensity or compensation perceptions manifest in the firm's innovation outcomes.

We study CEO risk propensity for two main reasons. First, the image of a CEO who does not fear change, makes bold decisions, and undertakes risky actions has proliferated as one of the finest CEO profiles for firms seeking to enhance innovation efforts (Tushman et al., 2011; Gerstner et al., 2013l; Tang et al., 2015; Kashmiri et al., 2017). Researchers have built theoretical links between a variety of executive characteristics and organizational innovation partly under the assumption that those characteristics reflect an individual's risk-seeking behavior (e.g. Barker and Mueller 2002, Galasso and Simcoe, 2011; Gerstner et al., 2013; Tang et al., 2015; Zhang et al., 2017; Kashmiri et al., 2017). For example, studies exploring CEO narcissism (Gertsner et al., 2014; Kashmiri et al., 2017; Zhang et al., 2017) have argued that narcissistic CEOs are overconfident with their abilities, likely to be more optimistic about their strategic efforts, likely to take bold and challenging actions, and have an overall decrease perception of risk. In turn, these behaviors manifest in the firm's adoption of new technologies (Gerstner et al., 2013), an increased number of new product introductions (Kashmiri et al., 2017), or overall superior innovative performance (Zhang et al., 2017). Characteristics such as overconfidence or hubris reflect a CEOs' tendency for optimistic beliefs, lower expectations of failure, and thus a propensity for risky investments and higher innovation (Galasso and Simcoe, 2011; Tang et al., 2015). Finally, characteristics such as CEO age or experience have been related to CEO risk-taking as reflected in investment decisions in R&D (Barker and Mueller, 2002). Overall, a common theme emanating from this research is that CEOs who assume risks are highly

important for the pursuit and success of organizational innovation. Thus, we explore the role CEO risk propensity due to its importance as a theoretical mechanism linking various CEO characteristics to firm innovation. In doing so, we provide an empirical validation of this prevalent theoretical mechanism.

Second, a vast literature on executive compensation has studied the effects of financial incentives on CEOs' strategic decision-making largely based on how compensation alters CEOs' risk tendencies (Wowak et al., 2017). Based on agency theory (Jensen and Meckling, 1976), a main prediction of this research is that equity ownership can encourage executives to make strategic choices that increase shareholder wealth. However, the case of how CEOs are motivated to make strategic decisions based on pay comparisons with their peers, let alone how such pay comparisons interact with CEOs' dispositional tendencies, has received much less attention (Wowak et al., 2017). This is particularly important for small- and medium-sized firms (SMEs) in which executives are likely to have ownership and hence their motivations to increase compensation might be more likely to originate from social comparisons. A CEOs' risk-taking behaviors, which have been the focus of attention on the compensation literature, might have stronger relationships with innovation depending on such pay comparisons with industry peers. This highlights the importance of integrating CEO risk aversion with compensation to understand a firm's orientation toward innovation efforts.

The study provides its main contribution to the vast literature on top managers' influence on organizational outcomes (see Bromiley and Rau, 2016; Wowak et al., 2017) by integrating two streams of research in the field that have developed in silos. While research based on upper echelons theory (Hambrick and Mason, 1984) has shown how executives' characteristics influence strategic decision-making processes and subsequent firm-level outcomes, research on

executive compensation has explored similar outcomes studying executives' tendencies to increase their financial wealth (see Wowak et al., 2017). Such separation limits the construction of a holistic perspective of executive behavior, where both personal preferences emanating from individual characteristics and incentives to increase compensation play an interactive role to determine decisions at the upper echelons. We attempt to bring the two fields together by theorizing how both executive characteristics (risk aversion) and compensation (relative pay) work together to influence SMEs' innovative efforts.

We also contribute specifically to the growing body of literature on the relationship between executives' characteristics and organizational innovation (Galasso and Simcoe, 2011; Tang et al., 2015; Zhang et al., 2017; Kashmiri et al., 2017). By studying various characteristics, this body of research suggested that CEO risk-taking tendencies are important for firm innovation as they reflect a CEO's willingness to undertake challenging endeavors with uncertain outcomes. We take these insights further by theorizing how CEOs' risk-taking propensities can influence strategic decisions that support innovation endeavors.

Theoretical background

CEOs and organizational innovation

Hambrick and Mason (1984) built on the concept of bounded rationality (Cyert and March, 1963) to propose their upper echelons theory, which argues that executives make decisions on the basis of their experiences, values, personalities, and other individual factors. Given their authority and position in the firm, the strategic decisions they make have a subsequent impact in organizational outcomes. One outcome that has received particular attention from scholars is innovation. Research has shown that a variety of CEO characteristics including demographic factors (Young et al., 2001; Barker and Mueller, 2002), personality traits

(Gerstner et al., 2013; Tang et al., 2015; Kammerlander et al., 2015; Zhang et al., 2017), leadership styles (Jung et al., 2008; Jansen et al., 2009), or cognitive dispositions (Yadav et al., 2008; Eggers and Kaplan, 2009; Nadkarni and Chen, 2014) can influence innovation outcomes of the firms CEOs lead. As we will show in the following section, CEO risk-seeking tendencies have played an important role in explaining CEOs' influence on innovation outcomes.

CEO risk tendencies

CEOs' tendencies to take risks have received interest from scholars in different fields and have been linked theoretically to numerous dispositional characteristics. For example, scholars in the finance literature have explored how CEO age or CEO inside debt holdings are reflected in the firm's riskiness of investment policies (Cassell et al., 2012; Serfling, 2014). Risk-taking behavior decreases with CEO age as shown by conservative investment policies such as reduced R&D or diversified operations and acquisitions (Serfling, 2014). In turn, large inside debt holdings expose the CEO to default risk, which manifests in less risky financial policies such as diversification and asset liquidity (Cassell et al., 2012). In the field of upper echelons, various characteristics such as tenure (Simsek, 2007), hubris (Li and Tang, 2010), or social class background (Kish-Gephart and Campbell, 2015) have been associated with executives' propensity to take strategic risks. Long-tenured CEOs have more experience, a deeper knowledge on the firm's environment, and are more integrated with the networks of key players than their short-tenured counterparts, allowing them to support more risky initiatives via their top management teams (Simsek, 2007). Hubris reflects an overestimation of abilities and underestimation of resource requirements for risky initiatives and uncertainties (Li and Tang, 2010). In addition, compared to CEOs from middle class origins, CEOs from lower or upper class origins take greater strategic risks given their differences in childhood societal rank and

access to resources (Kish-Gephart and Campbell, 2015). Overall, these studies show risk propensity as a key theoretical mechanism linking executive behavior to organizational outcomes.

A similar pattern can be observed in the literature exploring the relationship between top managers' characteristics and firm innovation, in which scholars have argued that certain CEO characteristics can reflect CEOs' tendencies to overlook associated risks and thus influence firm innovation positively. For example, studies exploring CEO narcissism (Gertsner et al., 2014; Kashmiri et al., 2017; Zhang et al., 2017) have argued that narcissistic CEOs are prone to undertake challenging actions to attract attention and improve their self-view, leading to increased likelihood of engaging in risky actions. In turn, these behaviors manifest in the firm's adoption of new technologies (Gerstner et al., 2013), increased number of new product introductions (Kashmiri et al., 2017), or overall superior innovative performance (Zhang et al., 2017). Overestimation of abilities and reduced perceptions of risk leading to higher firm innovation levels have also been studied through CEO overconfidence (Galasso and Simcoe, 2011), CEO hubris (Tang et al., 2015), and other characteristics such as CEOs' age or career experience (Barker and Mueller, 2002). Overall, these studies suggest that CEOs' decisions to pursue innovation strategies are highly dependent on those CEOs' risk-taking propensities.

Considering the importance of CEO risk propensity as an underlying mechanism linking CEO characteristics to firm-level outcomes, we capture CEO risk propensity directly to explore how relative compensation shapes its relationship with organizational innovation.

CEO compensation and strategic actions

A large number of studies exploring executive compensation draw on agency theory and the principal-agent risk-sharing problem (Eisenhardt, 1989) to explain incentive differences

between agents and principals and how the interests of principals and agents can be aligned (Martin et al., 2016). More specifically, how shareholders can set executive compensation (usually increasing equity ownership) so that top managers pursue strategic actions that increase shareholder wealth (Wowak et al., 2017). For example, stock options granted to executives, which provide benefits to the holder with stock price increases and avoid losses to the holder with stock price decreases, encourage executives to take more risks (Sanders and Hambrick, 2007; DeYoung et al., 2013). From an innovation standpoint, Makri et al. (2006) found that technology-intensive organizations can be more effective innovators if CEO incentives are based on a combination of financial results and indicators of long-term innovation quality. Such compensation arrangements alleviate the risk-sharing problem by encouraging CEOs to commercialize innovations while ensuring the firm's ability to innovate in the future.

This stream of research has focused mostly on public corporations where agency theory's interest-alignment problem is highly salient (Wowak et al., 2017). These conditions change when we consider SMEs and their different ownership structure. In Colombia, approximately 95% of SMEs are owned by families (Dinero, 2015), who take on the role of top managers and are usually founders or second generation. This increasingly blurred line between principals and agents defies self-interested behavior assumptions and diminishes the risk-sharing problem. In this case, executives are still motivated to increase their personal wealth, but they might be more likely to assess their pay in a relative sense by comparing their compensation with salient referents. For example, executives might be motivated to increase their pay if they believe to be underpaid according to executives of similar firms.

Studies have drawn on tournament theory (Lazear and Rosen, 1981), equity theory (Adams, 1963), or social comparison theory (Festinger, 1954) to explain how relative payment

influences executive behavior. Most of this research, however, has focused on how pay comparisons influence executive turnover (see Wowak et al., 2017). For example, pay dispersions within the TMT are positively associated with TMT turnover, whereas CEO-TMT pay differences relate negatively to turnover (Ridge et al., 2017). Other studies have shown that CEOs who are underpaid relative to their peers are more likely to remain in the firm (Fong et al., 2010) and more likely to underpay their subordinates (Wade et al., 2006). The consequences of how relative payment affect top managers' decisions, however, has received less attention (Wowak et al., 2017). Studies have shown that relative to peers, underpaid CEOs are more likely to engage in acquisitions (Seo et al., 2015) or increase R&D spending (Fong, 2010). This highlights that relative payment plays a role in determining strategic decisions, and possibly risk-taking behaviors. However, no research to date has tackled the question of how CEO compensation, specifically relative payment, plays a role in conjunction with CEO characteristics to determine strategic outcomes. We theorize this interactive influence in the following section.

Hypotheses

Top managers face more information than they can ultimately process and grasp (Cyert and March, 1963). The type of information that decision makers attend to, driven by their cognitive bases (Hambrick and Mason, 1984), influences the firm's strategic decisions and those decisions' associated outcomes (Ocasio, 1997). Changes in managerial attention can change subsequent strategic decisions (Cho and Hambrick, 2006; Kaplan, 2008; Eggers and Kaplan, 2009) and innovation outcomes such as the rate of new product introduction (Yadav et al., 2007) or the economic impact of new products (Tang et al., 2015). This research suggests that CEOs' focus of attention is selective and its direction has important consequences for decision-making and innovation. This is particularly important in the case of SMEs, in which top managers play

both operational and strategic roles, are knowledgeable about the firm's competencies, and are close to the markets to notice relevant changes, allowing them to discover and evaluate opportunities directly (Lubatkin et al., 2006). We build on this research to explain how risk propensities and compensation perceptions shape executives' attentional patterns to influence organizational innovation.

We argue that CEO risk propensity will manifest in organizational innovation through two underlying mechanisms: search and selection of innovation opportunities. First, CEO characteristics shape executives' field of vision and the type of information they search and interpret (Hambrick and Mason, 1984). Thus, risk-seeking CEOs are likely to search for challenging strategic actions that promise strong performance benefits for their firms. Innovation is characterized as an important effort for firm adaptation because it allows firms to renew their capabilities and remain competitive in their environments (Rosenbusch et al., 2011). However, innovation is challenging because it demands experimentation with new products and processes as well as search for new knowledge and development of new skills (Lavie et al., 2010). Because innovations represent a firm's introduction or implementation of new offerings and/or processes that change incrementally or fundamentally from its existing ones, their implementation is associated with unforeseen challenges, while their impact on the firm is expected as positive but is often uncertain (Mueller et al., 2013). Thus, innovation initiatives are likely to catch the attention of risk-seeking CEOs because these initiatives are defiant, require the organization to update knowledge and skills, yet hold opportunities to create an important impact.

Second, we argue that risk propensity will influence CEOs' willingness to pursue innovation endeavors. While CEOs might devote their attention to innovation opportunities and the type of information that top managers attend to will determine the strategic decisions they

make (Cho and Hambrick, 2006; Ocasio, 1997), CEOs might not necessarily decide to commit resources to those innovation initiatives. CEOs, especially in the context of SMEs, are aware of their resource limitations and the underlying difficulties of implementing innovation opportunities. Implementing these initiatives might require CEOs to borrow significant financial resources, hire new employees with limited ability to meet associated obligations, and place the firm at a potential survival threat should these innovation opportunities be unsuccessfully implemented. Thus, we argue that CEOs with greater risk propensity might be willing to assume and undertake such challenges. Hence:

Hypothesis 1: CEO risk-taking propensity has a positive relationship with organizational innovation

We argue that CEOs' perception of their relative compensation, or how they perceive their compensation's standing relative to peers, will shape the relationship between CEO risk propensity and organizational innovation by decreasing the likelihood that they search for and pursue innovation opportunities. When CEOs' perception of relative compensation is low (they perceive to be underpaid relative to others), theories based on norms of fairness such as equity theory (Adams, 1963) or social comparison theory (Festinger, 1954) suggest that executives can take actions aimed at creating a fairer or equal situation. CEOs who perceive underpayment relative to peers can experience feelings of inequity (Trevor and Wazeter, 2006) and take action to restore compensation fairness (Bloom, 1999; Fredrickson et al., 2010; Yanadori and Cui, 2013). For example, CEOs who perceive to be underpaid are more likely to make acquisitions or increase R&D spending in an attempt to increase their pay (Seo et al., 2015; Fong, 2010). Thus, CEO risk propensity is likely to manifest on innovation opportunities for executives who are motivated to increase their compensation.

In turn, executives might be less likely to search and pursue innovation opportunities when they perceive their relative compensation to be high. CEOs who perceive a better compensation standing might not be willing to undertake challenging actions that threat their position in their compensation scale. This is consistent with work suggesting how good performance (i.e. compensation) standing can drive executives' focus from opportunities for gain to dangers of loss (Kahneman and Tversky, 1979; March and Shapira, 1987). In other words, under conditions of over payment, it might be less likely that CEOs' risk propensity will manifest in the search and selection of innovation opportunities because overpaid CEOs do not want to threaten their standing.

Hypothesis 2: CEO perception of relative compensation weakens the positive relationship between CEO risk-taking propensity and organizational innovation.

Methodology

Sample

We present authorization information from the Institutional Review Board (IRB) to collect this data in the appendix. We collected data through a two-stage survey of executives of SMEs operating in different industries in Colombia. We follow the broad conceptualization of innovation as the development and implementation of new ideas (Van de Ven, 1986; Anderson et al., 2014). Under this categorization, we classify any policy, structure, process, product/service or market opportunity perceived to be new by CEOs as an innovation. Previous studies adopted this perspective (e.g. Nohria and Gulati, 1996; Ling et al., 2008) considering it allows the comparison of firms operating in multiple industries.

Colombian SMEs represent a suitable context for multiple reasons. First, executives of SMEs are commonly seen as having higher levels of managerial discretion (Lubatkin et al.,

2006; Kammerlander et al., 2015), making it more likely that their characteristics and decisions manifest more strongly on organizational outcomes compared to CEOs of larger firms. Second, SMEs have fewer levels of management and are less constrained by external influences (e.g. powerful outside directors, capital markets, or challenges of having multiple divisions) than large firms, increasing SMEs executives' influence on firm-level outcomes (Ling et al., 2008). Third, studies have shown relatively higher levels of power distance in Colombia compared to other countries (Botero and Van Dyne, 2009), highlighting the authority of Colombian CEOs on determining key strategic decisions of the firm. Research has highlighted the relationship between high levels of power distance and organizational members' acceptance of hierarchy and authority, allowing leaders to exert great influence on their organization merely through their position (Fikret Pasa, 2000).

Fourth, Colombian firms have experienced an outstanding and recent improvement in innovation efforts. According to the national survey of technological innovation and development (DANE, 2017), the number of companies classified as innovative increased 44% between 2013 and 2016. For this same period, the number of product innovations introduced to the national and international markets increased 87% and 300%, respectively, and the number of process innovations (including production, logistic, management, or commercialization methods) increased 22% on average. Furthermore, the number of employees in each firm participating in innovative activities increased 39% for this period.

We used several sources to identify our sample. The main data source were multiple Chambers of Commerce located throughout Colombia, which possess directory-type company information on all types of Colombian companies. We supplemented this data with additional public information available from the Colombian Department of Statistics (DANE) and the

Unique Business and Social Registry (RUES). We obtained contact information for a total of 5,847 SMEs. These firms fit the Colombian SME definition specified in the Law 590 of 2000, which defines SMEs based on both number of employees and total assets.

