

Does an Employee-Experienced Crisis Help or Hinder Creativity? An Integration of Threat-Rigidity and Implicit Theories

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Although a crisis provides room for creativity, organizations often suffer from creativity deficits in such a situation. Indeed, threat-rigidity theory suggests that an employee-experienced crisis may hinder employee creativity. An interesting but unresolved question is thus, “When does an employee-experienced crisis stifle or stimulate creativity, and how?” Embedding our study in a person-in-situation creativity research stream, we introduce employee-experienced crisis, defined as the impact an employee experiences from crisis event(s) in a team, and examine its interaction with implicit theories (i.e., a fixed vs. a growth mindset) in employee creativity. We hypothesize that an employee-experienced crisis stifles employee creativity via increased job anxiety when the individual possesses a strong fixed mindset. In contrast, the same phenomenon stimulates creativity via enhanced creative process engagement when the individual has a strong growth mindset. In Study 1, we collected multisource, time-lagged field data from 506 employees working in 107 research and development (R&D) teams. The results supported our hypotheses. To further explore how the moderating effects of mindsets occur, we conducted Study 2, another multisource, time-lagged field study of 260 employees in 40 R&D teams. We found that the moderating effects of implicit theories are mediated by goal orientations (i.e., implicit theories

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are more distal moderators, and goal orientations are more proximal moderators). Overall, we provide an integrative account of when and how an employee-experienced crisis hinders or helps employee creativity.

Keywords: *creativity; implicit theories; employee-experienced crisis*

In today's uncertain world, where crises (e.g., the COVID-19 outbreak) erupt from time to time, employee creativity—the generation of novel and useful ideas (Amabile, 1983)—has become an increasingly important intellectual asset for organizational adaptation and survival (Amabile & Pratt, 2016; Anderson, Potočník, & Zhou, 2014). On the one hand, when experiencing a crisis, people often have trouble seeking novel ideas (Amabile & Conti, 1999; Stoker, Garretsen, & Soudis, 2019). Since experiencing a crisis is potentially menacing, individuals experience emotional drain and reduced creativity (Staw, Sandelands, & Dutton, 1981). On the other hand, a crisis requires people to move beyond well-learned practices (James, Wooten, & Dushek, 2011). It provides the impetus and room for employees to think outside of the box and sparks creativity (Acar, Tarakci, & van Knippenberg, 2019; Mehta & Zhu, 2016; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018). As Ed Catmull, one of the founders of Pixar Animation Studios, has asserted, “new crises are not always lamentable,” and “imposing limits can encourage a creative response” (Catmull & Wallace, 2014: 319, 318). It is therefore possible that employees, especially those with a “change is possible” mindset, could generate creative ideas and solutions when a crisis occurs.

This tension leads to a critical question: When does a crisis stymie or stimulate employee creativity, and how? Having given scant attention to crisis and its impact on employee creativity, extant research on creativity has neglected the question. Addressing it is of theoretical and practical importance. From a theoretical standpoint, there is a limited understanding of the paradoxical effects of a crisis on creativity. Following threat-rigidity theory (Staw et al., 1981), some research points to the negative effects of a crisis on creativity (Amabile & Conti, 1999). However, according to person-in-situation creativity research (van Knippenberg & Hirst, 2020), a crisis can increase or decrease employee creativity depending on how employees' personal traits interact with it. This is because employees respond to a crisis situation based on what they are motivated to achieve (van Knippenberg & Hirst, 2020). Testing the interactive effect of a crisis and a personal trait could offer insight into the paradoxical effect of crises on creativity. From a practical standpoint, because of the current unprecedented business environment, created by factors such as the COVID-19 pandemic, it would be valuable to know which employee personal traits obstruct or potentiate creativity while experiencing crises at work.

Our purpose is to present an employee-experienced crisis and examine its interactive effect with implicit theories on employee creativity from person-in-situation creativity perspective (Amabile, 1983; van Knippenberg & Hirst, 2020; Woodman, Sawyer, & Griffin, 1993; Zhou & Hoever, 2014). For a creativity-relevant situation, we investigate employee-experienced crisis in a team (hereinafter “employee-experienced crisis”), defined as the impact an employee experiences owing to crisis event(s) in a team (Billings, Milburn, & Schaalman, 1980).

A handful of crisis studies have examined the impact of organizational crises on learning and adaption (Christianson, Farkas, Sutcliffe, & Weick, 2009; Lampel, Shamsie, & Shapira, 2009; Rerup, 2009), assuming that members of organizations experience crisis events collectively and uniformly. However, individual employees, as the microfoundation of any team or organization when it comes to responding to a crisis (Stallings & Quarantelli, 1985; Wenger, 1992), can experience a crisis distinctively and therefore react differently (Billings et al., 1980). Scholars have advocated investigation of the role of employees in a crisis situation, because a bottom-up approach driven by employees can be more effective than a top-down approach controlled by the upper echelons (Coombs & Holladay, 2005; Drabek, 2005; Mitroff, 2005). An understanding of employees' different experiences of and reactions to crisis thus becomes essential (Stallings & Quarantelli, 1985; Wenger, 1992).

To determine when an employee-experienced crisis stifles and stimulates creativity, we adopted implicit theories (Dweck & Leggett, 1988) and investigated employees' mindsets as personal trait contingencies. Both practitioners and scholars have pointed out that mindset vis-à-vis "change" can make a difference in response to a situation, such as a crisis, that demands adaption and learning (Dweck, 2017; Schmidt & Rosenberg, 2014). For example, Pixar's members faced "a full-fledged crisis" when they discovered that their creative rules had gotten a project in trouble. They could have been reluctant to change the rules that had led to the success of preceding projects. But the studio members resolutely revised the rules, acted upon them, and made another big hit with *Toy Story 2*. Ed Catmull has stated, "Change and uncertainty are part of life. Our job is not to resist them . . . when unexpected events occur" (Catmull & Wallace, 2014: 317). Scholars have also shown increasing interest in implicit theories (Dweck & Leggett, 1988; Dweck & Yeager, 2019), which capture people's beliefs about changeability, as a personal trait that provides a motivational account for constructive responses to adversity situation (Ashford, Sytch, & Greer, 2020; Dimotakis, Mitchell, & Maurer, 2017; Jordan & Audia, 2012; Nussbaum & Dweck, 2008). Given that a crisis jeopardizes the status quo and necessitates a positive change for survival (James et al., 2011), such a "change is possible" belief is particularly relevant in the sense that it can be a prime motivational variable that turns a crisis situation into creativity (van Knippenberg & Hirst, 2020). In implicit theories, there are two mindsets (Dweck & Yeager, 2019). A *fixed mindset* refers to the belief that personal attributes are given and unchangeable, whereas a *growth mindset* refers to the view that such attributes are malleable and can grow (Dweck, 2017). Among those with a strong fixed mindset, an employee-experienced crisis jeopardizes self-image or self-presentation (Dweck, 1999), prompting anxiety and rigidity. In contrast, among those with a strong growth mindset, it prompts self-development and discovery as a primary response (Dweck, 1999), leading to engagement in creative activities. Thus, our presupposition is that an employee-experienced crisis stifles creativity via increased job anxiety for those with a strong (vs. weak) fixed mindset but stimulates creativity via enhanced creative process engagement for those with a strong (vs. weak) growth mindset.