A total of 1443 firms were randomly selected from the database and contacted by telephone. The CEOs of these firms were asked to participate in a two-stage survey focusing on innovation activities. The CEOs of 403 SMEs initially agreed to participate in the first stage, with whom we scheduled appointments to deliver and answer the survey (27 percent response rate). We dropped 22 surveys in cases in which the CEO was replaced unexpectedly by another employee to answer the survey, leaving 381 usable surveys in the first stage. We requested these CEOs for contact information of another member of the TMT, who we contacted six months after the first stage to schedule an appointment to answer the second stage of the survey. A total of 120 TMT members responded and participated in the second stage. After dropping seven firms from the analysis due to missing data in our main study variables, we had a usable sample of 113 firms. A power analysis before data collection indicated that a sample of 213 firms was required to find significant effects assuming a medium, conservative effect size in the population. In turn, a stronger effect size would require data collection from approximately 122 firms. Following the plethora of studies finding important effects of executives on their firms, our final sample was intended to target this number.

The 381 firms that responded to the first stage were scattered across Colombia's major cities. In figure 1, we present a map of the geographical locations in Colombia in which we obtained responses.

The resulting firms had, on average, 24 years of age and 138 employees. CEOs, on average, had 43 years of age and had been on their position for approximately 9 years. Forty

percent of these CEOs were female, 69 percent had undergraduate or graduate degrees, and 35 percent founded their firms.

Common method variance

Questionnaires administered to managers and coming from single sources often have problems associated with common method variance (Richardson et al., 2009). Following recommendations from Podsakoff et al. (2003), we took several actions to alleviate these problems. First, criterion and predictor variables measured at the same time might produce artifactual covariance that is independent of the constructs themselves. Thus, we used a two-phase survey to capture dependent and independent variables at two different time points with a separation of six months between the phases. Second, artifactual covariance may also be present when the same individual is answering to certain constructs or there is a tendency to respond to certain items from a socially acceptable perspective. To alleviate this, the first phase of the survey collected information from the CEO and the second phase collected information from another member of the TMT who reported directly to the CEO and had full information on the firm's strategic direction and outcomes. Third, we followed Podsakoff and colleagues' (2003) recommendations and ensured anonymity and reduced evaluation apprehension by communicating to the respondents that there were no right or wrong answers. Finally, several of our constructs are free of methodological bias because we used objective measures rather than subjective assessments (e.g. age, gender, founder status).

Measures

Individuals tend to be consistent in their risk preferences, with some individuals being more comfortable taking risks compared to others (Dohmen et al., 2011). To capture *CEO risk propensity,* we employed the measure used by Josef et al. (2017), which has one question

capturing general risk-taking propensity followed by six questions capturing risk-taking propensity in six different domains (driving, financial, recreational, occupational, health, and social). More specifically, the first question asked the CEO: "are you generally a person who is willing to take risks or do you try to avoid taking risks?" The second set of questions asked the CEO: "People can behave differently in different situations. How would you rate your willingness to take risks in the following areas?" All questions were rated on a 10-point Likert scale from "not at all willing to take risks" to "very willing to take risks." This measure has been used in several scientific analysis of risk taking and has shown good internal consistency (see Josef et al., 2017). Furthermore, risk assessments based on questionnaires offer a powerful yet underutilized method for behavioral strategy research (Powell et al., 2011). The measure in our sample showed good reliability ($\alpha = 0.87$) and subsequent factor analysis indicated that a single factor explained the data well. Thus, we used the average of the seven items in subsequent analyses.

Studies exploring behavioral effects of CEO relative compensation have used publicly traded firms where complete compensation information is accessible and accurate comparison of compensation across firms within an industry is available (e.g. Fong, 2010). Using this type of measures in our study was not possible for multiple reasons. First, there was no available and public compensation information for firms in our sample. Second, the extent to which there is a common CEO compensation structure (e.g. salary and bonuses) comparable across SMEs is unclear. Third, the construction of an objective measure of relative compensation does not necessarily capture CEOs' perception of their relative compensation (Fong, 2010). It is possible that underpaid (overpaid) CEOs believe they should receive less (more) compensation for their job. Fourth, these measures do not capture CEOs who perceive their compensation as average

compared to CEOs of similar companies. Thus, considering there was no precedent (to the best of our knowledge) to capture CEOs' perceptions of their compensation, we developed a simple, single-item measure to capture *CEO relative compensation*. The question was worded as follows: "imagine yourself in a room with your peers (CEOs of similar companies) when a consultant enters to classify the compensation of all CEOs in the room. How do you think your compensation would compare to that of your peers?" CEOs were asked to select a number ranging from -10 to 10, where -10 meant that the compensation was among the lowest in the room, 0 meant that the compensation was in the average of the room, and 10 meant that the compensation was among the highest in the room. The majority of CEOs perceived to be overpaid (62 percent), 23 percent of CEOs perceived their compensation as average, and the remaining CEOs perceived to be underpaid (14 percent).

We used a single-item question to capture relative compensation for several reasons. First, a perception of compensation is a relatively simple opinion question that would turn repetitious with multiple items. Respondents, especially executives, may resent being asked questions that appear to be repetitious (Wanous et al., 1997). This might affect their responses on this question and introduce bias to subsequent questions in the survey. Second, a single item is usually easier to understand from a management perspective (Wanous et al., 1997). Third, the use of fewer items can be more appropriate when issues of time or participant fatigue are possible (Gardner et al., 1998), as was the case with our sample of executives. Finally, several studies employed on different constructs have shown that the use of a single item can be as reliable and useful in predicting outcomes as a multi-item scale (Bergkvist and Rossiter, 2007; Gardner et al., 1998; Wanous et al., 1997).

To capture *organizational innovation,* we used He and Wong's (2004) 8-item measure. Four items reflect exploratory orientation and four items reflect an exploitative orientation. CEOs were asked to assess their firm using a 5-point Likert scale, ranging from "not important" to "very important", how they consider various criteria for pursuing an innovation project. Sample items refer to criteria such as "introduces a new generation of products/services", "enters new technology fields", "improves existing product/service quality", or "reduces production cost". Internal consistency of this measure ($\alpha = 0.87$) was above accepted levels.

We used several control variables at both CEO and firm levels. At the CEO level, we controlled for age, education, experience, gender, and founder status. Older CEOs are more rigid, whereas younger CEOs more aggressively pursue firm-innovative activities (Wiersema and Bantel, 1992). Thus, we included a question to capture *CEO age*. CEOs with higher levels of experience may gain more insight into a firm's specific areas of operation and might be better equipped to pursue innovative projects in that area. Thus, we measured *CEO experience* with the number of years the CEO had worked in the position (Simsek, 2007). Multiple studies have found important relationships between CEO education and organizational outcomes in different industries (Jalbert et al., 2009; King et al., 2016), suggesting that level of education might play an important role in how CEOs engage in innovation strategies. We control for CEO education using a categorial variable with four levels (high school, associate degree, undergraduate degree, and graduate degree). Evidence indicates that women are perceived as more effective leaders than men in business organizations (Paustian-Underdahl et al., 2014), suggesting the possibility that female CEOs in SMEs might be better at leading innovative efforts. Thus, we controlled for the CEO's gender using a dummy variable. Finally, research suggests that founder CEOs of

SMEs might have a greater impact on organizational outcomes than non-founder CEOs (Ling et al., 2008). Thus, we included a dummy variable indicating the CEOs founder status.

At the firm level, we controlled for *firm age* and *firm size* because as firms become larger and older, they can enjoy greater levels of performance and might develop the capabilities necessary be more innovative (Josefy et al., 2015). Thus, we measured *firm size* as the natural logarithm of the number of employees in the firm and firm age by the number of years since firm founding (Boeker, 1997). To capture *prior performance*, we used a four-item scale (Schilke, 2014) included in the first phase of the survey that asks respondents to assess performance in various financial dimensions. Finally, firms that have higher levels of financial slack are more likely to successfully pursue innovative activities (Plambeck, 2012). Thus, we measured *financial slack* using two items that assessed the availability and ease of accessing financial resources (Plambeck, 2012).

Analysis and results

Table 1 presents variable means, standard deviations, and correlations among the study variables. CEO risk propensity and CEO relative compensation were collected from the CEO, whereas organizational innovation was collected from the additional TMT member.

We used multiple ordinary least squares regression analysis to test for the main and moderated effects of CEO risk propensity and relative compensation on exploratory and exploitative innovation. To test the moderation hypotheses, we followed the commonly applied method of calculating the product of the two independent variables and including the resulting interaction term in the regression equation (Dawson, 2014). The significance of the coefficient of the interaction term indicates whether moderation is significant. The results associated with our hypotheses testing are summarized in Table 2.

Consistent with hypothesis 1, model 4 indicates a positive and significant effect of CEO risk propensity on organizational innovation ($\beta = 0.45$, $p = 0.00$). For every standard deviation increase in CEO risk propensity, organizational innovation increases by 0.45 standard deviations. Model 4 also indicates that CEO relative compensation has a marginally significant effect on organizational innovation ($\beta = 0.41$, $p = 0.07$). For every standard deviation increase in CEO relative compensation, organizational innovation increases by 0.41 standard deviations. Finally, model 4 shows that the interaction term between CEO risk propensity and CEO relative compensation has the expected direction but is not significant ($\beta = -0.13$, $p = 0.57$). Thus hypothesis 2 was not supported.

Post hoc analysis

We conducted additional analysis to explore whether the non-significance of the interaction term was indicating more complicated relationships among the constructs. In Figure 2, we show the relationship between CEO risk propensity and organizational innovation by categories of relative compensation. We created these categories based on the relative compensation question by designating *underpaid* CEOs as those who responded between -10 and -1, *average* CEOs as those who responded 0, and *overpaid* CEOs as those who answered between 1 and 10.

The plot indicates that CEOs who perceive to be underpaid seem to have a positive and decreasing relationship between risk propensity and innovation. In turn, CEOs who perceive their compensation as average have a positive, linear relationship between risk propensity and innovation. Finally, CEOs who perceive to be overpaid have a positive and increasing relationship between risk propensity and innovation. Additional regression analyses using

subgroups of relative compensation and a quadratic term for risk aversion confirm the direction of these relationships. However, these quadratic terms were not significant.

Discussion

The vast literature on executive behavior has uncovered several CEO motives that influence strategic choices and have important implications for firm-level outcomes (Bromiley and Rau, 2016; Busenbark et al., 2016; Liu et al., 2018; Wowak et al., 2017). However, despite the accumulation of knowledge on two widely studied motivators of executive behavior: dispositional characteristics and compensation structure, the lack of integration of these motivators remains as an important challenge for upper echelons research (Wowak et al., 2017). We took a first step in this direction and theorized how CEOs' strategic choices are jointly shaped by their dispositions and their compensation. More specifically, we argued that CEOs' general risk-taking propensity and their perceptions of relative compensation are motivators that work together to predict how CEOs engage in innovation in SMEs. Our findings suggest the importance of combining these different motives in future upper echelons research.

Research implications

By integrating upper echelons and managerial cognition research with social comparison and equity theories, we contribute to the ongoing conversation on the executive motivators behind strategic choices and outcomes. More specifically, we integrate two vastly fragmented perspectives of executive behavior: dispositional characteristics and compensation structure. In their review of executive behavior, Wowak and colleagues (2017) found that these streams of research had developed in silos, and proposed a framework that would integrate such perspectives holistically to build a more accurate picture of CEO behavior. Our findings show

that there are complex relationships behind CEOs' personal preferences, pay comparisons, and strategic choices.

We follow prior research theorizing the important role of risk-taking for innovation engagement (Gerstner et al., 2013; Kashmiri et al., 2017; Tang et al., 2015) and capture CEO risk-taking propensity directly. Consistent with these studies, we find a strong relationship between CEO risk-taking propensity and innovation in our sample of SMEs. Our findings show that CEO risk propensity can be more relevant than important firm-level antecedents of innovation, such as prior performance or resource slack. Furthermore, our findings confirm prior work theorizing risk-taking as an underlying mechanism explaining executive decision making, and show that attention to and selection of strategic choices can explain how CEO risk tendencies manifest in firm-level outcomes.

Consistent with prior work on executive pay comparisons (Fong, 2010; Seo et al., 2015), our findings also show that CEOs' perceptions of relative compensation can be important drivers of strategic choices. However, our findings extend this work in two ways. First, to the best of our knowledge, we are the first to capture executive *perceptions* of relative compensation. Prior studies have discussed the limitations of using secondary data for this purpose (Fong, 2010), as executives who are actually underpaid (or overpaid) relative to executives of similar organizations, might not perceive their compensation as such. The new measure we employ for this purpose captures how CEOs perceive their compensation relative to others, making it more likely to predict executive behavior and decision making. Furthermore, as the measure requires executives to evaluate themselves relative to other people, it shows consistency with the better-than-average (BTA) effect (Brown, 2012; Guenther and Alicke, 2010), i.e., most executives in our sample of SMEs perceive their payment as higher than that of executives in similar firms.

Second, our findings indicate that CEOs' perceptions of relative compensation have interesting relationship with innovation outcomes that demand further inquiry. Prior work has focused on how underpaid executives are motivated to restore equity and fairness (Fong, 2010; Seo et al., 2015; Wade et al., 2006). Our findings are consistent with this view and show that underpaid executives are motivated to engage in innovation. However, we find that those CEOs who perceive their compensation as average, as well as those who perceive to be overpaid, are also motivated to engage in innovation. We encourage future work to explore the underlying mechanisms for these interesting relationships.

Finally, although we did not find support for our interaction hypothesis, our post hoc analysis provides some explanations for this non-finding and supports the need to study these relationships in future work. First, it is likely that the lack of significance in the interaction term is a result of treating relative compensation as a single continuous variable. As we indicate in Figure 2, relative compensation might change the relationship between risk propensity and firm innovation in different ways depending on the position in the relative compensation scale. Executives perceiving themselves as underpaid have a decreasing relationship between risk propensity and innovation. Thus, underpaid executives engage more strongly in innovation when their risk propensity is lower. Conversely, executives perceiving themselves as overpaid have an increasing relationship between risk propensity and innovation. Thus, overpaid executives engage more strongly in innovation when their risk propensity is higher. Finally, executives who perceive their pay as average indicate a more linear relationship between risk propensity and firm innovation. Our additional regression analysis was likely not uncovering significant interactions due to low sample sizes, especially for the underpaid group (n = 15). Nonetheless, our results are clear indicators that both personal preferences and compensation motivators of executive

behavior should be studied in conjunction, as they clearly have important implications for strategic choices and work together in complex ways that require additional investigation.

Implications for practice

The implications of understanding drivers of executive behavior often remain discussed as an executive selection issue: boards should evaluate and rely on personality assessments to appoint CEOs. Although this can be a useful recommendation for some organizations, we see two problems with this implication. First, in some firms (such as SMEs), CEOs are founders or they are subsequent generations of founding CEOs, making the selection problem not applicable. Second, the recommendation does not assist current CEOs to evaluate their decisions and improve their strategic management abilities. In turn, we see our study as a starting point for providing integrative explanations of different motivators of executive behavior that can help practitioners assess their own drivers of their decisions. Executives can evaluate their risk-taking propensity and the extent to which this propensity manifests in strategic choices, particularly those reflecting innovation initiatives. Executives can also assess their perception of their compensation, the extent to which they want to change their compensation standing, and the extent to which their decisions might be driven by a desire to change such compensation perception. Ultimately, executives can also assess whether their compensation perceptions and risk-taking propensities are driving their decisions at the expense of other factors they should take into account, and whether they should gather additional information at the moment of committing resources to innovation.

Limitations

We see three main limitations in our study that provide opportunities for future research. First, our findings might be restricted to the context of Colombian SMEs. As we discussed

earlier, top managers can have important discretion in Colombian SMEs' strategic choices. How CEOs' risk propensity and relative compensation influence innovation decisions in SMEs of other countries or in large, diversified firms is an important question for future research.

Second, given the context and data availability for our sample, we were able to collect survey data only. We took several steps to address common method bias, such as obtaining data from multiple senior executives, but access to objective innovation information (e.g. new product introduction or patents) would extend our findings. We encourage scholars to test and extend our model in settings where objective information of SME innovation and performance is available.

Third, although the two phases of data collection were separated by six months, the findings of our study do not provide strong evidence of causality. Adopting longitudinal designs or combining different methodologies (i.e. an experiment) can inform the field the interplay of CEO motives and innovation outcomes, as well as a deeper understanding of compensation perceptions and their interaction with dispositional characteristics.

Conclusion

Despite the extensive research on the drivers of executive behavior, and the implications of executives' decisions on organizations, the interactive role of different drivers of executive behavior have been overlooked. Using a sample of Colombian SMEs, we integrate this highly fragmented literature and study how CEO risk propensity and CEO perceptions of relative compensation shape firms' innovation engagement. Our results show complex relationships between these motivators and highlight the need to develop integrative and comprehensive theories. It is our hope that this work will encourage scholars to pursue additional lines of research on how CEOs make strategic decisions considering the role of these different motivators.