We make two major contributions. First, scholars have attempted to unravel the paradoxical nature of crisis, which can produce either a negative or positive outcome (Bloom, 2016; Bundy, Pfarrer, Short, & Coombs, 2017; Sarkar & Osievskeyy, 2018; Tabesh & Vera, 2020). However, few have focused on creativity as a key outcome of crisis or provided an integrative framework to explain when a crisis hinders or helps creativity. Threat-rigidity theory (Staw et al., 1981) by

itself does not fully explain when an employee-experienced crisis stifles or stimulates creativity at work. We provide such an account through integrating threat-rigidity theory (Staw et al., 1981) and implicit theories (Dweck & Leggett, 1988; Dweck & Yeager, 2019). Second, prior research has assumed that employees experience crisis events in a uniform manner. By acknowledging that employees experience crisis events distinctively, we introduce the notion of employee-experienced crisis, develop a measurement for it, and further show that employees react to it differently. Using implicit theories, we further document a promising path for turning an employee-experienced crisis into creativity. In doing so, we reveal frontline employees as the microfoundation of organizational response to a crisis and the driver for the upside of crisis beyond the role of organizational leaders.

Theoretical Background

Employee-Experienced Crisis

A team crisis is a significant context for individual employees (Johns, 2006, 2017). At times, an event unexpectedly occurs in a team that jeopardizes employees' tasks and, ultimately, the team's functioning and survival (Choi, Sung, & Kim, 2010; Kaplan, LaPort, & Waller, 2013; Kayes, 2004)—for instance, when a competitor develops new products that make the team's current design obsolete (Jaworski & Kohli, 1993). Other examples include failure to meet a key criterion for a project (Shepherd, Patzelt, & Wolfe, 2011), missing an important milestone (Drazin, Glynn, & Kazanjian, 1999), or receiving a stretch project for which the team is ill prepared (Sitkin, See, Miller, Lawless, & Carton, 2011). Research has examined unfavorable challenges, such as resource constraints, competition, or environmental hostility, as a context for employees (Acar et al., 2019). However, scholars have asserted that crises are distinct from unfavorable challenges (for a review, see Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017), in that they occur suddenly and disturb ongoing activities (Dutton, 1986; Hermann, 1963; Pearson & Clair, 1998). Moreover, a crisis affords employees fewer possibilities for completing their original plans with their current resources (e.g., competence, skill, or know-how; Drazin et al., 1999).

Previous crisis studies have mostly assumed that employees are homogeneous in the context of an organizational crisis (Amabile & Conti, 1999; Christianson et al., 2009; Lampel et al., 2009; Rerup, 2009). Although some studies have noted the possibility that individuals experience an organizational crisis personally and differentially (Rerup, 2009; Roux-Dufort, 2009), crisis researchers have chiefly explored the perceptions of organization leaders (e.g., the chief executive officer; Brockner & James, 2008; James et al., 2011; König, Graf-Vlachy, Bundy, & Little, 2020), not their subordinates. Nonetheless, employees are at the forefront of executing tasks and thus might detect a crisis more accurately and swiftly than team leaders or upper-echelon management (Coombs & Holladay, 2005; Mitroff, 2005). Also, because command-and-control approaches tend to be ineffective in a crisis context (Drabek, 2005), an understanding of employees' experiences of crisis and their reactions to it becomes essential (Stallings & Quarantelli, 1985; Wenger, 1992).

The model of crisis perception (Billings et al., 1980) provides a key insight into how individual employees experience a crisis in a team. When a crisis happens, people tend to perceive the value of the loss caused depending on their circumstances. In a team typically structured

in line with the division of labor, employees take differentiated roles and tasks (Bunderson & Boumgarden, 2010). Each member has their own territory and span of responsibility in team tasks or projects (Bunderson & Boumgarden, 2010). Mainly due to the nature of team structure, employees can have distinctive circumstances that fundamentally affect their experience of a crisis in a team. Some employees experience it strongly if it is more proximal or relevant to their particular roles and responsibilities (Billings et al., 1980). For example, a team may receive a sudden budget cut; this will directly and more heavily impact staff who occupy managerial roles or have responsibility for financial matters (Drazin et al., 1999). In contrast, when a disruptive new technology emerges, it will affect staff who mainly serve technical roles or have expertise in the technology (Drazin et al., 1999).

Borrowing from the model of crisis perception (Billings et al., 1980), we introduce the notion of employee-experienced crisis, or the impact an employee experiences from team crisis events (Dutton, 1986; Hermann, 1963; Pearson & Clair, 1998). Employee-experienced crisis fundamentally discloses individual employees' potential lack of resources (e.g., competence or skill) to carry out their tasks for the completion of team tasks as planned (Drazin et al., 1999). The subjective impact experienced by an individual employee from team crisis events is our unit of analysis rather than the objective events themselves. Although teams may confront different crisis events, we focus on the impact individual employees experience from crisis events, which then can be compared across different employees within a team or across teams. In essence, an employee-experienced crisis is a person-specific experiential effect engendered by crisis events.

Threat-Rigidity Theory

Threat-rigidity theory (Staw et al., 1981) provides an important lens to examine employee-experienced crisis and creativity. Individuals facing a threat often limit the range of information sources they consult and restrict their span of attention to potential solutions in a way that consolidates the propensity for inertia (Ocasio, 1995). Specifically, this theory prescribes how individuals demonstrate rigidity. First, an employee-experienced crisis presents a threat to the individual that triggers negative emotion, such as job anxiety. This negative emotion is a central mechanism leading individuals to behave rigidly at work. Second, anxiety leads individuals to narrow their search for and use of information. Third, with narrow cognitive processes, individuals adhere to routines and well-learned practices. On the basis of threat-rigidity theory, one would expect an employee-experienced crisis to engender anxiety and thus stifle creativity.