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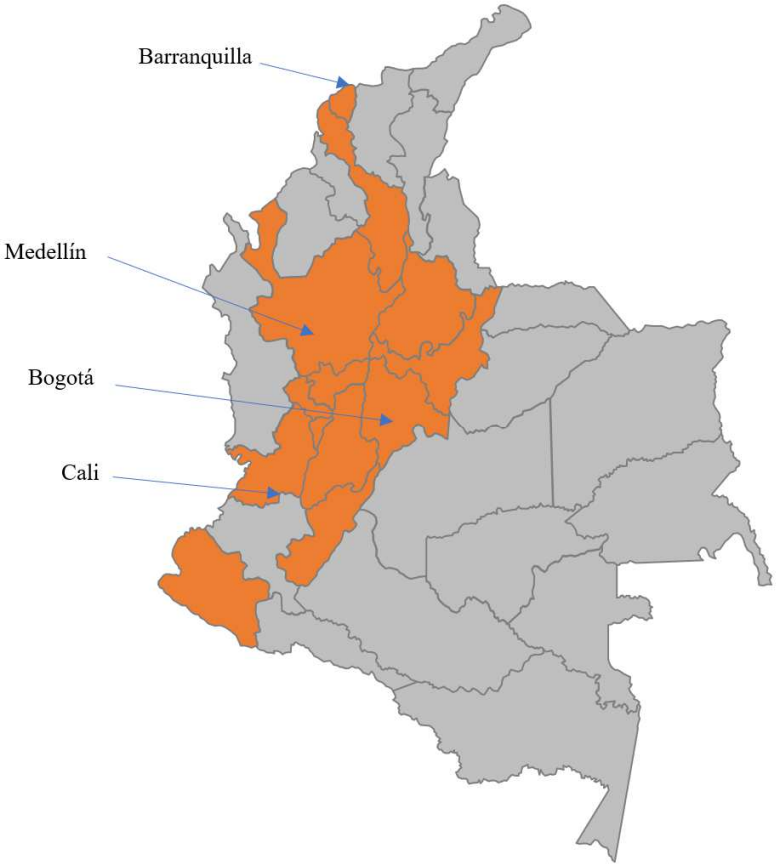

Figure 1

Map of Colombia with highlighted geographic locations where SMEs responded to the first stage of the survey[2]

[2] Four largest cities in Colombia, with more than 75 percent of surveyed SMEs, are indicated in the map.

Table 1

Descriptive statistics and correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. CEO age	43.38	11.73											
2. CEO gender	1.41	0.49	-0.15										
3. CEO education	2.70	0.93	-0.03	0.09									
4. CEO tenure	9.47	9.02	0.62	-0.07	-0.17								
5. CEO founder status	1.65	0.48	-0.28	0.09	0.18	-0.43							
6. Firm age	23.95	17.32	0.21	0.02	0.13	0.23	0.26						
7. Firm size	3.49	1.41	0.07	0.01	0.21	-0.02	0.37	0.49					
8. Prior performance	3.72	0.70	-0.11	-0.10	0.10	-0.16	0.04	0.16	0.20				
9. Slack	3.48	0.87	-0.10	0.10	-0.07	-0.10	0.23	0.24	0.21	0.29			
10. CEO risk propensity	4.78	2.08	-0.20	-0.11	0.03	-0.18	0.19	-0.01	0.09	0.34	0.14		
11. CEO relative compensation	1.19	3.87	0.02	-0.18	-0.04	-0.05	0.17	0.13	0.10	0.18	0.27	0.08	
12. Organizational innovation	4.02	0.42	0.03	-0.05	-0.03	0.01	0.03	0.09	0.05	0.26	0.23	0.43	0.34

Correlations with an absolute value greater than 0.20 are significant at $p < 0.05$

Table 2

Results of regression analyses

Variable	Organizational innovation			
	Model 1	Model 2	Model 3	Model 4
CEO age	0.07	0.13	0.10	0.11
	(0.00)	(0.00)	(0.00)	(0.00)
CEO gender	-0.04	0.01	0.06	0.07
	(0.08)	(0.08)	(0.07)	(0.07)
CEO education	-0.04	-0.03	-0.02	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)
CEO tenure	0.03	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
CEO founder status	0.04	-0.04	-0.09	-0.10
	(0.10)	(0.10)	(0.09)	(0.09)
Firm age	0.01	0.06	0.05	0.05
	(0.00)	(0.00)	(0.00)	(0.00)
Firm size	-0.05	-0.05	-0.04	-0.05
	(0.03)	(0.03)	(0.03)	(0.03)
Prior performance	0.23*	0.09	0.06	0.06
	(0.06)	(0.06)	(0.06)	(0.06)
Slack	0.18†	0.16†	0.10	0.10
	(0.05)	(0.05)	(0.05)	(0.05)
CEO risk propensity		0.42***	0.42***	0.45***
		(0.02)	(0.02)	(0.02)
CEO relative compensation			0.29**	0.41†
			(0.01)	(0.02)
CEO risk propensity*CEO relative compensation				-0.13
				(0.00)
F	1.36	3.39	4.35	3.99
Significance	0.21	0.00	0.00	0.00
R2	0.11	0.25	0.32	0.32
Adjusted R2	0.03	0.18	0.25	0.24

Standardized regression coefficients are reported. Standard errors in parentheses

† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

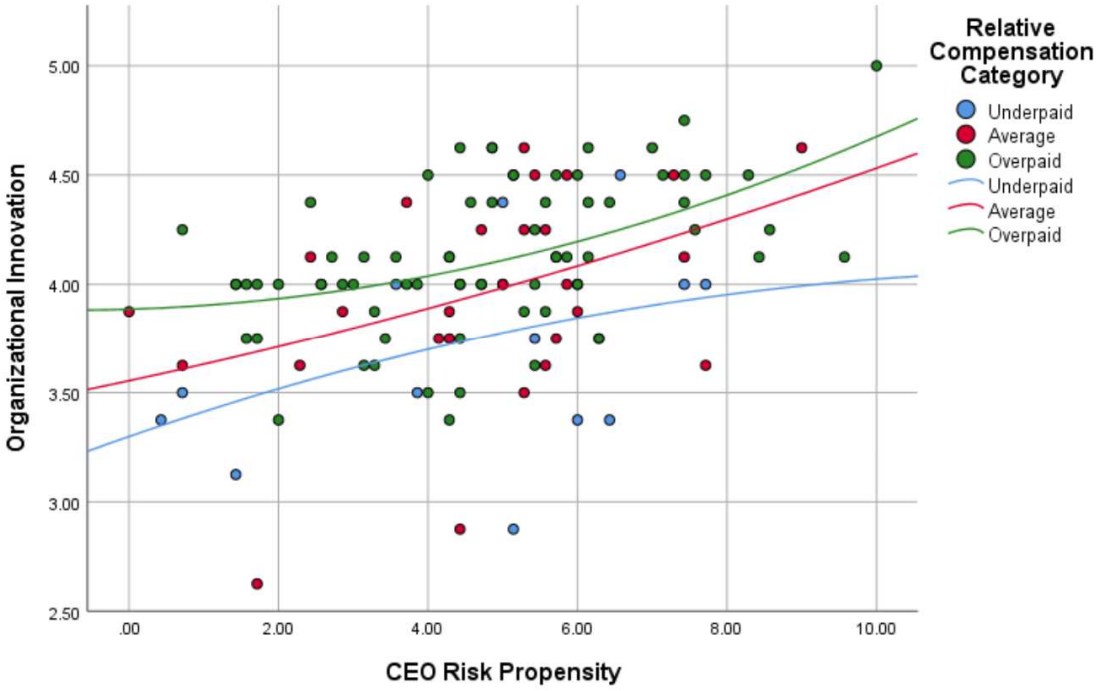

Figure 2

Plot of CEO risk propensity and innovation by relative compensation categories

Appendix. IRB approval

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 05/04/2018

To: Andres-Felipe F Cortes Pol Herrmann

From: Office for Responsible Research

Title: **Strategic Management of Innovation at SMEs**

IRB ID: **18-208**

Submission Type: Initial Submission **Exemption Date:** 05/04/2018

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

2: Research involving use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observations of public behavior, unless (i) Information obtained is recorded in such a manner that human subjects can be identified, and (ii) Any disclosure of the human subjects' responses outside the research could reasonably place the subject at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any *modifications to the research procedures* (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the *inclusion of participants from vulnerable populations*, and/or any *change that may increase the risk or discomfort to participants*. The purpose of review is to determine if the project still meets the federal criteria for exemption.

  In addition, ***changes to key personnel*** must receive prior approval.

  Detailed information about requirements for submission of modifications can be found on our website. For modifications that require prior approval, an amendment to the most recent IRB application must be submitted in IRBManager. A determination of exemption or approval from the IRB must be granted before implementing the proposed changes.

  Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

IRB 03/2018

Please note that you must submit all research involving human participants for review. **Only the IRB or its designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed**. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted**.

Please be advised that your research study may be subject to post-approval monitoring **by Iowa State University's Office for Responsible Research**. In some cases, it may also be subject to formal audit or inspection by federal agencies and study sponsors.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

CHAPTER 4. LINKING EXECUTIVE JOB DEMANDS AND INNOVATION: THE INFLUENCE OF NEGATIVE AFFECT, TMT PARTICIPATION, AND EMOTIONAL INTELLIGENCE

Modified from a manuscript to be submitted to the *Journal of Management*

Andres Felipe Cortes[1], Pol Herrmann[1]

Abstract

We develop and test a model that explains how executive (CEO) job demands influence organizational outcomes. Based on the premise that SMEs face important challenges in implementing successful innovation programs, we theorize how CEOs' perceptions of the difficulty of their job is associated with frequent displays of negative emotions, which are in turn associated with TMT members' unwillingness to share and communicate ideas, thus hurting the generation and implementation of innovation initiatives. Additionally, we explore how CEOs' level of emotional intelligence can mitigate the displays of negative emotions associated with high job demands. We contribute to the emerging stream of research exploring process models that link executives to firm-level outcomes. We also discuss implications for innovation management in SMEs, particularly those in developing markets.

Introduction

Why do small- and medium-sized enterprises (SMEs) in developing countries face challenges in generating and implementing new ideas? SMEs in developing countries are rarely the pioneers of impactful innovations that are new to the world, yet they represent the vast majority of firms in developing economies and innovation remains a critical factor for their performance (Hadjimanolis, 2000). Taking the broad perspective of innovation as the generation

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of implementation of ideas new to SMEs (Anderson et al., 2014), we suggest that one possible reason why SMEs face challenges at innovation lies at the executive level: chief executive officers (CEOs) face great job challenges, which results in an organizational environment where sharing novel ideas becomes increasingly difficult for the top management team (TMT). Organizations that intend to increase their levels of innovation require CEOs who excel at identifying opportunities, dare to pursue challenging initiatives, and lead their subordinates into a context of experimentation and creativity where new ideas are constantly emerging (Jansen et al., 2009; Jung et al., 2009; Makri and Scandura, 2010). Furthermore, as heads of different key areas and/or departments of the firm, TMT members can function both as generators and channels of innovation ideas related to their fields (Alexiev et al., 2010) and play a pivotal role in how CEOs get in contact with the multitude of ideas created in the firm (Cao et al., 2010). Thus, CEOs who are overwhelmed by the difficulties of their position and cannot foster an environment where the TMT shares ideas could explain why some SMEs fail to enhance their innovation efforts. If TMT members lack incentives to express their novel ideas, it is likely that the firm's level of innovation will be hampered by the absence of innovation initiatives circulating at the upper echelons.

We explore this possibility by surveying a sample of executives leading Colombian SMEs from various industries. SMEs tend to have a higher failure rate than their larger counterparts, often explained by their resource limitations, informal strategies, and flexible structures (Terziovski, 2010; Qian and Li, 2003). Such characteristics of SMEs place great knowledge demands on SMEs' top managers, who are required to exercise their discretion in both strategic and operational roles (Lubatkin et al., 2006). Particularly in Colombia, innovation is a function almost entirely in charge of SMEs' management (Salazar, 1998), highlighting the

pressures that top managers face to lead innovation initiatives and increase firm performance. Given the essential role of executives in this setting, it is crucial to understand how some executives fail to excel at leading their SMEs' innovation efforts and how such process occurs.

We draw on upper echelons theory (Hambrick and Mason, 1984) and the emotions-as-social-information (EASI) model (Van Kleef, 2009) to explore this phenomenon. We study how CEOs that perceive their job to be challenging or difficult, i.e. have greater job demands (Hambrick et al., 2005), are likely to make regular displays of negative affect. Considering that leaders' affect can have important consequences on employee participation (Gooty et al., 2010), we discuss how CEOs' display of negative affect can reduce the TMTs' willingness to share ideas. More specifically, we argue that CEOs' negative affect can both convey TMT members that the context for speaking up is not favorable and arouse negative emotions in the TMT (e.g. fear) so that they are less likely to communicate. Finally, considering that successful innovation processes require thorough elaboration of ideas (Perry-Smith and Manucci, 2017), we argue that lack of participation and discussion at the upper echelons will likely translate into fewer opportunities for innovation initiatives and manifest in reduced levels of innovation for the firm.

Additionally, we take into consideration that some CEOs might be better equipped to handle the difficulties of their job and avoid such regular displays of negative affect. Technical ability and skills to effectively manage firms are important features of a good CEO, but how CEOs cope with the stress associated with their job and interact with other organizational members under such conditions has been pointed out as a critical antecedent to successful leadership (Goleman, 2004). We draw on the literature on emotional intelligence (Salovey and Mayer, 1990; Wong and Law, 2002) and propose that CEOs with higher emotional intelligence

are less likely to transfer their job demands into their negative affective states. We present our conceptual model in Figure 1.

This study contributes to our overall understanding of barriers to innovation in SMEs and the critical role of top managers in this process. Considering the important role of top managers for leading innovation efforts (Elenkov and Manev, 2005; Jansen et al., 2009; Jung et al., 2009), specifically in SMEs, we propose that the difficulties that CEOs face in their job can hinder innovation by impeding subordinate top managers to speak up and share their ideas. This insight highlights that executives of SMEs can aim to reduce their job demands or be increasingly aware of their reactions in order to avoid receiving critical information from their TMTs for strategic decision-making.

The study also contributes to research on executive behavior and its effect on organizational outcomes (see Bromiley and Rau, 2-16; Wowak et al., 2017) by understanding how CEO job challenges can play an important role in setting SME innovation efforts. This literature has traditionally focused on how CEOs engage in specific strategic actions according to personal or monetary motivations (Wowak et al., 2017). However, it has not considered that strategic actions are not merely driven by such motivators but also by the executives' ability to handle their job challenges and respond to complex strategic situations. Using job demands (Hambrick et al., 2005), a construct thoroughly studied in organizational behavior (e.g. Janssen 2000, 2001), we attempt to provide the first insights as to how executives' challenging job of leading organizations can translate into their firm's innovation. Finally, we also provide insights as to how emotional intelligence, a characteristic with substantial scholarly attention (see Joseph and Newman, 2010; O'Boyle et al., 2011) but thus far ignored at the executive level, embodies

the importance for SMEs to have CEOs who can handle the challenges of their job to maintain successful leadership.

Theoretical background and hypotheses

Conceptualized as the generation and implementation of new ideas (Van de Ven, 1986; Anderson et al., 2014), innovation is highly important for firms to remain adaptive to changing environments, develop new knowledge and skills, and find new sources of revenue and competitive advantage. A wide number of factors can assist firms in their innovative efforts. For example, organizational structure, organizational culture, processes for knowledge management, or accurate resource allocation are important determinants of a firm's successful innovation endeavors (see Crossan and Apaydin, 2010). One factor that has received particular attention is the role of top managers (Elenkov et al., 2005; Elenkov and Manev, 2005; Jansen et al., 2009; Jung et al., 2009; Makri and Scandura, 2010). Recognizing that CEOs are key decision makers and set the strategic direction of the firm (Hambrick and Mason, 1984), scholars have argued that they play an important role in creating the structure, culture, or processes that support innovation (Elenkov and Manev, 2005). For example, CEOs with transformational leadership behaviors can enhance innovation by stimulating followers' creativity, motivating followers to contribute with ideas and challenge existing assumptions, and linking followers' identity to a collective identity in which they take active part with their initiatives (Jung et al., 2008; Jansen et al., 2009). Furthermore, CEOs who focus on internal knowledge development and search for external opportunities to exploit, as reflected in creative and operational leadership, can increase their firm's innovation (Makri and Scandura, 2010).

In the case of SMEs, successful innovation is of critical importance for performance (Rosenbusch et al., 2011). Compared to their large counterparts, it has been argued that SMEs

lack the availability of resources and established processes to promote innovation. While large organizations can use slack resources to absorb failure, SMEs might face existential risks given a failure of an innovation attempt (Nohria and Gulati, 1996). Large firms can possess innovation capabilities due to their increased experience with innovation projects, but SMEs usually lack such capabilities and thus may engage in innovation activities without required experience (Rosenbusch et al., 2011). These innovation-related limitations of SMEs highlight the role of top managers, who are essential at setting the appropriate strategic agendas for their SMEs to follow (Kammerlander et al., 2015; Lubatkin et al., 2006), especially in SMEs located in developing economies (Kiss et al., 2012; Nadkarni and Herrmann, 2010). Additionally, the reduced number of hierarchical levels in SMEs require CEOs to take part in both strategic and operational roles (Lubatkin et al., 2006), placing a great emphasis on how CEOs are critical at driving SMEs' performance through their decisions.

However, one neglected aspect of CEOs' role in SMEs is the difficulty of their job. One possibility regarding why SMEs face so many challenges in advancing innovation efforts and surviving in competitive markets might be precisely the prominent role of CEOs, whose levels of job demands can reach a detrimental point for the organization. To explore this possibility, we draw on the construct of executive job demands (Hambrick et al., 2005) and the EASI model (Van Kleef, 2009).