Threat-rigidity theory is grounded in a stimulus-response paradigm and does not explicitly consider the role of individual difference in countering the stimulus (Ocasio, 1995; Staw et al., 1981). Because individuals may assign different meanings to an experienced crisis, incorporating individual differences is imperative for understanding when a crisis is experienced as a deleterious event—and therefore undermines creativity—and when it is not. In this connection, implicit theories provide valuable insight.

Implicit Theories

The person-in-situation perspective on creativity attaches a central role to individual differences in reacting to a situation (Amabile, 1983; van Knippenberg & Hirst, 2020;

Woodman et al., 1993; Zhou & Hoever, 2014). More specifically, the motivational lens model developed by van Knippenberg and Hirst (2020: 1135) suggests that “traits focus people’s attention on certain elements of the situation rather than others . . . and affect their responses to the situation.” For example, extrinsically driven individuals focus on social expectations for desired outcomes, while intrinsically motivated individuals search for solutions in a crisis situation. Related to extrinsic or intrinsic motivation (Heyman & Dweck, 1992), individuals can have a fixed or a growth mindset (Dweck, 2017). A person-in-situation perspective does not provide specific individual differences, so we draw upon implicit theories (Dweck, 1999). Dweck and colleagues (Dweck, 1999; Dweck & Yeager, 2019) proposed that implicit theories affect cognitive, affective, and behavioral processes (Dweck & Leggett, 1988) by providing a motivational lens to make sense of the world (Molden & Dweck, 2006).

A fixed mindset motivates an individual to prove their competency or avoid showing incompetency. In a crisis, an individual with a strong fixed mindset is likely to use maladaptive emotion regulation strategies (e.g., dwelling on negative experiences; Kappes & Schikowski, 2013; King & dela Rosa, 2019) and thus demonstrate helplessness-oriented negative emotions (e.g., anxiety). In contrast, a growth mindset motivates an individual to improve their competency (Dweck, 2017). Because they use a crisis as a prospect for self-development and discovery, individuals with a strong growth mindset are likely to develop adaptive, remedial, and problem-solving strategies (e.g., brainstorming solutions or planning a course of action; Nussbaum & Dweck, 2008). These two mindsets are orthogonal in such a way that they set in motion different goal orientation (performance vs. learning; Dweck & Leggett, 1988). Dweck and colleagues (Dweck, 1999; Dweck & Yeager, 2019) have demonstrated that individuals show distinctive responses to situations depending on the extent to which they have a fixed or a growth mindset.

Individuals’ implicit theories, as a psychological factor, condition whether they react negatively or positively to a critical situation at work. For example, Jordan and Audia (2012) proposed that low performance poses a potential danger to the image of decision makers with a fixed mindset so that they respond to it by defensively managing their public image. Dimotakis et al. (2017) found that when employees possess a fixed mindset, unfavorable feedback inimically affects self-efficacy improvement, presumably because they react to criticism as an image risk.

Hypotheses Development

Threat-rigidity theory is most apt for predicting the psychological outcomes of an employee-experienced crisis if such an experience is countered as a negative event (James et al., 2011). Studies have documented that people develop a feeling of anxiety when they confront a threat (McCarthy, Trougakos, & Cheng, 2016). For instance, research has found that excessive work demands induce job anxiety (Astrachan, 2004; Dawson, O’Brien, & Beehr, 2016; Sprigg, Stride, Wall, Holman, & Smith, 2007). We extend this logic and posit that an employee-experienced crisis engenders anxiety when employees have a fixed mindset.

According to implicit theories (Dweck & Leggett, 1988; Dweck & Yeager, 2019), individuals with a strong fixed mindset believe that personal attributes (e.g., competence in assigned tasks)

are unchangeable. For such individuals, an employee-experienced crisis presents a negative evaluation of their fixed competence. It spotlights their current low capability and hence their low chances of successfully completing the tasks required to accomplish team projects as planned. An employee-experienced crisis, therefore, tends to have negative impacts on their self-image and self-presentation (Molden & Dweck, 2006). They thus adopt ineffective emotion-regulation strategies (Aldao, Nolen-Hoeksema, & Schweizer, 2010). For instance, they may dwell on their emotional experiences, a strategy that aggravates the effect of an employee-experienced crisis on anxiety (Nolen-Hoeksema, 2000). However, individuals with a weak fixed mindset are less likely to think that an employee-experienced crisis mainly indicates their lack of competence. Thus, in the face of a crisis, they will likely be less anxious about their tasks and jobs and dwell less on such negative emotions.

Although no research conducted in the workplace has provided direct empirical evidence, research in other areas (e.g., educational psychology) has offered indirect support for our prediction regarding the relationship between an employee-experienced crisis and job anxiety when individuals have a strong fixed mindset. For instance, Danthony, Mascaret, and Cury (2020) found that exams in physical education led students with a strong fixed mindset to experience test anxiety. Integrating implicit theories with threat-rigidity theory, we posit that an employee-experienced crisis is more likely to engender job anxiety for employees with a strong (vs. weak) fixed mindset. The preceding discussion leads to the following hypothesis:

Hypothesis 1: An employee-experienced crisis is positively related to job anxiety when the employee has a strong rather than weak fixed mindset.

Social cognitive psychologists have shown that people tend to process less information and generate fewer ideas when threatened (Kruglanski & Webster, 1996; Roets, Kruglanski, Kossowska, Pierro, & Hong, 2015). Threat-rigidity theory posits that anxiety engenders rigidity in the processing of information and generation of novel ideas; that is, individuals with job anxiety fixate on their established internal hypotheses or well-learned and customary practices. Also, the threat-rigidity account postulates that anxiety serves as an underlying mechanism linking a crisis to rigidity (Staw et al., 1981).