Executive job demands is a variation of the well-established job demands construct studied in the field of organizational behavior (e.g. Janssen 2001; Karasek, 1979). Initially brought to the executive level by Hambrick et al. (2005), executive job demands is defined as the degree to which executives experience their job as difficult or challenging. This definition underlines that executives' experienced demands of the job, as opposed to possible objective

demands arising from the job, are the most important in predicting their behavior. Thus, executive job demands may originate from objective factors and be correlated with experienced demands, but it is essential that job demands are perceived by executives to influence their behavior (Hambrick et al., 2005; Wiersema and Bantel,1993). Furthermore, such demands arise to the extent that an executive's capabilities fit the situation, as any given executive would experience greater demands if their skills are not appropriate for the job. Although job demands can be a broad concept including both quantitative (i.e., general workload or difficulty faced by the individual) and qualitative demands (i.e., role ambiguity or conflicting role demands) (Janssen 2001; Karasek, 1979), we follow previous research by focusing on quantitative demands to separate the facets of job demands with specific responses and avoid conceptual problems or unclear theory (Hambrick et al., 2005; Janssen, 2001).

We link executive job demands to TMT participation based on the EASI model (Van Kleef, 2009; Van Kleef et al., 2010), which explains how emotional expressions of an individual influence observers' behavior. This model argues that such influence occurs through two main processes: inferential processes and affective reactions. Based on an individual's emotional expression, observers can process information about the individual (e.g. the individuals' feelings or intentions) and/or can have an affective reaction elicited by such expression, both of which can influence observers' behavior (Van Kleef, 2009). Thus, affect plays critical interpersonal functions in social interactions as it conveys information regarding an individual's intentions or feelings. Research on leadership has found support for the EASI model. For example, leaders' display of anger increases team performance when teams show higher epistemic motivation (i.e. a desire to develop a thorough understanding of a situation), whereas leaders display of happiness increases team performance when teams show lower epistemic motivation (Van Kleef

et al., 2009). We apply the EASI model to explain how CEOs' negative affective states influence their TMT's willingness to share ideas.

In the following sections we derive hypothesis to explain the relationship between executive (CEO) job demands and SME innovation as explained by CEOs' frequency of negative emotions and TMT participation. We also propose how emotional intelligence can play an important moderating role that can explain why some CEOs are better at handling their experienced demands.

Executive job demands and negative affect

The demands that individuals face in their work can have several effects on job behavior, mental health, and physical well-being (Spector et al., 1988). One important consequence of increased job demands is experienced stress (Ganster, 2005). In this sense, job demands can be a source of stress (i.e., a stressor) to the individual perceiving them (Ganster, 2005; Hambrick et al., 2005, Karasek, 1979; Xie and Johns, 1995). As executives experience the demands of their work to be increasingly challenging and difficult, and thus they perceive such demands to exceed their management abilities, they ought to experience greater levels of stress as well.

At the executive level, demands can go beyond task design or job scope characteristics because CEOs typically have boundless responsibilities in their job (Hambrick et al., 2005). Communicating effectively, influencing and motivating other organizational members, acting as the image of the firm, scanning the external environment for threats and opportunities, monitoring the firm, or making strategic decisions are some of CEOs' functions (Mintzberg, 1973) that can be a source of demands and possibly stress. As CEOs perceive that their ability to perform their functions is below what is required to perform them effectively, and thus experience them as challenging, they might perceive greater levels of stress.

Although the extent to which stress has an effect on decision-making quality is not clear, stress has an important effect on strong affective reactions, particularly negative affect (Ganster, 2005), which can clearly manifest in CEOs' relations with other parties. CEOs under increased levels of job demands would be expected to feel more stressed and thus, have more regular displays of negative affect at work and to display such negative affective states in their interactions with other organizational members. Such variations in displays of negative affect can have important effects on CEOs' behavior over and above more stable or dispositional affect (Weiss et al., 1999). As job demands reflect the extent to which CEOs experience their job as difficult, this perception is assumed to be relatively stable over time. Thus, CEOs under high job demands, feeling more stressed, are expected to experience aversive mood states, such as anger or contempt, and overall have more regular displays of negative affect.

H1: executive (CEO) job demands are associated with CEO negative affect such that CEOs who experience greater job demands will display negative emotions more frequently

CEO negative affect and TMT participation

As CEOs experience negative emotions more frequently, they can reduce their TMT's participation and thus, the sharing of ideas among top managers. This process can happen through inferential processes and affective reactions (Van Kleef, 2009). First, affect conveys meaningful information to the observer. CEOs' display of affect can provide information to the TMT regarding CEOs' feelings, intentions, or orientation toward their relationships. Based on this observation, TMT members can make judgements based on those inferences originating from CEOs' emotions (Miron-Spektor et al., 2011; Van Kleef et al., 2009). Before sharing their ideas, followers assess the favorability of the context for speaking up, and they do so by monitoring their leaders' affective states (Ashford et al., 1998; Liu et al., 2017). A leaders'

display of positive affect, for example, influences follower behavior by inferring that the leader is happy or excited (Van Kleef et al., 2009) and can promote follower voice (Liu et al., 2017). It follows that CEOs regularly displaying negative emotions will lead other top managers to perceive that the context for contributing with their ideas is not favorable and may have negative consequences.

Second, emotional displays can arouse affective reactions in others, which can be understood as an emotional contagion process (Van Kleef 2009; Hatfield et al., 1994). From this perspective, anger in one person can evoke negative affective reactions in another and thus influence behavior (Van Kleef et al., 2009). From this perspective, CEOs who tend to display negative emotions are more likely to evoke negative emotions in other members of their TMT, whose behavior is in turn influenced by that negative affect. TMT members experiencing fear, for example, might not be willing to participate or share ideas (Kish-Gephart et al., 2009). Thus, the negative affect displayed by the CEO transfers to other members of the TMT, possibly influencing their willingness to share information. Therefore, such mechanisms from the EASI model (Van Kleef, 2009) suggest that CEOs' display of negative affect limit TMT participation by suggesting TMT members that the context for sharing ideas is not favorable and by the contagion of negative emotions that limit TMT's participative behavior.

Finally, scholars have shown that the relationship between leaders' negative affect and followers' upward voice requires additional evidence (Liu et al., 2017). We argue that this relationship will be prominent and highly relevant in the top management context for two main reasons. First, the leader in this context (i.e., the CEO) is the individual with the highest authority in the organization. Members of the TMT who deem participating as risky might have greater motivations to abstain from sharing an idea given that the CEO has the discretion to make any

changes in the SME without oversight. Thus, the CEO can dismiss TMT members, modify their role to remove/add responsibilities, influence their availability of resources, or change them to another position without the need to consult with another party. This is particularly the case in Colombian SMEs, where high power distance highlights the authority and position of CEOs. Second, evaluation of ideas and many decision-making processes at the top management level are characterized by high stakes and increased uncertainty. Although not all discussions among top managers necessarily revolve around strategic issues, many of the ideas and initiatives can have permanent consequences not only for TMT members but for the future of the firm. Contributing with ideas that drive the direction of the firm might be more challenging than contributing with ideas that revolve around one's job or other operational issues. Thus, TMT members under negative affect might be more inclined toward not participating. Given these arguments, we suggest that:

H2: CEO negative affect is associated with TMT participation such that CEOs who display negative emotions more frequently will reduce TMT participation

TMT participation and SME innovation

TMT members are heads of various key areas of the firm. Given their focus and experience on different areas and their interactions with other organizational members working directly with them, TMT members can not only generate novel ideas related to their fields but also act as receptors of ideas emerging from organizational members in their areas (Alexiev et al., 2010). Because they are in direct contact with the CEO, they can play a pivotal role in how the CEO gets in contact with the multitude of ideas generated throughout the firm (Cao et al., 2010).

If TMT members are not willing or feel unable to share those ideas, and hence exhibit low levels of participation, the wide variety of ideas possibly generated throughout the firm will not be available for consideration and evaluation at the top management level. The CEO's contact with a reduced set of ideas will limit the available options to pursue innovation and try new initiatives. Furthermore, the lack of communication of ideas will hamper their possible improvement. Ideas shared by TMT members can be discussed and improved through high-quality discussions, analyses, and strategic understanding (Cao et al., 2010). Thus, the number of innovation initiatives for top managers to discuss, improve, and decide to pursue will be limited in SMEs whose TMT's level of participation is low. This limited number of innovation ideas will, in turn, be reflected in the firm's lack of successful innovations.

Although low levels of TMT participation might reduce the available number of ideas, some SMEs might excel at pursuing a few successful innovation ideas. Thus, it is possible that low levels of TMT participation will not hamper innovation. However, in SMEs whose TMTs exhibit low levels of participation, the available ideas will likely receive less discussion and elaboration. Thus, the resulting ideas will not be as robust and effective for the organization and might not result in successful implementation efforts compared with SMEs whose TMTs participate and deliberate without restrictions. Given the prominent role of top managers in guiding the strategic direction of the firm and influence its outcomes (Hambrick and Mason, 1984), we expect that TMTs who participate, share their opinions and their ideas, and discuss available options freely with the CEO will have greater and enhanced innovation alternatives to pursue. In turn, this will be reflected in the firm's successful implementation of new ideas.

H3: TMT participation is positively associated with SME innovation

The moderating role of emotional intelligence

Emotional intelligence is defined as an individual's ability to monitor their own and others' feelings and emotions, discriminate among them, and use that information to guide their actions (Salovey and Mayer, 1990). Emotional intelligence encompasses the four dimensions of appraisal and expression of emotions in (1) the self and in (2) others and regulation of emotions in the (3) self and in (4) others (Salovey and Mayer, 1990; Wong and Law, 2002). In this study, we refer specifically to the appraisal and regulation of emotions in the self because the focus is on the influence of job demands on CEOs' affective displays. More specifically, we expect CEOs with higher emotional intelligence to be able to express and regulate effectively how their emotions manifest so that their job demands are not reflected in frequent displays of negative emotions.

Emotionally intelligent CEOs can accurately perceive and appraise their own emotions as well as handle the expression of those emotions to others (Salovey and Mayer, 1990). CEOs with emotional intelligence ought to accurately understand if the stress caused by increased levels of job demands is triggering arousal of negative emotions. They will sense and acknowledge these emotions before individuals with less emotional intelligence do (Wong and Law, 2002). Thus, executives under increased job demands who are feeling stressed and transferring such stress to negative affect, can rely on their emotional intelligence to recognize those negative emotions and be aware of their affective state. Thus, CEOs who can recognize their own emotions might be more likely to understand how their job is influencing their behavior through affect and might take actions to reduce displays negative emotions should these emotions cause negative consequences for the firm.

CEOs with emotional intelligence can also regulate their own emotions effectively. Thus, CEOs who can recognize their negative affective states caused by their job demands might be able to regulate their negative emotions and avoid displaying such affective states in their interactions with other organizational members. These CEOs, even under stressful conditions of high job demands, can recognize the emotions caused by their job demands and successfully regulate them. Hence, these CEOs might be able to diminish or avoid the subsequent displays of those negative emotions at work.

H4: CEO emotional intelligence weakens the positive relationship between CEO job demands and CEO frequent displays of negative emotions

Methodology

Sample

We present authorization information from the Institutional Review Board (IRB) to collect this data in the appendix. We collected data through a two-stage survey of executives of SMEs operating in different industries in Colombia. We follow the broad conceptualization of innovation as the development and implementation of new ideas (Van de Ven, 1986; Anderson et al., 2014). Under this categorization, we classify any policy, structure, process, product/service or market opportunity perceived to be new by CEOs as an innovation. Previous studies adopted this perspective (e.g. Nohria and Gulati, 1996; Ling et al., 2008) considering it allows the comparison of firms operating in multiple industries.

Colombian SMEs represent a suitable context for multiple reasons. First, executives of SMEs are commonly argued to have higher levels of managerial discretion (Lubatkin et al., 2006; Kammerlander et al., 2015), making it more likely that their characteristics and decisions manifest more strongly on organizational outcomes compared to CEOs of larger firms. Second,

SMEs have fewer levels of management and are less constrained by external influences (e.g. powerful outside directors, capital markets, or challenges of having multiple divisions) than large firms, increasing SMEs executives' influence on firm-level outcomes (Ling et al., 2008). Third, studies have shown relatively higher levels of power distance in Colombia compared to other countries (Botero and Van Dyne, 2009), highlighting the authority of Colombian CEOs on determining key strategic decisions of the firm. Research has highlighted the relationship between high levels of power distance and organizational members' acceptance of hierarchy and authority, allowing leaders to exert great influence on their organization merely through their position (Fikret Pasa, 2000).

Fourth, Colombian firms have experienced an outstanding and recent improvement in innovation efforts. According to the national survey of technological innovation and development (DANE, 2017), the number of companies classified as innovative increased 44% between 2013 and 2016. For this same period, the number of product innovations introduced to the national and international markets increased 87% and 300%, respectively, and the number of process innovations (including production, logistic, management, or commercialization methods) increased 22% on average. Furthermore, the number of employees in each firm participating in innovative activities increased 39% for this period.

We used several sources to identify our sample. The main data source were multiple Chambers of Commerce located throughout Colombia, which possess directory-type company information on all types of Colombian companies. We supplemented this data with additional public information available from the Colombian Department of Statistics (DANE) and the Unique Business and Social Registry (RUES). We obtained contact information for a total of

5,847 SMEs. These firms fit the Colombian SME definition specified in the Law 590 of 2000, which defines SMEs based on both number of employees and total assets.

A total of 1443 firms were randomly selected from the database and contacted by telephone. The CEOs of these firms were asked to participate in a two-stage survey focusing on innovation activities. The CEOs of 403 SMEs initially agreed to participate in the first stage, with whom we scheduled appointments to deliver and answer the survey (27 percent response rate). We dropped 22 surveys in cases in which the CEO was replaced unexpectedly by another employee to answer the survey, leaving 381 usable surveys in the first stage. We requested these CEOs for contact information of another member of the TMT, who we contacted six months after the first stage to schedule an appointment to answer the second stage of the survey. A total of 120 TMT members responded and participated in the second stage. After dropping firms from the analysis due to missing data in our main study variables, we had a usable sample of 117 firms. A power analysis before data collection indicated that a sample of 213 firms was required to find significant effects assuming a medium, conservative effect size in the population. In turn, a stronger effect size would require data collection from approximately 122 firms. Following the plethora of studies finding important effects of executives on their firms, our final sample was intended to target this number. The resulting firms had, on average, 23 years of age and 138 employees. CEOs, on average, had approximately 42 years of age and had been on their position for approximately 9 years. 47 percent of these CEOs were female and 68 percent had founded their firms.

Common method variance

Questionnaires administered to managers and coming from single sources often have problems associated with common method variance (Richardson et al., 2009). Following

recommendations from Podsakoff et al. (2003), we took several actions to alleviate these problems. First, criterion and predictor variables measured at the same time might produce artifactual covariance that is independent of the constructs themselves. Thus, we used a two-phase survey to capture dependent and independent variables at two different time points with a separation of six months between the phases. Second, artifactual covariance may also be present when the same individual is answering to certain constructs or there is a tendency to respond to certain items from a socially acceptable perspective. To alleviate this, the first phase of the survey collected information from the CEO and the second phase collected information from another member of the TMT who reported directly to the CEO and had full information on the firm's strategic direction and outcomes. Third, we followed Podsakoff and colleagues' (2003) recommendations and ensured anonymity and reduced evaluation apprehension by communicating to the respondents that there were no right or wrong answers. Finally, several of our constructs are free of methodological bias because we used objective measures rather than subjective assessments (e.g. age, gender, founder status).

Measures

As suggested by Hambrick et al., (2005), we captured *CEO job demands* through an 8-item scale developed by Janssen (2000). Each item asks CEOs regarding their daily work on a 5-point Likert scale ranging from "Never" to "Always". Sample items are "Do you have too much work to do?", or "Do you work under time pressure?" Reliability for this scale was above recommended levels ($\alpha = 0.85$).

We used the widely established PANAS scale developed by Watson et al. (1988) to capture *CEO negative emotions.* The scale contains a list of ten feelings and emotions (e.g., upset, scared, hostile, irritable). We asked the TMT member to rate from 1 to 5 the frequency

with which the CEO was perceived that way during the previous year. Reliability for this scale was above recommended levels (α = 0.86).

We used Wong and Law's (2002) measure of *emotional intelligence*. The scale asks the CEO to indicate on a 7-point Likert scale ranging from "Strongly disagree" to "Strongly agree" the extent to which he/she disagrees with 16 items that capture four underlying dimensions of self-emotion appraisal, uses of emotion, regulation of emotion, and others' emotional appraisal. Consistent with our theorizing, we used the eight items reflecting self-emotion appraisal and regulation of emotion. Sample items are "I have a good understanding of my own emotions", "I really understand what I feel", or "I am quite capable of controlling my own emotions". Reliability for this scale was above recommended levels (α = 0.89).

We captured *TMT participation* at the second stage of the survey through the 5-item scale developed by Liang et al. (2012). The TMT member was asked to indicate, on a 5-point scale ranging from "Strongly disagree" to "Strongly agree", the level of agreement with statements about the TMT willingness to share ideas and suggestions to the CEO. Sample items are "We proactively develop and make suggestions for issues that may influence the company" or "We make constructive suggestions to improve the company's operations". Reliability for this scale was above recommended levels (α = 0.90).

To capture *organizational innovation,* we used He and Wong's (2004) 8-item measure. Four items reflect exploratory orientation and four items reflect an exploitative orientation. CEOs were asked to assess their firm using a 5-point Likert scale, ranging from "not important" to "very important", how they consider various criteria for pursuing an innovation project. Sample items refer to criteria such as "introduces a new generation of products/services", "enters

new technology fields", "improves existing product/service quality", or "reduces production cost". Internal consistency of this measure ($\alpha = 0.88$) was above accepted levels.

We used several control variables at both CEO and firm levels. At the CEO level, we controlled for age, education, experience, gender, and founder status. Older CEOs are more rigid, whereas younger CEOs more aggressively pursue firm-innovative activities (Wiersema and Bantel, 1992). Thus, we included a question to capture *CEO age*. CEOs with higher levels of experience may gain more insight into a firm's specific areas of operation and might be better equipped to pursue innovative projects in that area. Thus, we measured *CEO experience* with the number of years the CEO had worked in the position (Simsek, 2007). Multiple studies have found important relationships between CEO education and organizational outcomes in different industries (Jalbert et al., 2009; King et al., 2016), suggesting that level of education might play an important role in how CEOs engage in innovation strategies. We control for CEO education using a categorial variable with four levels (high school, associate degree, undergraduate degree, and graduate degree). Evidence indicates that women are perceived as more effective leaders than men in business organizations (Paustian-Underdahl et al., 2014), suggesting the possibility that female CEOs in SMEs might be better at leading innovative efforts. Thus, we controlled for the CEO's gender using a dummy variable. Finally, research suggests that founder CEOs of SMEs might have a greater impact on organizational outcomes than non-founder CEOs (Ling et al., 2008). Thus, we included a dummy variable indicating the CEOs founder status.

At the firm level, we controlled for *firm age* and *firm size* because as firms become larger and older, they can enjoy greater levels of performance and might develop the capabilities necessary be more innovative (Josefy et al., 2015). Thus, we measured *firm size* as the natural logarithm of the number of employees in the firm and firm age by the number of years since firm

founding (Boeker, 1997). Finally, firms that have higher levels of financial slack are more likely to successfully pursue innovative activities (Plambeck, 2012). Thus, we measured *financial slack* using two items that assessed the availability and ease of accessing financial resources (Plambeck, 2012).

Analysis and results

Table 1 presents variable means, standard deviations, and correlations among the study variables. In the analysis, we used data obtained from the CEO for CEO job demands CEO negative emotions, and CEO emotional intelligence. In turn, we used data from the additional TMT member for TMT participation and organizational innovation.

We used both structural equation modeling (SEM) and hierarchical regression analysis to test our hypothesized model. The advantage of using SEM is that it offers a simultaneous test of an entire system of variables in a hypothesized model and enables assessment of the extent to which a model is consistent with the data (Byrne, 1994). We tested the fit of the measurement model prior to assessing our hypothesized structural model. To test our sequential process model, we followed the SEM approach suggested by James et al. (2006), which uses the complete mediation model as the baseline. Thus, mediation is indicated when the paths between independent and mediating variables, as well as the paths between mediating variables and the dependent variable are significant and the model shows acceptable goodness of fit (James et al., 2006). To gauge the fit of the measurement and structural models, we examined the extent to which the covariances estimated in the model matched the covariances in the measured variables using criteria such as the comparative fit index (CFI), incremental fit index (IFI), Tucker–Lewis index (TLI) and the root mean square error of approximation (RMSEA). A value of 0.90 or

higher for CFI, IFI and TLI and a value of 0.08 or lower for RMSEA are typically suggested as adequate fit indicators (Hu and Bentler, 1999).

Hierarchical regression was used to examine the role of CEO emotional intelligence as a moderator of the relationship between CEO job demands and CEO display of negative emotions. We present our model with SEM and moderation results in Figure 2 and the results of hierarchical regression analysis in Table 2.

The measurement model results indicated an acceptable fit to the data (CFI = 0.83; IFI = 0.83; TLI = 0.82; and RMSEA = 0.07), providing evidence that the assessment of the hypothesized model was justified. Results for structural modeling suggested that our fully mediated, hypothesized model had an acceptable fit with the data (CFI = 0.83; IFI = 0.84; TLI = 0.82; and RMSEA = 0.07).

Consistent with hypothesis 1, CEO job demands shows a significantly positive association with CEOs' display frequency of negative emotions ($\beta = 0.21$, $p < 0.001$). For every standard deviation increase in CEO job demands, CEO negative emotion displays increase by 0.21 standard deviations. In turn, the frequency with which CEOs display negative emotions is negatively and significantly associated with TMT participation ($\beta = -0.17$, $p < .001$). For every standard deviation increase in CEO negative affect, TMT participation decreases by 0.17 standard deviations. Thus, hypothesis 2 is supported. Hypothesis 3 argued that TMT participation is positively associated with organizational innovation. The coefficient is in the expected positive direction but is not significant ($\beta = 0.05$, $p = 0.37$). Thus, we did not find support for hypothesis 3. Finally, hypothesis 4 proposed that CEO emotional intelligence negatively moderates the relationship between CEO job demands and CEO negative affect. Model 3 in Table 2 shows that the multiplicative coefficient is in the expected negative direction

and is significant (β = -0.14, p = 0.006). Thus, hypothesis 4 is supported. We illustrate the moderating role of CEO emotional intelligence in Figure 3.

We performed additional tests of indirect effects using bootstrapping to estimate bias-corrected confidence intervals. Although CEO job demands shows a negatively significant indirect effect on TMT participation, the indirect effect of CEO job demands on innovation is negative but is not significant. Similarly, the indirect effect of CEO negative affect on innovation is negative but is not significant.

Discussion

SMEs face important challenges in advancing innovation efforts and introducing new offerings and processes than can improve their performance (Rosenbusch et al., 2011). Although these important innovation challenges are partially explained by SME's limited access to resources and lack of structured innovation systems, we set out to explore whether executives of SMEs have difficulties advancing innovation efforts due to a different reason: their job is difficult. Extant research supports the crucial role of top managers in generating and developing innovation opportunities that can improve SMEs' competitive standing (Kammerlander et al., 2015). For example, CEOs can lead their subordinates into a context of experimentation where creative ideas emerge (Jansen et al., 2009; Jung et al., 2009; Makri and Scandura, 2010) and TMT members can both generate and channel innovation ideas related to their key areas in the firm (Alexiev et al., 2010, Cao e tal., 2010). Thus, it is expected that executives who face important challenges and difficulties associated with their job would have more problems trying to lead their SMEs through successful innovation initiatives. In this study, we developed a process model that explains how the job demands faced by CEOs can bring difficulties to the innovation process in SMEs by eliciting CEOs' display negative emotions and hurting

participation of other TMT members. Our findings present important insights for studying executive job demands and their implications for interactions in the TMT and SME innovation.

Research implications

Our study shows that CEOs' perceptions of their job's associated challenges and difficulties have important implications for how CEOs display negative emotions and how TMTs communicate and share ideas. To the best of our knowledge, we are the first to theorize and test how executive job demands have implications for strategic decision-making. Hambrick et al. (2005) argued that research on top executives had largely ignored the degree of challenge that executives experience in their job and the implications of those experiences for organizations. Such neglect of the variance in executive job difficulties persists to date. By showing that CEO job demands influences the frequency of displays of negative emotions through the underlying mechanism of stress, we begin to point out how executive job demands can influence interactions in the top management team and show the relevance of this construct for strategic decisions or other firm-level outcomes.

To the best of our knowledge, we are also the first to bring the construct of emotional intelligence to the executive level. Prior studies have emphasized the need for leaders to cope with and handle stress and interact effectively with other employees under difficult conditions (Goleman, 2004), yet prior research has not proposed how CEOs are able to do so. Drawing on the literature on emotional intelligence (Salovey and Mayer, 1990; Wong and Law, 2002), we show that CEOs who are high on emotional intelligence can effectively handle stress and regulate their emotions such that increased perceptions of job demands are not entirely reflected on negative emotion displays. Although CEO emotional intelligence plays a moderating role in

our study, we see future research exploring this construct further by theorizing its main effect on various outcomes and investigating its relevance in different contexts.

Our study also answers calls to develop sequential process models that test the influence of executives on their firms (Liu et al., 2018). Early reviews of upper echelons research (Carpenter et al., 2004) as well as recent reviews on executive behavior (Bromiley and Rau, 2016; Wowak et al., 2017) have continued to emphasize the "black-box" problem (Hambrick, 2007), which refers to the need to untangle the specific mechanisms that drive the influence of top managers on their firms. Our process model theorizes and tests various mechanisms that link CEO perceptions to firm innovation and shows the importance of developing these models to understand whether and how various executive attributes ultimately influence firm-level outcomes.

Although one of our main goals was to illustrate innovation challenges at SMEs by showing that CEO job demands hurts innovation indirectly through negative emotions and TMT participation, we did not find strong associations among our main study variables and SME innovation. TMT participation was not significantly related to innovation, and the indirect association between CEO job demands and innovation, as well as that between CEO negative affect and innovation, were not significant. We see one likely explanation for this result. It is possible that innovation in these firms represents efforts on behalf of other organizational members and goes beyond the communication of ideas at the executive level as we proposed. This is consistent with Crossan and Apaydin's (2010) or Anderson and colleagues' (Anderson et al., 2014) conceptualization of innovation as a complex process. We argued that TMT participation was highly relevant because it would make multiple generation and implementation ideas available for discussion and elaboration. However, the presence of a CEO with certain

characteristics (see Bromiley and Rau, 2016), as well as several firm-level characteristics (e.g., Chang and Hughes, 2012; De Jong and Freel, 2010; Nieto and Santamaría, 2010) can influence innovation in SMEs. In our sample, it is likely that CEOs' level of discretion and a possibly (and subsequently) strong decision-making centralization impede that top managers other than the CEO have a strong influence on innovation choices and outcomes. In such conditions, the influence of TMT participation on innovation would be diminished.

Implications for practice

Despite a general notion that leading entire organizations is challenging, the implications of executive job demands are largely undertheorized and lack empirical exploration. Through our study, we begin to outline how executive job demands can have relevant consequences for negative emotions and TMT participation. Our insights have the potential to inform CEOs on how perceptions of job difficulty translate into problematic interactions at the upper echelons with potentially negative consequences for the organization. Although findings in our sample of SMEs do not allow us to conclude that a lack of sharing ideas in the TMT necessarily hampers innovation, is likely that low levels of TMT participation would, at the very least, cause strategic decision-making to be deficient in available input and information. CEOs can rely on the findings of our study to evaluate their job demands and assess whether these demands are causing difficult interactions and TMT members' unwillingness to communicate ideas. If that is the case, CEOs might be able to take action that mitigates this consequence. For example, CEOs can seek coaching and training that helps them handle the demands associated with their job. Our findings particularly show that coaching in emotional intelligence can be a fruitful direction. Alternatively, CEOs can seek to reduce the emotional consequences of increased job demands by delegating some of their functions. Scholars have argued that CEOs of SMEs handle both

strategic and operational roles (Lubatkin et al., 2006), which might explain the associated job difficulties. CEOs can evaluate which of these roles can be handled by other organizational members to reduce job demands.

Limitations

The limitations of our study can provide opportunities for future research. First, our findings are restricted to the context of Colombian SMEs. Although top managers have important levels of discretion in SMEs and the characteristics of these organizations might enhance executive job demands, it is important to explore this phenomenon in other contexts. How CEOs handle job demands in SMEs of other countries or in large, diversified firms is an important question for future research.

Second, we were only able to collect survey data considering the context and data availability for our sample. We took steps to address common method bias (e.g. obtaining data from multiple senior executives), but access to objective information (e.g. new product introduction or other performance data) might show more clearly the organizational implications of TMT participation. Although our constructs of job demands, affect, emotional intelligence, and TMT participation are arguably best captured through a survey, future scholars could explore some alternative measures for these constructs or use alternative research designs (e.g. a laboratory experiment) to test our model.

Conclusion

Decades of research in organizational settings have explored the consequences of increased job demands for employees. However, despite the notion that CEOs face one of the most challenging jobs, we have not investigated the consequences of executive job demands. We have shown how CEO job demands hampers TMT participation through the frequent display of

negative emotions. We have also shown how emotional intelligence can mitigate the consequences of job demands for negative emotions. It is our hope that future research continues to explore the consequences of CEO job demands and uncovers its organizational implications in a variety of settings.

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Table 1

Descriptive statistics and correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. CEO age	42.45	11.32													
2. CEO gender	1.47	0.50	-0.19												
3. CEO education	2.72	0.90	0.06	-0.06											
4. CEO tenure	8.85	8.31	0.60	-0.09	-0.08										
5. CEO founder status	1.68	0.47	-0.17	0.05	0.14	-0.29									
6. Firm age	23.72	17.61	0.23	-0.08	0.17	0.23	0.31								
7. Firm size	3.53	1.34	0.10	-0.02	0.24	-0.04	0.38	0.40							
8. Prior performance	3.72	0.77	-0.14	-0.02	0.16	-0.19	0.19	0.13	0.31						
9. Slack	3.46	0.94	0.01	-0.04	0.10	-0.10	0.15	0.14	0.21	0.32					
10. CEO job demands	2.40	0.62	-0.01	-0.03	-0.03	-0.09	-0.06	0.00	0.01	0.09	0.02				
11. CEO negative affect	1.77	0.71	-0.05	0.07	-0.04	-0.03	0.08	-0.01	-0.07	0.02	0.10	0.21			
12. CEO emotional intelligence	3.96	0.60	0.04	-0.04	0.05	0.09	-0.07	-0.10	-0.10	-0.05	-0.04	0.10	-0.09		
13. TMT participation	3.83	0.74	0.08	-0.04	-0.01	0.07	-0.04	0.01	0.02	0.02	-0.06	0.12	-0.17	0.40	
14. Organizational innovation	3.98	0.69	-0.02	0.01	0.08	-0.09	0.10	0.01	0.13	0.42	0.25	0.07	0.04	0.05	0.05

Correlations with an absolute value greater than 0.10 are significant at $p < 0.05$

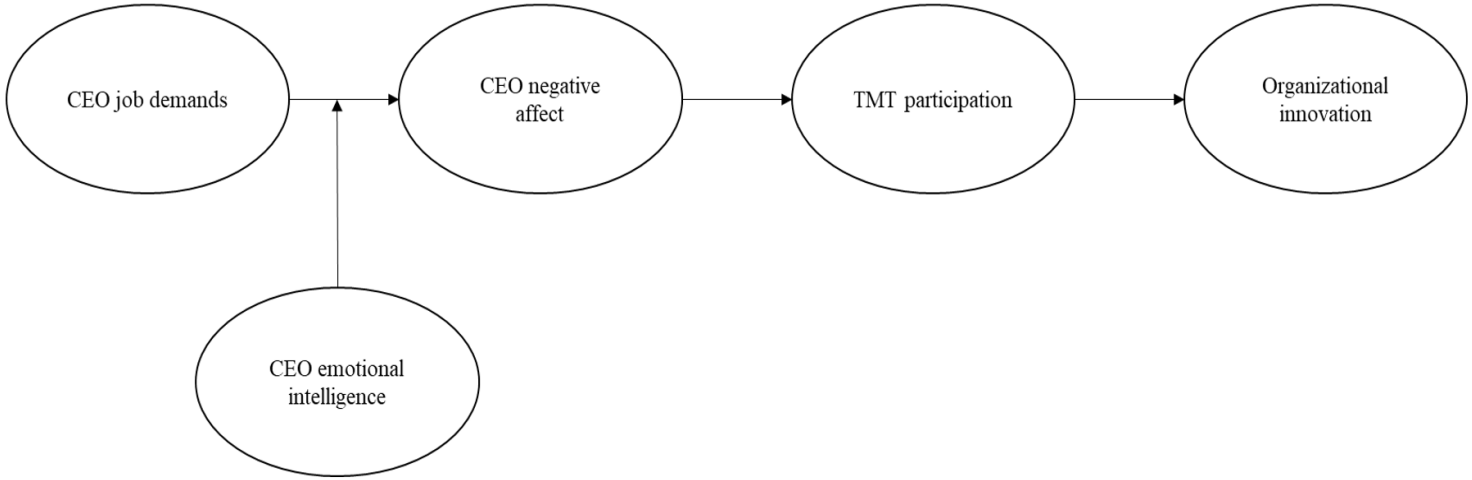

Figure 1

Conceptual model

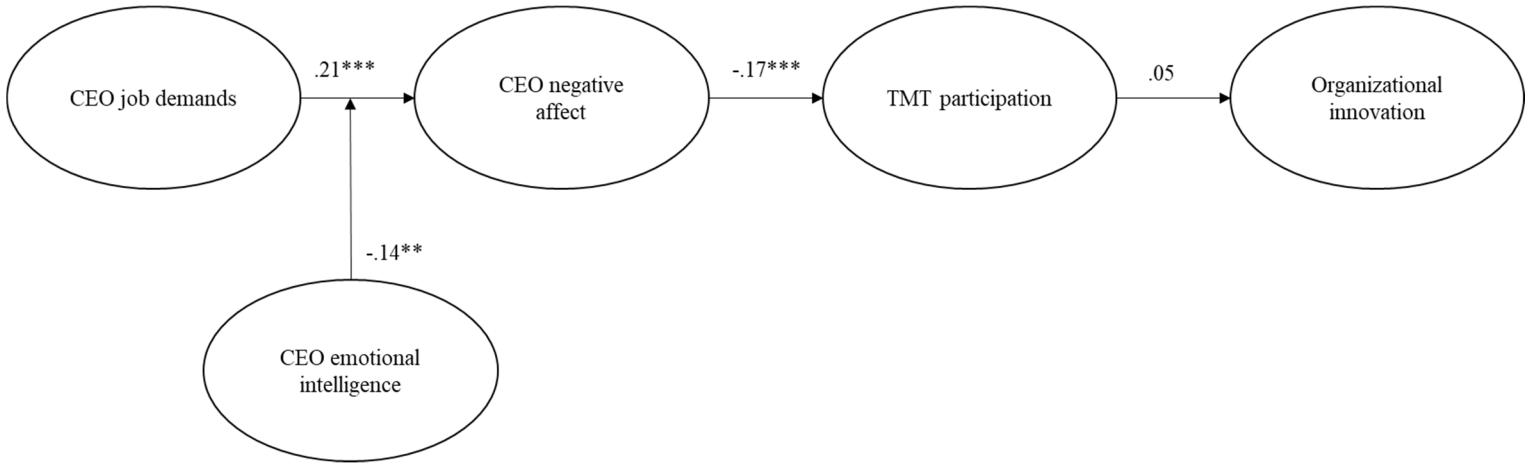

Figure 2

Structural equation modeling with moderation results

Table 2

Results of hierarchical regression analysis

	CEO negative affect		
Variable	Model 1	Model 2	Model 3
CEO age	-0.04	-0.04	-0.04
	(0.00)	(0.00)	(0.00)
CEO gender	0.07	0.07	0.07
	(0.07)	(0.07)	(0.07)
CEO education	-0.01	0.00	0.00
	(0.04)	(0.04)	(0.04)
CEO tenure	0.07	0.09	0.07
	(0.01)	(0.01)	(0.01)
CEO founder status	0.14*	0.15*	0.15*
	(0.09)	(0.09)	(0.09)
Firm age	-0.02	-0.03	-0.03
	(0.00)	(0.00)	(0.00)
Firm size	-0.13*	-0.14*	-0.14*
	(0.03)	(0.03)	(0.03)
Prior performance	-0.01	-0.01	-0.01
	(0.05)	(0.05)	(0.05)
Slack	0.12*	0.12*	0.12*
	(0.04)	(0.04)	(0.04)
CEO job demands	0.22***	0.24***	0.25***
	(0.06)	(0.06)	(0.06)
CEO emotional intelligence		-0.12*	-0.15**
		(0.06)	(0.06)
CEO job demands*CEO emotional intelligence			-0.14**
			(0.10)
F	3.39	3.66	4.05
Significance	0.00	0.00	0.00
R2	0.08	0.10	0.12
Adjusted R2	0.06	0.07	0.09