Job anxiety impels people to devote substantial cognitive resources to worrying about potential negative consequences of a threatening situation, thus leaving fewer resources available for task engagement (McCarthy et al., 2016). To perform creatively, however, an employee needs to give their undivided attention and prime consideration to the analysis of problem(s) and formulation of ideas. An employee with cognitive resources depleted by job anxiety is unable to mobilize effectively for creativity (Han, Harms, & Bai, 2017; Ng & Feldman, 2011). Also, job anxiety leads individuals to prioritize attention and concern toward defending or protecting their self-image. For example, when top executives are anxious about poor firm performance, they reframe key data to create a favorable self-image and defend their status instead of attempting to improve firm performance (Jordan & Audia, 2012). Mannor, Wowak, Bartkus, and Gomez-Mejia (2016) posited that top executives with high job anxiety assign a high probability of loss to risky ideas; they found that such executives tend to withdraw from risky strategic initiatives. In sum, job anxiety causes employees to be mindful of their own self-protection but less likely to seize opportunities for risky creative ideas (Brockner & James, 2008).

Integrating the moderating role of the fixed mindset in the relationship between an employee-experienced crisis and job anxiety (Hypothesis 1) and the negative relationship between job anxiety and creativity, we propose a moderated mediation model (Edwards & Lambert, 2007; Hayes & Preacher, 2010). Specifically, an employee-experienced crisis has a negative indirect relationship with creativity via increased job anxiety for employees with a strong fixed mindset. This is because employees with a strong fixed mindset are more likely to experience job anxiety as a result of their experienced crisis. Job anxiety in turn reduces creativity because it prioritizes resources for the protection of self-image, diverts resources away from task engagement, and reduces the breadth of information processing and the generation of useful ideas (Eysenck & Calvo, 1992; Eysenck, Derakshan, Santos, & Calvo, 2007). The preceding discussion leads to the following hypothesis:

Hypothesis 2: An employee-experienced crisis has an indirect negative relationship with creativity via increased job anxiety when the employee has a strong rather than weak fixed mindset.

Implicit theories (Dweck & Leggett, 1988) posit that not all individuals react to an experienced crisis unfavorably. It can serve as a stimulus for exploration and self-growth for those with a strong growth mindset (Molden & Dweck, 2006), who believe that personal competence can be further developed through augmented effort and/or more effective task strategies in a novel situation. Adversity and challenges motivate them to search for information widely and to test novel ideas to improve their current capabilities or to remedy shortcomings (Nussbaum & Dweck, 2008). Individuals with a strong growth mindset are less likely to derive overgeneralized judgments from a small sample or isolated pieces of negative evidence, which leads to rigidity (Molden, Plaks, & Dweck, 2006).

We expect that when employees have a strong growth mindset, an employee-experienced crisis motivates creative process engagement, defined as the engagement in problem identification, information search and coding, and alternative generation (Amabile & Pratt, 2016; Zhang & Bartol, 2010). An employee-experienced crisis signals a problematic situation. In response to the experienced crisis, employees with a strong growth mindset strive to achieve self-growth through researching and resolving the problematic situation (Nussbaum & Dweck, 2008). Because the crisis situation provides room for their learning and development, those employees are likely to engage in developmental activities, such as viewing the focal problem from a different angle, identifying related possible problems, seeking out a broad range of information, and coding them (Ford, 1996; Unsworth & Clegg, 2010). Also, even though an employee-experienced crisis can be emotionally loaded, it may have little negative emotional impact on those with a growth mindset (Schroder et al., 2017). Rather, they may even feel optimistic and positive because they expect growth and development through dealing with problems in the crisis situation (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013). They will focus on brainstorming solutions to problems and planning a course of action (Aldao et al., 2010). In contrast, an employee-experienced crisis is unlikely to motivate those with a weak growth mindset to engage in problem identification and alternative generation because they are unlikely to believe that they can develop their competences to tackle the problematic situation. Such employees are also unlikely to seek out information and code them, because they do not view the crisis situation as an opportunity for learning and development. Hence, we hypothesize the following:

Hypothesis 3: An employee-experienced crisis is positively related to creative process engagement when the employee has a strong rather than weak growth mindset.

We further posit that creative process engagement enhances creativity and hence mediates the relationship between an employee-experienced crisis and creativity for those with a strong growth mindset. Creative process engagement is a manifestation of activated cognitive information processing (Ford, 1996; Unsworth & Clegg, 2010). *Engagement* refers to a task-related state of mind that is characterized by vigor and dedication (Bakker & Xanthopoulou, 2009). Performing creative work demands a cognitively sustaining force that drives employees to expend great effort and persevere to discover novel ideas (Amabile & Pratt, 2016). Highly engaged employees persistently navigate a complex web of knowledge, data, and views in anticipation of generating new and useful ideas. In support of this view, research has widely shown that creative process engagement enhances creativity (Harris, Li, Boswell, Zhang, & Xie, 2014; Kwan, Zhang, Liu, & Lee, 2018; Zhang & Bartol, 2010).

Integrating the moderating role of the growth mindset in the relationship between an employee-experienced crisis and creative process engagement (Hypothesis 3) and the positive relationship between creative process engagement and creativity, we propose a moderated mediation model (Edwards & Lambert, 2007; Hayes & Preacher, 2010). Specifically, an employee-experienced crisis has a positive indirect relationship with creativity through increasing creative process engagement for those with a strong growth mindset. This is because these employees are motivated to embrace creative process engagement to capitalize on their experienced crisis to pursue the self-development and discovery that an employee-experienced crisis represents for them (Dweck, 2017; Molden & Dweck, 2006; Nussbaum & Dweck, 2008). Increased creative process engagement in turn leads to enhanced creativity. To sum up, we hypothesize the following:

Hypothesis 4: An employee-experienced crisis has an indirect positive relationship with creativity via increased creative process engagement when the employee has a strong rather than weak growth mindset.

Overview of the Studies

We conducted two studies. In Study 1 we tested our hypotheses with a multisource, multi-wave set of field data. In Study 2, with another multisource, multiwave data set, we explored how mindsets may exert moderating effects through goal orientation in the first stage of the research model. In doing so, we aimed to examine the more proximal role of goal orientation relative to mindsets when it comes to their moderating roles in the relationship between employee-experienced crisis and anxiety or creative process engagement.

Study 1

Sample and Procedure

We collected multisource and multiwave data from research and development (R&D) teams in four firms in the technology industry in China. The senior executives of these

firms showed a strong interest in understanding how to manage crises and were keen to participate. We also promised to provide a consulting report upon project completion. We first interviewed key decision makers in these firms, including a CEO, a vice president for R&D, and a senior human resources (HR) executive. They informed us that their employees participate in R&D projects where creativity and innovation are important and that they sometimes experience crisis events during team projects.