Standardized regression coefficients are reported. Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

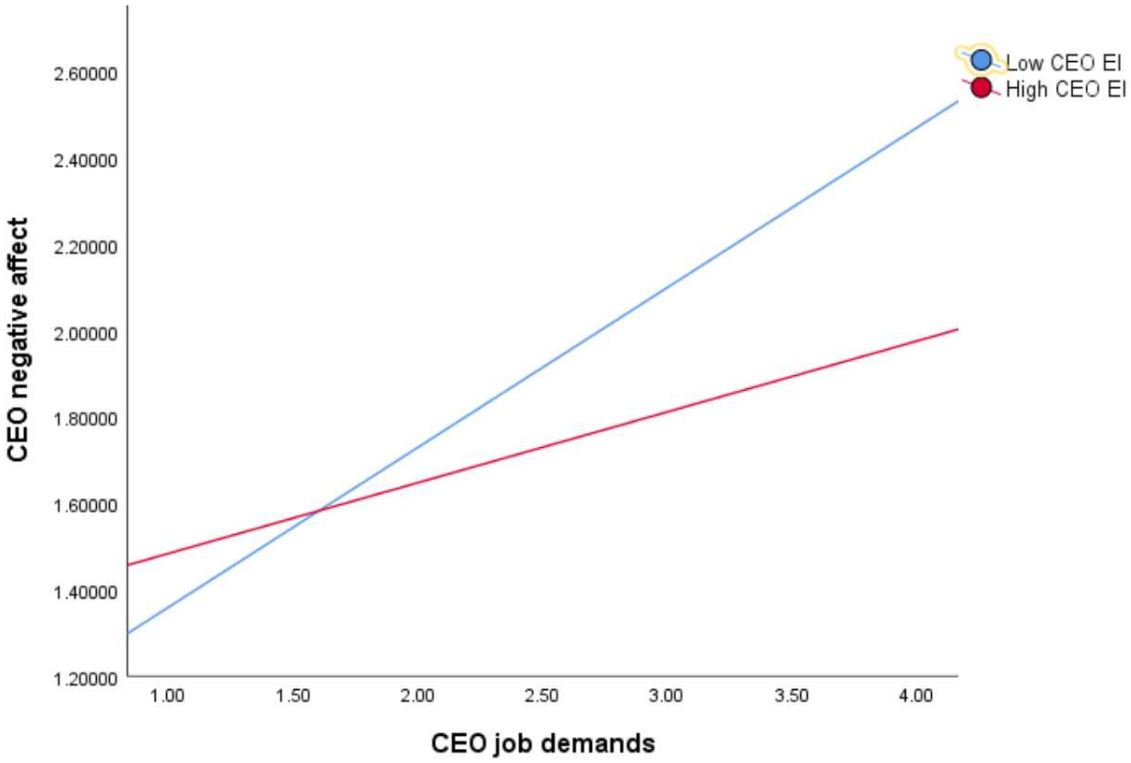

Figure 3

The moderating role of CEO emotional intelligence

Appendix. IRB approval

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 05/04/2018

To: Andres-Felipe F Cortes Pol Herrmann

From: Office for Responsible Research

Title: **Strategic Management of Innovation at SMEs**

IRB ID: **18-208**

Submission Type: Initial Submission **Exemption Date:** 05/04/2018

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

2: Research involving use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observations of public behavior, unless (i) Information obtained is recorded in such a manner that human subjects can be identified, and (ii) Any disclosure of the human subjects' responses outside the research could reasonably place the subject at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any *modifications to the research procedures* (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the *inclusion of participants from vulnerable populations*, and/or any *change that may increase the risk or discomfort to participants*. The purpose of review is to determine if the project still meets the federal criteria for exemption.

  In addition, ***changes to key personnel*** must receive prior approval.

  Detailed information about requirements for submission of modifications can be found on our website. For modifications that require prior approval, an amendment to the most recent IRB application must be submitted in IRBManager. A determination of exemption or approval from the IRB must be granted before implementing the proposed changes.

  Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

IRB 03/2018

Please note that you must submit all research involving human participants for review. **Only the IRB or its designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed**. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted**.

Please be advised that your research study may be subject to post-approval monitoring **by Iowa State University's Office for Responsible Research**. In some cases, it may also be subject to formal audit or inspection by federal agencies and study sponsors.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

CHAPTER 5. INFLUENCE TACTICS AND DECISION MAKING UNDER RISK: AN AGENCY THEORY PERSPECTIVE

Modified from a manuscript to be submitted to *The Leadership Quarterly*

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Abstract

How are leaders able to persuade their followers to comply with tasks associated with different levels of risk? We suggest one possible answer lies in the type of influence tactic used by leaders. We adopt an agency perspective to argue that leaders and followers often represent a risk-sharing problem in which leaders assign risky tasks to their followers, such tasks are difficult to monitor for leaders, and followers have decision-making authority over them. We suggest that leaders' use of rational, soft, or hard influence tactics to persuade followers to comply provides information to the follower that can shift the attention away from the risk and make compliance more likely. We find that soft tactics are effective under medium levels of risk but loose effectiveness as the risk increases, hard tactics show the opposite pattern, and rational tactics are effective at inducing compliance at both medium and high levels of risk. We also find that none of the tactics seems to be effective at zero or low levels of risk. Our study contributes to agency theory by showing a behavioral tool that can alleviate the risk sharing problem between leaders and followers and contributes to the influence tactics literature by applying the framework to an immediate compliance decision and by exploring a boundary condition that determines the effectiveness of influence tactics.

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Introduction

Organizations can be viewed as systems in which different parties delegate work to other parties, forming a vast set of contractual relationships (Eisenhardt, 1989). In this delegation, a problem often occurs when the party who delegates has difficulties in monitoring and verifying the actions and compliance of the other party, who might have different interests and take alternative courses of action (Jensen and Meckling, 1976). In problems like these, which have a cooperative structure, agency theory has emerged as a framework to attempt explain how the party who delegates (i.e. the principal) can monitor and incentivize the behavior of the other party (i.e. the agent) to ensure that outcomes relevant to the principal are satisfied (Martin, Wiseman, and Gomez-Mejia, 2016). Such problems can be of particular importance in leadership. Acting as the principal, the leader delegates work to a subordinate, acting as the agent, expecting compliance in specific tasks where the agent is difficult to monitor and/or has decision-making authority, and the attitudes toward risk are different for the leader and the follower.

This risk-sharing problem can become salient if we consider a leader who, motivated by personal or organizational interests, makes a request to a follower who must engage in personal risks to fulfill the leader's request while the leader does not share any part of the risk. Tasks or requests such as these can vary substantially across organizations, but can involve anything from reputation to layoff risks for followers should they decide to comply, and leaders can play an important role in influencing followers to embrace the risk and satisfy a request.

In this study, we are concerned with exploring the question of why certain principals can be more successful at alleviating the risk-sharing problem with their agents. More specifically, why some leaders are better at influencing followers to take a personal risk for the sake of an

organizational goal. According to agency theory, incentive alignment is an effective way of alleviating the risk-sharing problem (Eisenhardt, 1989; Martin et al. 2016). The principal attempts to align the incentives by making a portion of the agent's compensation contingent on accomplishing outcomes that are important to the principal. However, alleviating the risk-sharing problem through compensation may not be the single approach for principals to employ. Leaders may not always hold the discretion or the option to design their follower's compensation according to the multitude of requests in order to incentivize follower risk-taking behavior, and thus must resort to other influencing mechanisms to solve a risk-sharing problem.

We rely on the literature on influence tactics (Kipnis, Schmidt, and Wilkinson, 1980; Yukl, and Tracey, 1992; Falbe and Yukl, 1992; Clarke and Ward 2006; Lee, Han, Cheong, Kim, and Yun; 2017) and individual attention (Simon, 1997) to argue that behavioral mechanisms used and portrayed by leaders can incentivize risk-taking behavior on behalf of followers. Applying the meta-categorization of soft, rational, and hard influence tactics (see Lee et al., 2017), we argue that leaders who use such tactics to make a request that followers deem as risky can shape followers' attention and therefore the type of information they process when deciding whether to comply. By placing greater information-processing demands on followers, leaders using influence tactics might be able to cause followers to place their focus of attention away from the task's associated risk and into other pieces of information that can persuade followers toward task compliance.

We test these predictions through a laboratory experiment in which participants take the role of managers of a research and development (R&D) department in a fictional smart phone company. As managers, they are assigned with the task of deciding whether to pursue the development of an innovation project. We manipulate both the level of risk (low, medium, or

high) involved in the project and the influence tactic (soft, hard, or rational) used by their leader (the company's CEO). We link participants' decision to a monetary compensation in the experiment and study whether the influence tactic, in the form of a message from their fictional leader, results in an actual difference in participants' decisions to approve or discard the innovation project.

We provide the main contribution to agency theory (Eisenhardt, 1989) by studying behavioral mechanisms that can alleviate the risk-sharing problem between principals and agents. Literature on agency theory has focused on incentive alignment as a means to solve this problem, but the understanding of antecedents to risk taking other than compensation design remains limited (Martin et al., 2016). This study proposes that the behaviors used by principals (leaders) when delegating work to the agent (subordinate) are one possible mechanism that can influence the agent to take on a risky task without necessarily aligning the agent's compensation to the task. I also contribute to the literature on influence tactics. Researchers have acknowledged that the effects of influence tactics "should be understood in relation to proximate outcomes, such as immediate member responses" (Sparrowe et al., 2006: 1194), but no research to the best of our knowledge has answered this call. By focusing on immediate responses and the risk of the task, we argue that the literature on influence tactics can move toward interesting questions regarding why followers decide to comply with a specific request and are affected by a an influence when considering compliance under various risk conditions.

Theoretical background

The risk-sharing problem

Managers and other organizational members can frequently make strategic decisions on behalf of the firm's owners or more senior managers (Ross, 2014). With such decision-making

authority comes the possibility for opportunistic behavior and thus the agency problem (Jensen and Meckling, 1976), in which principals and agents have different goals and attitudes toward risk, making it more likely for the agent to prefer actions that are not in the interest of the principal (Eisenhardt, 1979). Such opportunistic behavior rises because of information asymmetries (managers can have more information than those who monitor them) and the difficulty of monitoring managerial behavior and effort (Zenger and Lazzarini, 2004). The risk-sharing problem is thus created given the different attitudes toward risk that drive the manager and his/her principal to prefer different actions.

Scholars have suggested that incentive alignment can alleviate the risk-sharing problem by making a portion of the manager's compensation contingent on achieving the outcomes relevant to the principal (Martin et al. 2016). Such incentive-based contracts can limit the opportunism of managers with decision-making authority by aligning principal-agent interests (Makadok, 2003). However, the design of compensation schemes argued to solve the risk-sharing problem assume that the principal can actually alter compensation design, which may not be the case for every principal-agent relationship. Such emphasis on compensation structure might result from the research emphasis on the CEO-shareholder relationship (Bendickson, Muldoon, Liguori, and Davis, 2016). However, an agency structure can be applied to multiple cooperative situations occurring in organizations (Eisenhardt, 1989). Situations emerging in organizations where one party delegates work to another apply to a multitude of leader-follower interactions in which the follower is delegated a task, has decision-making authority on whether to pursue it, the risk associated with complying with the task is different for the leader and the follower, and the leader cannot easily monitor or ensure follower compliance.

The risk difference in a leader-subordinate interaction can manifest when a leader makes a request from a subordinate but the required task has an associated compliance risk for the subordinate and such risk is not shared by the leader. For example, a leader that asks a subordinate to make a difficult decision that has an increased likelihood of damaging the subordinate's career in the firm (or elsewhere) if the decision leads to undesirable outcomes. A leader who asks a subordinate to engage in an illegal activity for the sake of the firm is another example. In situations such as these, it can be difficult for the leader to design a compensation structure that can influence the subordinate's behavior in favor of the outcomes important to the leader. However, we argue that leaders might use other behavioral mechanisms, e.g. influence tactics, to attempt to change subordinates' risk perceptions associated with the request.

Influence tactics

The type of behavior that one individual uses to influence the behavior of another person is referred to as an influence tactic (Yukl, Chavez, & Seifert, 2005). Individuals at work employ different tactics to influence their superiors, subordinates, or colleagues to achieve personal or organizational goals (Kipnis et al., 1980). In their research, Kipnis et al. (1980) found eight dimensions of influence: assertiveness, ingratiation, rationality, sanctions, exchange, upward appeals, blocking, and coalitions. Although dimensions of influence tactics have remained relatively stable through time, scholars have found new types of influence tactics. For example, Yukl and Falbe (1990) reconceptualized dimensions proposed by Kipnis et al. and included two new dimensions: inspirational appeal and consultation. The inspirational appeal refers to an emotional request that arouses enthusiasm by appealing to values in the target of the tactic. The consultation involves seeking participation from the target in making a decision. In this study, Yukl and Falbe (1990) found that two influence tactics, consultation and rational persuasion,

were used most frequently regardless of the direction of influence. Schriesheim and Hinkin (1990), from a methodological standpoint, extended Kipnis et al. (1980) by critiquing the items used to measure the various influence tactics and offering a refined instrument. Additions of influence tactics or refinement of measurement instruments have been proposed later by Yukl et al. (2005) or Yukl, Seifert, and Chavez (2008).

Kipnis and Schmidt (1985) proposed that influence tactics can be grouped in the meta-categories of hard, soft, and rational. Hard tactics are based on threats, demand, pressure, continual checking, or repeated reminders to gain a target's compliance with a request. Tactics such as coalition or pressure are commonly classified in the hard category. Soft tactics, such as consultation or inspirational appeals, attempt to gain a target's volitional compliance for performing a task mainly by emphasizing the importance of the task to arouse enthusiasm and engage the target's commitment by appealing to values and emotions (Clarke & Ward, 2006). Finally, rational persuasion or apprising are tactics usually classified in the rational meta-category. With rational tactics, individuals try to gain target compliance though the use of logical arguments and factual evidence to convince and persuade on the basis of logic (Clarke & Ward, 2006).

Literature on how influence tactics relate to other outcomes has been rather diverse. For example, Fable and Yukl (1992) explored how the various influence tactics were related to the response to incidents described by employees. The incidents were classified by the authors as commitment, compliance, or resistance. They found that the most effective tactics to engage a target's commitment to a request were inspirational appeals and consultation, while the least effective were pressure, legitimating, and coalition tactics. Yukl and Tracey (1992) found similar results when exploring influence tactics' relationship with task commitment and manager

effectiveness, and they did so exploring the effects in upward, downward, and lateral directions. Others scholars have explored outcomes such as safety climate and safety participation in the workplace (Clarke & Ward, 2006), resistance to organizational change (Furst and Cable, 2008), recruiting perceptions of fit and hiring recommendations (Higgins and Judge, 2004), perceptions of supervisor power (Hinkin and Schriesheim, 1990), organizational citizenship behavior (Lian and Tui, 2012), or helping behavior (Sparrowe et al., 2006). Except for Howell and Higgins's (1990) work on the tactics used by champions of technological innovation, less research has focused on what type of influence tactics are most likely used by certain types of workers in an upward direction.

In their meta-analysis of the literature on influence tactics, Lee et al. (2017) grouped the outcomes studied in the literature in task- and relations-oriented outcomes. They found that regardless of the type of outcome, these outcomes had positive associations with rational persuasion, inspirational appeal, apprising, collaboration, ingratiation, and consultation and negative associations with pressure. Given the recentness of this study and the findings by previous scholars, the literature on influence tactics seems to be consistent with the fact that soft and rational tactics are positively associated with these outcomes while hard tactics are negatively associated. In other words, soft and rational tactics are mostly effective to engage a target's commitment to a request whereas hard tactics are mostly ineffective at doing so. However, given the outcomes that have been studied, little is known in terms of what type of tactics are effective for the immediate response, i.e. task compliance. As we have argued previously, organizational members often see themselves embedded in risky tasks or decisions (Eatough, Meier, Igic, Elfering, Spector and Semmer, 2016; Stuart and Moore, 2017) and complying with such tasks or decisions might bring negative consequences if they can be held

accountable. Little is known in terms of how leader influence tactics can persuade a subordinate to engage in a specific task or decision infused with various levels of risk. Furthermore, which type of tactics are more effective for this persuasion.

Hypotheses

To argue how influence tactics can persuade the subordinate/target to engage in a risky task, we propose that different types of tactics can shape the target's focus of attention in different ways and provide the target with different sources of information to process, which in turn affect the target's compliance decision. An individual's attention, defined in this study as the momentary focus on one of multiple and available trains of thought (James, 1890), can be shaped by the organization and can influence work behavior (Simon 1957). As pointed by Simon (1957), external stimuli can direct attention away from attributes of a situation to other attributes, which in turn might influence individual choice in other directions.

When a subordinate is evaluating whether to comply with a particular task infused with a given level of risk, the subordinate is likely to focus his/her attention on the available information that can inform the best course of action. Assuming no influence tactic is applied to persuade the subordinate, the focus of attention is likely to be placed on the benefits of fulfilling the task in relation to the task's associated risk.

Such reasoning implies that the subordinate will likely devote the majority of attentional resources to determine whether the benefits of task compliance are comparable to the risk that must be taken to fulfill the task successfully. With such focus, the compliance decision is likely to be based mostly on the task's associated risk. Hence, holding the task's benefits constant, it is expected that the subordinate will be less likely to comply to a given task as the risk of compliance increases.

H1: in absence of an influence tactic, compliance to a given task will be less likely as the task's associated risk level increases

By introducing an influence tactic with the request, a leader adds a new source of information for the subordinate to consider while evaluating compliance. Such new information consumes attention, a subordinate's scarce resource (Simon, 1957), and forces the subordinate to consider not only a task's level of risk, but also the content of the influence tactic that is trying to persuade them to comply. Regardless of the influence tactic employed (soft, rational, or hard), a purpose of the tactic (intentionally or not) is to attempt to focus the subordinate's attention away from the risk associated with the tactic in order to ensure compliance. This is consistent with the view that individuals' decision making under risk in not independent of the content of the problem, but rather plays an important role in the decision process after probabilities and outcomes associated with the problem have been defined (Kusev, van Schaik, Ayton, Dent, and Chater, 2009).

Given the additional information processing requirements for the subordinate, we expect that any influence tactic will create competing attentional demands from the risk and the tactic's content, making it more likely that subordinates consider the influence tactic as a source of information to evaluate their compliance decision. Hence, we propose that targets of an influence tactic are more likely to comply to a given task compared to subordinates who merely evaluate the task's level of risk.

H2: compliance to a given task associated with any level of risk is more likely for targets of an influence tactic than for those who are not targets of an influence tactic

Although any influence tactic used by the leader can shift the subordinate's attention away from the risk, different tactics might be more or less effective at doing so depending on the

attentional demands created by the type of information that the subordinate has to process due to the tactic and the level of risk associated with the task.

Soft tactics attempt to engage a subordinate's commitment to a tactic by appealing to values and emotions associated with the task (Clarke and Ward, 2006) and by trying to increase subordinate's confidence that they can do a requested task (Fable and Yukl, 1992). These tactics tend to emphasize requests with inspirational language that aim to induce compliance by creating a personal or emotional connection between the target and the compliance outcome. Rational targets focus on factual evidence and logical arguments behind a given request, highlighting that a given request is feasible or relevant for a particular objective (Yukl et al. 2008). The subordinate thus receives concrete information regarding why the task is relevant and should be performed. Finally, hard tactics use pressure and threats to ensure compliance with the request (Clarke and Ward, 2006). The subordinate can be a target of a request while being threatened in any particular fashion should the target opt for non-compliance (Farmer, Maslyn, Fedor, and Goodman, 1997).

Noticeably, subordinates who are targets of different influence tactics receive different types of information to process when evaluating compliance to a request. The soft tactic attempts to divert the target's attention to the emotions and the values associated with successful compliance. In turn, the rational target attempts to divert the attention to the arguments and the evidence in support of successful compliance. Finally, the hard tactic seeks to divert the subordinate's attention to the associated costs of pursuing non-compliance.

We expect the three types of influence tactics to achieve similar compliance levels for tasks associated with low levels of risk. Although such influence tactics provide different types of information to process, the risk associated with task compliance may be low enough for the

subordinate not to process those additional sources of information thoroughly and focus instead on the low compliance risk. In other words, the three types of tactics consume part of the target's attentional resources, but the low compliance risk is likely to receive most of those resources at the decision-making process, diminishing any possible differences attributable to the type of tactic.

H3: compliance to a given task associated with low levels of risk is more and similarly likely for targets of soft, rational, and hard tactics than for those are not targets of an influence tactic

We argue that influence tactics may start having different compliance effects when the task compliance risk for the subordinate starts to increase to medium and high levels. As the level of risk increases and the compliance decision is more challenging, subordinates can provide more attentional resources to different types of information that can inform their decision. Thus, it is likely that the information provided by the leader's employed influence tactic will be increasingly processed by the subordinate as the risk level increases to determine whether the risk is worth taking.

According to the most recent meta-analysis on the effectiveness of influence tactics (Lee et al., 2017), soft and rational tactics were found to be mostly effective while hard tactics were mostly ineffective. Following such findings, it would be expected that directing subordinates' attention toward the emotional content of the request, as well as to the factual evidence and rational arguments behind the request is likely to persuade subordinates to comply and ignore greater levels of risk compared to hard tactics. Based on such findings:

H4a: compliance to a given task associated with medium levels of risk is more likely for targets of soft and rational tactics than for targets of hard influence tactics

H5a: compliance to a given task associated with high levels of risk is more likely for targets of soft and rational tactics than for targets of hard influence tactics

However, we have argued that such findings have not accumulated on the specific compliance decision and the response in immediate target outcomes (see Lee et al. 2017). There might be reasons to expect that hard tactics, although ineffective for different sets of outcomes, might be effective at directing the target's attention away from increased levels of risk such that the pressures and threats associated with non-compliance are the main information drivers of the compliance decision. In other words, because soft and rational tactics do not provide any information regarding the consequences of not complying with the task, subordinates might not perceive that non-compliance is an option with any negative consequences. Instead, a hard tactic infused with pressure and threats does provide the subordinate with information about the negative consequences of not complying, probably making it more likely for them to ignore increased levels of risk when a figure of authority is the requester and place attention on the consequences of not conforming to that authority's request. We thus propose the competing hypotheses:

H4b: compliance to a given task associated with medium levels of risk is more likely for targets of hard influence tactics than for targets of soft and rational influence tactics

H5b: compliance to a given task associated with high levels of risk is more likely for targets of hard influence tactics than for targets of soft and rational influence tactics

Methodology

Sample

We present authorization information from the Institutional Review Board (IRB) to collect this data in the appendix. We recruited 1,109 participants through Amazon Mechanical

Turk, an increasingly used online platform in social science research that provides data at least as reliable as that obtained through traditional methods (Buhrmester, Kwang, & Gosling, 2011). Participants were invited to participate in a 10-minute survey about decision-making for a minimum compensation of 0.25 U.S. dollars (USD). I recruited the participants over a two-month period by opening multiple batches to the survey of between fifty and two hundred participants. From the Mechanical Turk webpage, interested participants were taken to the survey in Qualtrics. After agreeing to participate in the study, participants inserted demographic information (sex, age, employment status, racial status, and education level) and subsequently read the instructions of the task.

Procedure

The task sets participants in a hypothetical scenario in which they act as the managers of an R&D department in a company that produces smartphones. Participants read a brief description of the company and were informed that their role was to read a proposal of an innovation project and decide to approve or discard the proposed project. The hypothetical project informs participants about a new type of material that can improve battery life and processing speed to the company's existing smart phones. We informed participants that they were potentially going to see additional sources of information when making the decision. Discarding the project awarded participants with 0.5 USD. Approving the project awarded participants with 1.00 USD if the project was successfully developed or 0.25 USD if the project failed in development. Since the difference between 0.25 USD and 1.00 USD was perhaps too low to actually induce a strong perception of risk in the decision between approving and discarding, we used "experimental units" (EA) instead of USD when describing the possible outcomes, never informed the participants that the maximum payment was 1.00 USD, and

provided the EU/USD exchange rate at the end of the experiment. All participants read the same company description, project proposal, and then were randomly assigned to one of 16 conditions in which the influence tactic (hard, soft, rational, and no tactic) and the risk level of the project (low risk, medium risk, high risk, and no risk) was manipulated.

We manipulated the level of risk by showing a message from an engineer in the R&D department making comments about the project. The engineer informed the participant about the viability of the project and provided an estimate of the likelihood that the project was successfully developed. We changed that estimate provided by the engineer to manipulate the condition's associated level of risk. This estimate for the low-risk condition was 70% likelihood of succeeding, the estimate for the medium-risk condition was 50%, the estimate for the high-risk condition was 30%, and the estimate for the no-risk condition was 100%. The final part of the message mentioned "(…) we believe there is a 70% chance of succeeding with the project".

To manipulate the influence tactic, we showed participants three different types of messages sent from the CEO of the hypothetical company, who made additional comments referring to the approval of the project. Based on definitions of influence tactics provided by Yukl et al. (2008), we designed three CEO messages that reflected inspirational appeal (soft tactic), rational persuasion (rational tactic), and pressure (hard tactic). We chose these three influence tactics because they are the most strongly associated with studied outcomes in the existing literature (Lee et al., 2017). Participants in the no-tactic condition did not see any message from the CEO. First, any type of message coming from the CEO could be perceived by participants in the no-tactic condition as having some form of influence tactic, which would add difficulties to interpreting results. Additionally, any type of information provided by the CEO can capture participants' attention and be processed in addition to the level of risk, which was

not desired for participants in this condition. The message from the CEO containing the soft tactic manipulation was: "offering our customers more battery life and faster phones is exciting! Plus, who knows what this material might hold for us in the future"? The message from the CEO containing the rational tactic manipulation was: "Most of our competitors are forgetting about battery and speed. Plus, I believe customers are demanding more of this now. This can be the right move to increase our profits." Finally, the message from the CEO containing the hard tactic manipulation was: "These are the types of projects we need to approve. We would be concerned with your decisions if you discard this".

As a manipulation check for the influence tactic, participants responded to a 10-item questionnaire of influence tactics adapted from Yukl et al. (2008) after making the decision of approving or discarding the project. Four items of the questionnaire corresponded to rational persuasion (rational tactic), three items corresponded to inspirational appeal (soft tactic), and three items corresponded to pressure (hard tactic). We asked participants to rate the content of the CEO's message on a 5-point Likert scale according to the extent to which they believed that the CEO's message reflected the statements in each item. We compared such responses between conditions to determine whether the influence tactic was perceived by participants as intended. We also randomized the order of the scale such that the items of a single tactic were not displayed consecutively. A sample item for the rational tactic was: "Uses facts and logic to make a persuasive case for the approval of the project." A sample item for the soft tactic was: "Describes an inspiring vision of what the project could accomplish." A sample item for the hard tactic was: "Uses threats or warnings to get you to approve".

We subsequently captured participants' risk aversion level to determine whether approval or discarding decisions were affected by the influence tactic and not participants' level of risk

aversion. We used the established set of paired lottery choices developed by Holt and Laury (2002). Participants see a menu of ten, paired lottery choices of low and high risk and are instructed to select one choice for each pair. Participants' crossover point to the high-risk lottery (and hence the number of high-risk lotteries selected) is used to infer a degree of risk aversion for each participant.

After checking for missing data and removing participants under 18 years of age, the final sample consisted of 996 participants. 57% of the participants were male. 71% were employed full-time, 15% were employed part-time, and the rest were students or did not specify. 44% had undergraduate degrees, 35% had graduate degrees, 19% had finished high school, and the rest did not specify. In terms of race, 60% of the participants were White, 26% were Asian, 5% were Black, 5% were Hispanic, and the remaining were divided among American Indian, Native Hawaiian, or did not specify. Finally, participants were between 18 and 77 years old, with an average of 34.45 years old and a standard deviation of 10.42 years.

Results

Considering all sixteen conditions, 16% percent of the participants decided to discard the project, which corresponded to 161 participants. Across all levels of risk, 17% percent of the participants in the soft tactic condition decided to discard, 12% percent of the participants in the rational tactic condition decided to discard, and 14% percent of the participants in the hard tactic condition decided to discard. Across all influence tactics, 9% of the participants in the low-risk condition decided to discard, 17% of the participants in the medium-risk condition decided to discard, and 34% of the participants in the high-risk condition decided to discard. Figure 1 shows participants' discard rates by tactic in each of the risk conditions.

To test whether the influence tactics were perceived as intended, we used a one-way ANOVA to compare the scores provided by participants to the influence tactic questionnaire. First, we averaged the four items for the rational tactic, the three items for the soft tactic, and the three items for the hard tactic for each of the participants who were exposed to an influence tactic to create three new variables reflecting an overall score for each tactic. We then used an ANOVA to test whether those averages were significantly different from each other for the participants exposed to a given tactic. For participants in the soft tactic condition, the average scores were 3.83 for the soft tactic scale, 3.64 for the rational tactic scale, and 2.90 for the hard tactic scale. The highest score was given to the soft tactic scale and the ANOVA indicated that these means were significantly different from each other. For participants in the rational tactic condition, the average scores were 2.99 for the soft tactic scale, 3.35 for the rational tactic scale, and 2.78 for the hard tactic scale. The highest score was given to the rational tactic scale and the ANOVA indicated that these means were significantly different from each other. Finally, for participants in the hard tactic condition, the average scores were 2.23 for the soft tactic scale, 2.22 for the rational tactic scale, and 3.38 for the hard tactic scale. The highest score was given to the hard tactic scale and the ANOVA indicated that these means were significantly different from each other. These tests provided evidence that participants in each of the conditions perceived the influence tactic as intended and there was not significant overlap among the tactics.

Given the nature of the variable of interest (approve/discard), we used binary logistic regression to test these hypotheses. We included demographic characteristics and risk aversion as control variables in all regressions and coded the dependent variable as one for “Approve” and zero for “Discard”. In hypothesis 1, we predicted that in absence of an influence tactic,

compliance to the task would decrease as the risk level increased. We restricted the sample to participants who were not exposed to an influence tactic (n=257) and ran the logistic regression with cases across all levels of risk with a categorial predictor coded 0 for participants in the no-risk condition, 1 for those in low-risk condition, 2 for those in the medium-risk condition, and 3 for those in the high-risk condition. The reference group was the no-risk condition. The overall variable of risk was statistically significant (Wald = 27.43, p=.00), the negative low risk condition coefficient (b = -.80, SE = .66, odds-ratio = .44, p = .22) indicated that participants in the low-risk condition were less likely to approve compared to those in the no-risk condition, but the coefficient was not significant. Participants in the medium- (b = -1.61, SE = .61, odds-ratio = .19, p = .00) and high-risk (b = -2.65, SE = .59, odds-ratio = .07, p = .00) conditions were significantly less likely to approve the project than those in the no risk condition and the probability of approving decreased as the level of risk increased. This provided evidence that participants were in fact less likely to approve as the risk level increased, but the effect of risk was only significant as the risk level approached medium and high levels. Thus, hypothesis 1 is partially supported. None of the control variables in the regression were statistically significant.

Hypothesis 2 predicted that any influence tactic would increase participants' likelihood of approval compared to the likelihood of approval for participants who were not targets of an influence tactic. We included all participants in the logistic regression (n = 996) with control variables and a categorical predictor coded 0 for participants who were not targets of an influence tactic and coded 1 for participants who were targets of any influence tactic. The coefficient for targets of an influence tactic was positive and significant (b = .543, SE = .18, odds-ratio = 1.72, p=.00), indicating that targets of any influence tactic were more likely to approve the project compared to participants who were not exposed to an influence tactic. More

specifically, the inclusion of an influence tactic increases the odds of approval by 72%. Thus, hypothesis 2 was supported.

Hypothesis 3 predicted that in low levels of risk, the three tactics would increase the likelihood of approval but there would be no clear differences among the three types of tactics. We ran the logistic regression with participants in the low-risk conditions (n = 248) and included a categorical predictor coded 0 in the reference category for the no-tactic condition, 1 for the soft-tactic condition, 2 for the rational-tactic condition, and 3 for the hard-tactic condition. The three tactics had positive coefficients, but they were not significant (see table 1, model 1). This indicated that tactics in the low-risk condition did not significantly increase the likelihood of approval compared to the absence of tactics. Thus, hypothesis 3 was not supported.

Hypotheses 4a predicted that compared to the absence of a tactic, the soft and rational tactics would be more effective than the hard tactic at increasing the likelihood of approval in medium levels of risk. Hypothesis 4b predicted the opposite. We ran the logistic regression for participants in the medium-risk conditions (n = 250) using the same predictors of the previous step (see table 1, model 2). The coefficient for the soft tactic category was positive and significant (b = 1.17, SE = .54, odds-ratio = 3.22, p = .03), the coefficient for the rational tactic was positive and marginally significant (b = .92, SE = .51, odds-ratio = 2.51, p = .07), and the coefficient for the hard tactic was positive and not significant (b = .01, SE = .44, odds-ratio = 1.01, p = .97). Compared to the absence of tactics, the soft tactic increased the odds of approval by 222%, the rational tactic did so by 151%, and the hard tactic did not significantly increase the odds of approval. Thus, hypothesis 4a was supported.