With the assistance of the HR departments, we invited all 669 R&D employees from 134 R&D teams to participate. We used either an online or a paper-and-pencil survey depending on the participating firms' preferences. For the online survey, one author sent links to R&D employees and their team leaders. For the paper-and-pencil survey, we sent the survey to participants according to an agreed-upon schedule. An English version was also provided, so participants were able to select the version that suited their language preferences. We assured them that their participation was voluntary and that their responses would be kept confidential and used solely for research purposes.

Employees and team supervisors completed questionnaires within the time window we set for this research. At Time 1, all R&D employees and team supervisors responded to a questionnaire that included items on employee-experienced crisis, implicit theories, and demographic characteristics. At Time 2 (1 month later), the R&D employees completed a questionnaire regarding job anxiety and creative process engagement. At Time 3 (2 months after Time 1), the team supervisors rated each R&D employee's creativity. The average R&D team size was 4.73. The number of employees assessed by a team leader ranged from four to eight. We obtained usable responses from 506 R&D employees in 107 R&D teams, representing an overall response rate of 75.6% at the employee level and 79.9% at the team leader level.

In the final sample, 15.2% of the participants were female. In terms of age, 20% were up to 29 years old, 29% were between 30 and 35, 26% were between 36 and 40, and 24.8% were over 40. Regarding education level, 49.5% held a bachelor's degree, 48% had a master's degree, and 2.5% held a doctoral degree. The participants' mean tenure in their current team was 4.7 years.

Measures

We used an index and several scales in Chinese where available. When a Chinese version was unavailable, we followed back-translation procedures (Brislin, 1986) to develop the Chinese version. One of the authors and a research assistant (both native Chinese speakers but fluent in English) translated the English measures into Chinese independently and arrived at an agreement on the translations. The measures were then translated back into English by another bilingual research assistant to verify translation equivalence (Brislin, 1986). With the exception of the employee-experienced crisis measure, participants responded to all items on a 7-point scale (1 = *completely disagree*; 7 = *completely agree*).

Employee-experienced crisis (time 1). We measured employee-experienced crisis as a formative index (Diamantopoulos & Siguaw, 2006; Diamantopoulos & Winklhofer, 2001). Because we examined employee-experienced crisis in an R&D context, we first developed and validated our measurements on the basis of a literature review and interviews with

R&D managers (see Appendix A and Appendix B).¹ Different crisis events serve the role of indicators of employees' experiential impact (i.e., employee-experienced crisis). We conceived the employee-experience crisis index as a combination of the impacts that employees experienced in ten different team crisis events.

At Time 1, we asked each R&D employee to identify unexpected and impactful event(s) that had happened in the past 12 months (Hermann, 1963). We examined the occurrence of team events reported by different team members and found a high consensus among them. The average heterogeneity index value ($1 - \sum P_k^2$, where P is the proportion of the k th category—the first category is the reporting of the “occurrence” of each crisis event in a team, and the second is the reporting of “nonoccurrence”; Blau, 1977) was .081 across all teams, indicating extremely high homogeneity in the crisis events that team members identified.

We also asked each participant to rate the impact they experienced in the identified team crisis event by using the index developed and validated by the pilot study (see Appendix A and Appendix B). They responded on the following range: 1 = *not at all*, 2 = *negligible*, 3 = *somewhat noticeable*, 4 = *slightly significant*, 5 = *moderately significant*, 6 = *very significant*, 7 = *extremely significant*. We explained in the instructions that “significance” referred to the impact that they had personally experienced in the team crisis event. There was considerable variance among the employees: 51.5% of the variance in employee-experienced crisis resided at the employee level. It is therefore important to examine individual employees' experienced crisis in terms of the impact on them. The impact as experienced by individuals was also comparable across members of different teams, despite the possibility of dissimilar crisis events in different teams.

Implicit theories (fixed and growth mindset) (time 1). We used Dweck's (1999) eight-item scale of implicit theories. The scale includes four items each for fixed and growth mindset. A sample item for fixed mindset is “I am a certain kind of person, and there is not much that can be done to really change that.” A sample item for growth mindset is “I believe that I can substantially change the kind of person I am.” In our main analysis, we followed prior research and reverse-coded the four items for fixed mindset and aggregated them with the four items for growth mindset to create a composite score (Dimotakis et al., 2017; Zhu, He, Treviño, Chao, & Wang, 2015). Higher scores for implicit theories indicated a stronger growth mindset and a weaker fixed mindset, whereas lower scores for implicit theories indicated a weaker growth mindset and a stronger fixed mindset. The Cronbach's alpha reliability coefficient for the scale was .85.

Importantly, we also conducted a post hoc analysis by separating fixed mindset from growth mindset and testing them as orthogonal variables.² We present the results in the Supplementary Analysis for Study 1. The Cronbach's alpha was .83 for fixed mindset and .90 for growth mindset.

Job anxiety (time 2). We used Parker and DeCotiis (1983) five-item scale to measure job anxiety. A sample item is “I felt fidgety or nervous as a result of my job.” The Cronbach's alpha was .85.

Creative process engagement (time 2). We measured creative process engagement using Zhang and Bartol's (2010) 11-item scale. The scale has three facets: problem identification

(e.g., “I spend considerable time trying to understand the nature of the problem”), information seeking and encoding (e.g., “I search for information from multiple sources”), and idea generation (e.g., “I generate a significant number of alternatives to the same problem before I chose the final solution”). Compatible with prior work (Harris et al., 2014; Kwan et al., 2018), we aggregated the items into a creative process engagement index.³ The Cronbach’s alpha was .92.

Employee creativity (time 3). We asked R&D team supervisors to rate each employee’s creativity using Farmer, Tierney, and Kung-Mcintyre’s (2003) four-item scale. Sample items include “This employee seeks new ideas and ways to solve problems” and “This employee generates groundbreaking ideas related to the field.” The Cronbach’s alpha was .90.

Control variables (time 1). Following previous work, age, gender, team tenure, and education were included as individual-level control variables (e.g., Hirst, van Knippenberg, Chen, & Sacramento, 2011; Zhang & Bartol, 2010). Age (measured in years) may affect creativity because it reflects different levels of work experience that afford the use of input for creativity (Simonton, 2017). We controlled for gender (0 for male, 1 for female) because of the potential gender bias in ratings of creativity (Proudfoot, Kay, & Koval, 2015). Education level (a bachelor’s degree, a master’s degree, a doctoral degree) was controlled for because it may affect the domain-relevant knowledge that is critical for creativity (Amabile, 1983; Gong, Huang, & Farh, 2009). We controlled for employee tenure in the team (measured in years) because it affects familiarity and interaction with and hence resources from others (Hirst et al., 2011).

We also included team-level control variables. Team size was controlled for because, as a structural property, it influences team processes, such as communication and information sharing, that have implications for employee creativity (Gong, Kim, Lee, & Zhu, 2013; Hirst et al., 2011). Also, previous crisis research has emphasized the role of the leader in recognizing an organizational crisis (Brockner & James, 2008; James et al., 2011). Thus, we controlled for a supervisor-experienced crisis in a team because it may affect employees’ creative process engagement and job anxiety. Accordingly, we asked each team supervisor to assess the impact they had experienced from a team crisis using the aforementioned crisis scale. Second, the averages and standard deviations of age, gender, education, and team tenure were controlled for at the team level; this was done because team demographic differences could conceivably affect team processes that impact employee creativity (Hülshager, Anderson, & Salgado, 2009). We also controlled for company with three dummy variables.

Analytical Strategy

We conducted confirmatory factor analysis (CFA) to test the discriminant validity of the employee self-reported variables (i.e., employee-experienced crisis, implicit theories, job anxiety, and creative process engagement). To avoid the issue of nonconvergence and enhance the reliability of indicators, consistent with previous studies (e.g., Hirst et al., 2011), we utilized an item parceling method (Nasser & Wisenbaker, 2003). As the number of items per construct increases, the stability of the results of the measurement model decreases (Floyd & Widaman, 1995). Item parceling proffers more reliable factor solutions

than item-level data, particularly for factor structures with lengthy scales, such as ours (Little, Cunningham, Shahar, & Widaman, 2002). It reduces item-specific biases and random error (Matsunaga, 2008) and increases the chances of the distribution of scores approaching normality (Bandalos, 2002; Little et al., 2002). We randomly assigned items of each measurement into three parcels. Item parceling yielded a total of 12 parcels from 34 observed items. The proposed four-factor model demonstrated a satisfactory fit: $\chi^2 = 150.24$, $df = 48$, $p < .01$; comparative fit index (CFI) = .97; Tucker-Lewis index (TLI) = .95; root mean square error of approximation (RMSEA) = .07; standardized root mean square residual (SRMR) = .05. All parcels had significant loadings on their intended factors. Also, the proposed model demonstrated a better fit than alternative models.⁴

To test our research model, we used multilevel path analysis by simply averaging items for the scale of each variable. We tested our model based on Bayesian estimation method (Bolstad & Curran, 2016) using Mplus 8.3 (Muthén & Muthén, 1998-2017). The Bayesian method can be used for complex models and can generate credibility intervals (CI) to assess accurately the non-normally distributed conditional indirect effects (Kruschke, Aguinis, & Joo, 2012; Simon, Hurst, Kelley, & Judge, 2015; Zyphur & Oswald, 2015). Testing our model also required sufficient employee-level variance in job anxiety, creative process engagement, and creativity. We calculated the variance of each variable and found that 94.3% of the variance of job anxiety, 91.8% of the variance of creative process engagement, and 67.1% of the variance of creativity resided at the employee level.

Results

Table 1 reports descriptive statistics (i.e., means, standard deviations, and correlations) and Cronbach's alpha reliabilities. Table 2 presents the results from our multilevel path analytical modeling.

Hypothesis 1 stated that a fixed mindset would moderate the relationship between employee-experienced crisis and job anxiety such that it is negative under a strong fixed mindset. The findings revealed a significant moderating effect (unstandardized path coefficients [B] = $-.11$, standard deviation of the posterior distribution [PSD] = $.05$, 95% CI [$-.20$, $-.01$]; column 2, Table 2). We plotted the moderating effect in Figure 1. For employees with a strong fixed mindset (one standard deviation below the mean of implicit theories), the positive relationship between employee-experienced crisis and job anxiety was significant ($B = .22$, $PSD = .07$, 95% CI [$.09$, $.35$]). For employees with a weak fixed mindset (one standard deviation above the mean of implicit theories), the association was nonsignificant ($B = .06$, $PSD = .06$, 95% CI [$-.05$, $.17$]). These results support Hypothesis 1.

Hypothesis 2 asserted that the indirect relationship between employee-experienced crisis and creativity via increased job anxiety would be negative for employees with a strong rather than weak fixed mindset. As shown in Table 2, fixed mindset moderated the relationship between employee-experienced crisis and job anxiety ($B = -.11$, $PSD = .05$, 95% CI [$-.20$, $-.01$]; column 2); in turn, job anxiety was significantly related to creativity ($B = -.12$, $PSD = .04$, 95% CI [$-.20$, $-.04$]; column 4). The simple conditional indirect relationship between employee-experienced crisis and creativity (via job anxiety) was significant ($B = -.024$, $PSD = .012$, 95% CI [$-.052$, $-.006$]) for employees with a strong fixed mindset (one standard deviation below the mean of implicit theories). However, the association was nonsignificant

Table 1
Descriptive Statistics and Zero-Order Correlations of Study Variables for Study 1

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Gender (Time 1)	0.15	0.36											
2. Age (Time 1)	36.04	7.33	-.27**										
3. Team tenure (Time 1)	4.67	3.75	-.24**	.65**									
4. Education_Master (Time 1)	0.48	0.50	.05	-.21**	-.25**								
5. Education_PhD (Time 1)	0.03	0.16	.04	-.02	-.06	-.16**							
6. Employee-experienced crisis (Time 1)	3.86	1.23	-.11*	.45**	.36**	-.12**	-.15**						
7. Supervisor-experienced crisis (Time 1)	4.00	1.25	-.07	.48**	.32**	-.15**	-.15**	.46**					
8. Implicit theories (Time 1)	3.96	0.74	.00	.25**	.17**	-.12**	-.09*	.21**	.28**	(.85)			
9. Job anxiety (Time 2)	3.74	0.88	.05	-.06	.03	-.02	-.05	.17**	-.01	-.01	(.85)		
10. Creative process engagement (Time 2)	5.45	0.65	-.19**	.21**	.10*	.02	.11*	.16**	.17**	.06	-.30**	(.92)	
11. Employee creativity (Time 3)	4.90	0.83	-.20**	.24**	.18**	.04	.14**	.08	.22**	-.04	-.15**	.29**	(.90)

Note: *N* = 506. Age was measured in years. Gender was coded 1 for females and 0 for males. Where applicable, alpha coefficients are presented in parentheses on the diagonal.