Hypothesis 5a and 5b predicted the same tactic effects as in hypothesis 4a and 4b in the high-risk conditions. Thus, we ran the same logistic regression for the participants in the high-

risk conditions (n = 249) (see table 1, model 3). The coefficient for the soft tactic was positive and not significant (b = .05, SE = .37, odds-ratio = 1.06, p = .87), the coefficient for the rational tactic was positive and significant (b = 1.03, SE = .40, odds-ratio = 2.80, p = .01), and the coefficient for the hard tactic was positive and significant (b = .78, SE = .40, odds-ratio = 2.20, p = .04). Compared to the absence of tactics, the rational tactic increased the odds of approval by 180%, the hard tactic did so by 120%, and the soft tactic did not significantly increase the odds of approval. Thus, hypotheses 5a and 5b were not supported.

Discussion

Applying agency theory to the leader-follower interaction, we set out to determine why certain leader behaviors are likely to induce followers to comply with requests infused with different levels of risk and thus alleviate the risk-sharing problem between agents and principals. We relied on the literature on influence tactics to suggest that different types of tactics are unique sources of information that followers evaluate in their decision-making process, and argued that influence tactics can shift followers' attention away from the risk so that compliance to leaders' risky requests is more likely.

We contribute to the literature on agency theory (Eisenhardt, 1989; Martin et al., 2016) and leadership, particularly leader influence tactics (Kipnis et al., 1980; Yukl, and Tracey, 1992; Falbe and Yukl, 1992; Clarke and Ward 2006; Lee et al., 2017). First, the study expresses that principal-agent relationships in organizational settings can be explored further beyond the usually studied shareholder-manager perspective, and more importantly, that the compensation arrangements typically argued to align interests and risk perceptions between agents and principals can exist in addition to alternative behavioral mechanisms employed by principals. Leaders in organizations must delegate and assign different functions and tasks to their

subordinates, but many such functions and tasks cannot be easily monitored or supervised by the leader to ensure subordinate compliance. Furthermore, subordinates might often perceive the required task to entail a level of risk for themselves, and thus face a process of decision-making under risk when evaluating whether to comply. These monitoring difficulties on behalf of the leader and the different attitudes toward risk between leaders and followers create a principal-agent relationship that can offer multiple insights in terms of why certain leaders are more successful at persuading organizational members into different courses of action. The literature on agency theory has largely focused on compensation arrangements as a tool to align principal-agent risk perceptions by linking the agent's compensation to outcomes that are important to the principal (Martin et al., 2016). However, leaders are not able to constantly redesign and structure subordinates' compensation for every request or task assigned and may have to resort to alternative mechanisms to alter such risk perceptions. In the present study, we find evidence that behavioral mechanisms can work as such alternatives to diminish the principal-agent risk-sharing problem.

Second, we contribute to our understanding of leadership and influence tactics by showing how individuals comply with tasks under various levels of risk depending on how the leader attempts to influence follower behavior. In doing so, we answer calls made by previous scholars (Sparrowe et al., 2006) to research influence tactics in the context of immediate responses. More specifically, study whether and how different types of tactics, regardless of other outcomes or consequences they entail, can persuade the target to perform a specific action. We argue that influence tactics provide information to the target in addition to the information of the task itself, and that such information can effectively deviate the target's attention away from the task's associated risk and make compliance more likely.

Results indicated that the use of influence tactics is not particularly effective when followers are asked to comply with a task under low or zero levels of risk. Such low levels of risk seem to capture most of followers' attention and translate into a relatively easy decision-making process that does not require any influence attempt on behalf of leaders to induce compliance. In turn, influence tactics start to have important compliance effects when individuals face medium and high levels of risk. Using rational tactics to focus individuals' attention on logical arguments and reasons behind a request effectively induces compliance at both medium and high levels of risk. In turn, relying on the arousal of emotions and inspirational appeals significantly induces compliance at medium levels of risk but surprisingly shows no effect for individuals facing a high-risk request. On the contrary, the use of threats and aggressive means to induce compliance shows no effect at medium-risk situations but becomes highly effective for individuals with higher-risk tasks. Such findings confirm the effectiveness of rational tactics but challenge the conception that soft tactics are mostly effective while hard tactics are mostly ineffective (Lee et al. 2017). Instead, results highlight that the effectiveness of soft and hard influence tactics depends on the level of risk associated with the request, and that these tactics may be more likely to induce compliance depending on boundary conditions.

The results of this experiment suggest that the information that persuades individuals at a decision-making process under medium levels of risk partially differs from the information that persuades individuals at high levels of risk. One explanation is that the transition from medium (50% probability of success) to high (30% probability of success) levels of risk makes the compliance decision increasingly challenging for an individual, who might seek more reliable or concrete information to assume the risk. Rational tactics using logical arguments and reasoning supporting a request capture individual attention and successfully induce compliance perhaps

because they provide reliable information about the benefits associated with compliance. The hard tactic might also be a source of concrete information, particularly for a highly risky decision, as it provides the individual with information on non-compliance consequences. To avoid such consequences, especially coming from a figure of authority, the individual might comply persuaded by the hard tactic. On the contrary, the soft tactic's emotional content and tone of excitement might be perceived as vague or unprecise information, perhaps enough to embrace a medium risk but not clear or concrete enough to facilitate a high-risk decision. Future research can shed more light on this issue and uncover how different types of information persuade followers to undertake risky tasks.

Although we have argued that these findings have important implications for agency theory and leadership, findings should be interpreted while acknowledging the study's limitations. First, we have employed the term of rational, soft, and hard tactics acknowledging that each of these meta-categories are composed of multiple types of tactics. However, we could only use three of those tactics in the study given that encompassing all types of tactics of one meta-category in one manipulation greatly increases the complexity of the study. Additionally, attempting to use all available tactics would have made this study too large and complex, and this is probably a task to explore through multiple studies. We aimed to remedy this limitation by using recent findings in the literature (Lee et al. 2017) to select the tactics that have been found to be most effective.

Although the study successfully separates the effects of the different tactics, such experimental conditions are unique and might not occur as noise-free in organizations. For example, managers may use more than one tactic in an influence attempt with a specific target (Yukl et al. 1993), which could include the use of rational persuasion together with inspirational

appeal (Yukl et al. 2008). Furthermore, targets of an influence tactic in organizations not only have information on the task and receive information through the influence tactic, but also have information about the leader who is making the request. Such additional information might work as a boundary condition for an effective influence tactic. For example, a highly respected and esteemed leader might successfully persuade followers in high-risk requests by using a soft tactic, or a despotic and feared leader might generally induce compliance with hard tactics at any level of risk. Such boundary conditions can be explored in the future and enrich these findings.

We encourage scholars to extend this study on its multiple implications it has for our understanding of risk-sharing issues between leaders and followers, influence attempts from leaders, and individual risk-taking behavior.

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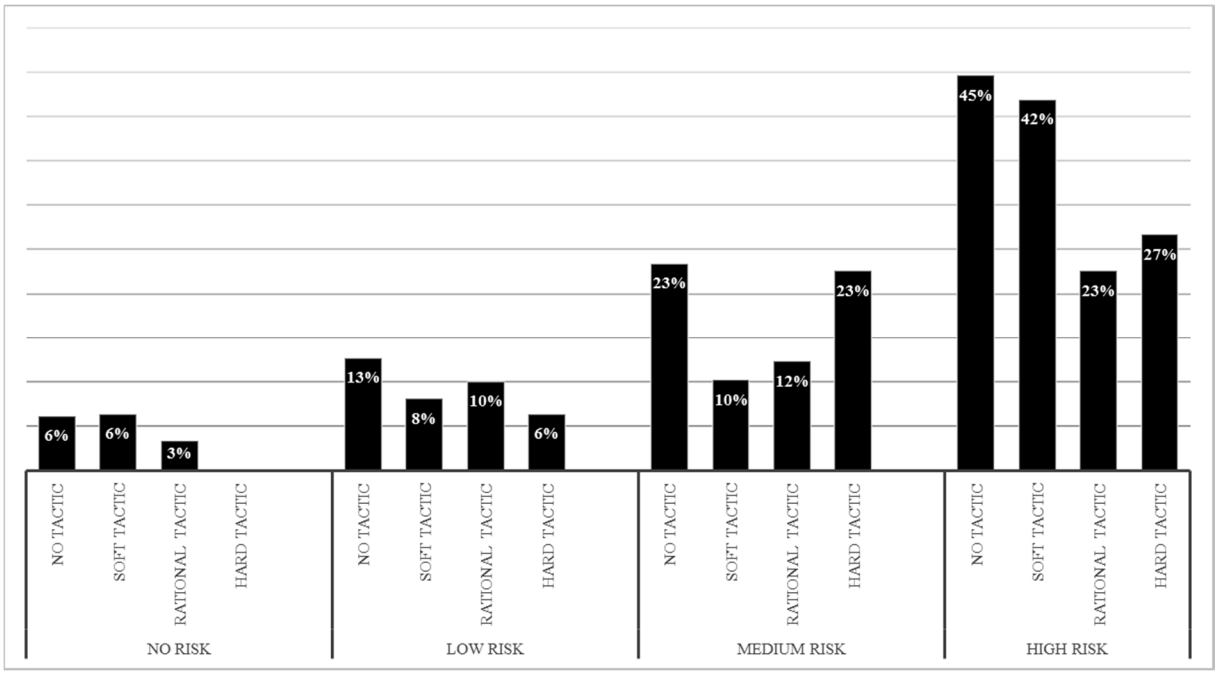

Figure 1

Percentage of participants who decided to discard the project

Table 1

Logistic regression results

Variables	Model 1 Low risk		Model 2 Medium risk		Model 3 High risk	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Gender[1]	1.007*	2.738	0.598	1.819	0.126	1.134
	(0.5)		(0.4)		(0.29)	
Age	-0.024	0.976	-0.03†	0.97	-0.024†	0.976
	(0.02)		(0.02)		(0.01)	
Part-Time employment[2]	-0.055	0.947	-0.423	0.655	0.189	1.208
	(0.62)		(0.5)		(0.41)	
Student-Other[2]	-0.274	0.76	-0.642	0.526	-0.54	0.583
	(0.73)		(0.49)		(0.41)	
Undergraduate degree[3]	0.292	1.339	0.146	1.157	-0.101	0.904
	(0.55)		(0.44)		(0.35)	
High school-Other[3]	1.122	3.07	-0.138	0.871	-0.399	0.671
	(0.76)		(0.53)		(0.41)	
Asian[4]	0.359	1.432	-0.117	0.89	0.393	1.481
	(0.66)		(0.5)		(0.38)	
Black-Hispanic[4]	0.248	1.281	0.16	1.173	0.564	1.757
	(0.83)		(0.63)		(0.53)	
Other race[4]	-0.75	0.473	-0.748	0.473	0.311	1.365
	(0.98)		(0.76)		(0.76)	
Risk aversion	0.163	1.177	0.032	1.033	0	1
	(0.11)		(0.08)		(0.07)	
Soft tactic[5]	0.485	1.624	1.17*	3.221	0.059	1.061
	(0.63)		(0.55)		(0.38)	
Rational tactic[5]	0.266	1.304	0.922†	2.515	1.032*	2.807
	(0.61)		(0.52)		(0.41)	
Hard tactic[5]	0.955	2.599	0.012	1.012	0.789*	2.2
	(0.69)		(0.45)		(0.4)	
Constant	-0.299	0.742	1.692	5.428	0.993	2.701
	(1.81)		(1.58)		(1.22)	

Standard errors in parentheses
†p<.10, *p<.05

[1]Reference category is Female

[2]Reference category is Full-time employment

[3]Reference category is Graduate degree

[4]Reference category is White

[5]Reference category is No-tactic

Appendix. IRB Approval

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 6/27/2017

To: Andres Felipe Cortes
705 Clark Avenue, Apt. 7
Ames, IA

CC: Dr. Elizabeth Hoffman
367 Heady Hall

From: Office for Responsible Research

Title: Leader influence tactics and follower risk-taking behavior in innovation settings

IRB ID: 17-234

Approval Date:	6/27/2017	**Date for Continuing Review:**	6/26/2019
Submission Type:	New	**Review Type:**	Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, **including the recruitment materials and informed consent documents that have the IRB approval stamp**.
- **Retain signed informed consent documents for 3 years after the close of the study**, when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of** (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 202 Kingland, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

CHAPTER 6. GENERAL CONCLUSION

Each of the four papers in the dissertation provides several contributions to our overall understanding of leadership influences on organizational innovation. The main contribution of the first paper is to provide a framework which categorizes the types of influence that top managers have on organizational innovation. The framework provides structure to existing research and proposes a wide variety of ideas for future research. Furthermore, several scholars have called for studies that explored more deeply the mechanisms through which top managers influence organizational outcomes (Carpenter et al., 2004; Liu et al., 2019; Wang et al., 2016). In this paper I offer guidance to answer this call by delineating the various types of influence that top managers can have on a specific firm-level outcome such as innovation. In doing so, I contribute to the upper echelons literature (Hambrick and Mason, 1984, Hambrick, 2007) by pointing out that the influence of top managers on a certain firm-level outcome is a complex phenomenon that can manifest through multiple avenues and not exclusively through strategic choice.

Finally, the study provides insights as to why a single leader characteristic can manifest differently on organizational innovation. Scholars have suggested that, given the complexity of innovation, leaders are required to show flexible behaviors in order to adapt to innovation's changing requirements because a single characteristic might both promote or inhibit innovation (Rosing et al., 2011; Zhang et al., 2017). The study proposes that such outcomes might occur because a single top managerial characteristic can have different effects on firm innovation depending on the mechanism through which it is manifests.

Drawing on upper echelons theory, the attention-based view, and social comparison theories, I provide several contributions in the second paper. First, I integrate two broad fields of

research that have explained executive behavior but have mostly developed in silos (Wowak et al., 2017). Executive behavior has been explained as a consequence of personal values or dispositions and has also been explained through executives' motivation to have larger compensation (Wowak et al., 2017). However, the way in which compensation and personal characteristics interact to explain CEOs' decisions is an important question that remains to be answered. I delved into this topic by studying how CEOs' perception of payment relative to other CEOs can alter their risk-taking propensity and influence organizational innovation. Second, scholars have argued that the pursuit of innovation requires executives to make bold, risky decisions and undertake challenging actions (Jansen et al., 2009; Gerstner et al., 2013; Tang et al., 2015). Such conception has led to the underlying premise that executives' risk-taking propensities are required to engage in innovation efforts. In this study, I captured and test risk propensities directly to show its importance as a predictor of innovation above other important firm-level antecedents. Finally, I advanced one of the first efforts to capture executive perceptions of compensation. Scholars have argued that perception of compensation is likely to have the most important implications for behavior (Fong, 2010). In this study, I show the importance of these perceptions as predictors of strategic choices and highlight the relevance of capturing such perceptions in future research. By surveying a sample of Colombian CEOs from SMEs operating in multiple industries, results indicate that both CEO risk propensities and relative compensation perceptions are important drivers of SMEs' innovation efforts. Furthermore, it is clear that there are complex interactions between CEOs' compensation perceptions and risk propensity that warrant future investigation.

The third paper contributes to the upper echelons and innovation research by incorporating job demands, emotions, and the CEO-TMT interface in strategic decision-making.

An overlooked aspect of strategic leadership research is the difficulties that executives face in their job, which may have several consequences in terms of how CEOs interact with other organizational members or make decisions (Hambrick et al., 2005). In this study I theorize how executive job demands can hamper organizational innovation by impeding the upward flow of innovative ideas from the TMT. I argued that one cause behind innovation initiatives not moving forward in the organization might not be the lack of idea generation or executive vision, but rather the unwillingness of the TMT to share those ideas with their boss, the CEO. Results did not indicate that TMT participation was associated with innovation in Colombian SMEs, but results show clearly that CEO job demands hamper TMT participation through the frequent display of negative emotions. Furthermore, I highlighted the importance of emotional intelligence for organizational leaders and postulate, to the best of my knowledge, the first model to integrate these constructs at the upper echelons. Thus, the study shows that it is important to consider not only executives' personal biases and strategic decision-making tendencies in upper echelons research, but also the degree of executives' job challenges and how those challenges have important implications for organizations.

Finally, the fourth study provides its main contribution to agency theory (Eisenhardt, 1989) by studying behavioral mechanisms that can alleviate the risk-sharing problem between principals and agents. Literature on agency theory has focused on incentive alignment as a means to solve this problem, but the understanding of antecedents to risk taking other than compensation design remains limited (Martin et al., 2016). I proposed in this study that the behaviors used by principals (leaders) when delegating work to the agent (subordinate) constitute one possible mechanism that can influence the agent to take on a risky task without necessarily aligning the agent's compensation to the task. I also contribute to the literature on influence

tactics. Researchers have acknowledged that the effects of influence tactics "should be understood in relation to proximate outcomes, such as immediate member responses" (Sparrowe et al., 2006: 1194), but no research to the best of my knowledge has answered this call. By focusing on immediate responses and the risk of the task, I argue that the literature on influence tactics can move toward interesting questions regarding why followers decide to comply with a specific request and are affected by an influence when considering compliance under various risk conditions. Finally, I contribute to the innovation literature by showing that employees' unwillingness to undertake increasingly challenging tasks, such as innovation, might be counteracted by a leaders' usage of an influence tactic that fits the risk of the associated task.

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