**p* < .05

***p* < .01

Table 2
Multilevel Path Analyses Results for Study 1

Variable	Job Anxiety (Time 2) <i>B (PSD) [95% CI]</i>	Creative Process Engagement (Time 2) <i>B (PSD) [95% CI]</i>	Employee Creativity (Time 3) <i>B (PSD) [95% CI]</i>
Employee level			
Gender (Time 1)	.19 (.13) [−.07, .44]	−.32 (.09) [−.49, −.14]	−.14 (.10) [−.33, .04]
Age (Time 1)	−.03 (.01) [−.05, −.01]	.01 (.01) [.00, .02]	−.01 (.01) [−.02, .01]
Team tenure (Time 1)	.03 (.02) [.00, .06]	−.01 (.01) [−.04, .01]	.02 (.01) [.00, .05]
Education_Master (Time 1)	−.11 (.09) [−.29, .07]	.13 (.07) [.00, .26]	.27 (.07) [.14, .41]
Education_PhD (Time 1)	−.24 (.27) [−.78, .29]	.67 (.20) [0.28, 1.05]	1.01 (.21) [0.61, 1.41]
Employee-experienced crisis (Time 1)	.14 (.05) [.04, .24]	.01 (.04) [−.05, .09]	−.02 (.04) [−.09, .05]
Implicit theories (Time 1)	−.01 (.07) [−.14, .11]	.02 (.05) [−.07, .11]	
Employee-Experienced Crisis × Implicit Theories (Time 1)	−.11 (.05) [−.20, −.01]	.10 (.03) [.03, .17]	
Job anxiety (Time 2)			−.12 (.04) [−.20, −.04]
Creative process engagement (Time 2)			.27 (.06) [.16, .39]
Team level			
Organization (Time 1)	Included	Included	Included
Team size (Time 1)	−.02 (.02) [−.07, .04]	−.01 (.02) [−.04, .03]	.07 (.03) [.00, .12]
Supervisor-experienced crisis (Time 1)	−.05 (.05) [−.15, .05]	.04 (.04) [−.04, .12]	.05 (.06) [−.06, .17]
Mean_Gender (time 1)	−.76 (.67) [−2.18, 0.68]	.50 (.49) [−0.54, 1.54]	−1.07 (0.38) [−2.64, 0.50]
Mean_Age (Time 1)	.07 (.02) [.03, .12]	.00 (.02) [−.03, .03]	−.01 (.02) [−.06, .04]
Mean_Team tenure (Time 1)	−.04 (.03) [−.11, .03]	.00 (.02) [−.05, .05]	−.03 (.04) [−.11, .04]
Mean_Education_Master (Time 1)	.13 (.26) [−.40, .64]	.11 (.20) [−.30, .50]	−.20 (.30) [−.78, .39]
Mean_Education_PhD (Time 1)	−.01 (.46) [−.96, .98]	−.29 (.38) [−1.01, 0.47]	.41 (.56) [−0.68, 1.52]
SD_Gender (Time 1)	.28 (.50) [−0.70, 1.28]	−.20 (.28) [−.92, .50]	.43 (.55) [−0.65, 1.52]
SD_Age (Time 1)	.02 (.03) [−.03, .07]	−.04 (.02) [−.08, −.01]	−.03 (.03) [−.09, .03]
SD_Team tenure (Time 1)	−.07 (.05) [−.17, .03]	.02 (.04) [−.06, .09]	.09 (.06) [−.02, .21]
SD_Education_Master (Time 1)	.64 (.31) [0.04, 1.29]	−.30 (.23) [−.74, .15]	−.04 (.35) [−.73, .65]
SD_Education_PhD (Time 1)	−.15 (.51) [−1.11, 0.86]	.20 (.38) [−.55, .96]	−.16 (.55) [−1.25, 0.91]
Employee-level R^2	.10	.12	.22
Team-level R^2	.65	.60	.47

Note: $N = 506$ at Level 1 for employees (employee level), and $N = 107$ at Level 2 for teams (team level). B = unstandardized path coefficients; PSD = standard deviation of the posterior distribution; CI = credibility interval; DIC = deviation information criterion. We reported DIC , the Bayesian estimation of the Akaike information criterion in maximum-likelihood estimation, to assess model fit. High implicit theories denote a growth mindset, and low implicit theories denote a fixed mindset. SD variable at between level refers to the standard deviation of variables at the team level. Two dichotomous variables are included to control for company.

($B = -.007$, $PSD = .007$, 95% CI [−.023, .006]) for employees with a weak fixed mindset (one standard deviation above the mean of implicit theories). The difference between the two conditional indirect relationships was significant ($B = .017$, $PSD = .011$ 95% CI [.001, .043]), supporting Hypothesis 2.

Hypothesis 3 proposed the moderating effect of a growth mindset on the relationship between employee-experienced crisis and creative process engagement. The findings revealed a significant moderating effect ($B = .10$, $PSD = .03$, 95% CI [.03, .17]; column 3, Table 2). We conducted a simple slope test following Aiken and West (1991) and plotted the moderating effect of implicit theories in Figure 2. For those with a strong growth mindset (one standard deviation above the mean),

Figure 1
The Relationship Between Employee-Experienced Crisis and Job Anxiety When Fixed Mindset Is High and Low

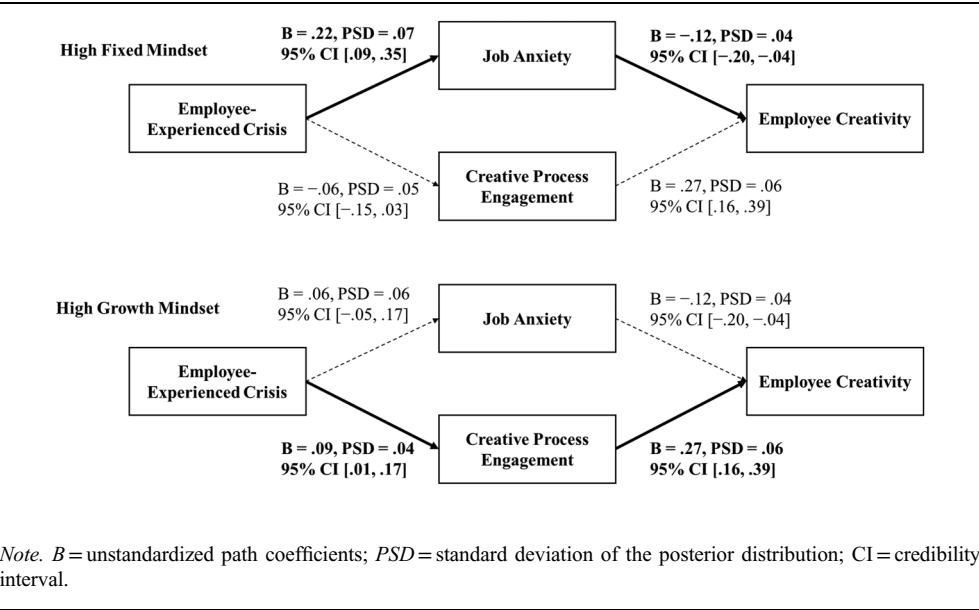


Figure 2
The Relationship Between Employee-Experienced Crisis and Creative Process Engagement When Growth Mindset Is High and Low



employee-experienced crisis was positively related to creative process engagement ($B = .09$, $PSD = .04$, 95% CI [.01, .17]). For those with a weak growth mindset (one standard deviation below the mean of implicit theories), the relationship became nonsignificant ($B = -.06$, $PSD = .05$, 95% CI [-.15, .03]). Therefore, Hypothesis 3 is supported.

Figure 3
The Indirect Relationship Between Employee-Experienced Crisis and Employee Creativity Under High Fixed or Growth Mindset



Hypothesis 4 posited that the indirect relationship between employee-experienced crisis and creativity via enhanced creative process engagement would be positive for individuals with a strong rather than weak growth mindset. As shown in Table 2, growth mindset moderated the relationship between employee-experienced crisis and creative process engagement ($B = .10, PSD = .03, 95\% CI [.03, .17]$; column 3); moreover, creative process engagement was significantly related to creativity ($B = .27, PSD = .06, 95\% CI [.16, .39]$; column 4). The simple conditional indirect relationship between employee-experienced crisis and creativity (via creative process engagement) was positive ($B = .024, PSD = .012, 95\% CI [.003, .051]$) for employees with a strong growth mindset (one standard deviation above the mean of implicit theories); the simple conditional indirect relationship was nonsignificant ($B = -.016, PSD = .014, 95\% CI [-.045, .009]$) for employees with a weak growth mindset (one standard deviation below the mean of implicit theories). The difference was significant ($B = .040, PSD = .056, 95\% CI [.012, .076]$). Thus, Hypothesis 4 is supported. Figure 3 presents the results of the indirect relationship between employee-experienced crisis and creativity for fixed and growth mindsets.

Supplementary Analysis

To check the robustness of the results, we excluded nonsignificant control variables in additional analyses. We also conducted analyses excluding all control variables. The

significance patterns and coefficients remained substantively identical, and our hypotheses were still supported.

We also conducted post hoc analyses, treating fixed mindset and growth mindset as separate variables and testing their moderating effects with the same multilevel path analyses. The results again supported our hypotheses. Hypothesis 1 suggested that a fixed mindset would moderate the relationship between employee-experienced crisis and job anxiety such that the relationship was positive under a strong fixed mindset. Post hoc analyses revealed that the moderating effect was indeed positive ($B = .08$, $PSD = .04$, 95% CI [.01, .16]), supporting Hypothesis 1. Under a strong fixed mindset (one standard deviation above its mean), the relationship between employee-experienced crisis and job anxiety was positive ($B = .20$, $PSD = .06$, 95% CI [.07, .32]). Under a weak fixed mindset (one standard deviation below its mean), the relationship was nonsignificant ($B = .05$, $PSD = .06$, 95% CI [−.06, .17]).

Hypothesis 2 stated that the indirect relationship between employee-experienced crisis and creativity via increased job anxiety would be negative for employees with a strong fixed mindset. The simple conditional indirect relationship was negative ($B = -.023$, $PSD = .011$, 95% CI [−.049, −.006]) under a strong fixed mindset (one standard deviation above the mean of fixed mindset). The association was nonsignificant ($B = -.006$, $PSD = .008$, 95% CI [−.023, .008]) under a weak fixed mindset (one standard deviation below its mean). The difference between the two conditional indirect relationships was significant ($B = -.016$, $PSD = .01$, 95% CI [−.042, −.001]). Thus, Hypothesis 2 is supported.

Hypothesis 3 suggested the moderating effect of a growth mindset on the relationship between employee-experienced crisis and creative process engagement. The results showed a significant moderating effect ($B = .11$, $PSD = .03$, 95% CI [.05, .16]), supporting Hypothesis 3. Under a strong growth mindset (one standard deviation above its mean), employee-experienced crisis was positively related to creative process engagement ($B = .10$, $PSD = .04$, 95% CI [.02, .18]). Under a weak growth mindset (one standard deviation below its mean), it was negatively related to creative process engagement ($B = -.10$, $PSD = .05$, 95% CI [−.20, −.001]). Therefore, Hypothesis 3 is supported.

Hypothesis 4 posited that the indirect relationship between employee-experienced crisis and creativity via enhanced creative process engagement is positive under a strong growth mindset. The simple conditional indirect relationship between employee-experienced crisis and creativity via creative process engagement was positive ($B = .026$, $PSD = .012$, 95% CI [.006, .054]) under a strong growth mindset (one standard deviation above its mean). The relationship was nonsignificant ($B = -.025$, $PSD = .014$, 95% CI [−.056, .000]) under a weak growth mindset (one standard deviation below its mean). The difference was significant ($B = .052$, $PSD = .018$, 95% CI [.021, .092]). Thus, Hypothesis 4 is supported.

Overall, Study 1 showed that an employee-experienced crisis reduced creativity via increased job anxiety for employees with a strong fixed mindset but increased creativity via creative process engagement for employees with a strong growth mindset. The findings suggested that the prediction of threat-rigidity theory regarding the relationship between crisis and creativity holds for those with a strong rather than weak fixed mindset; however, the prediction of a positive relationship between crisis and creativity holds for those with a strong rather than weak growth mindset.

Study 2

Theoretical Background

In Study 2, we explored the possibility that the moderating effects of implicit theories (i.e., distal moderators) are mediated by goal orientation (i.e., proximal moderators). Individuals depend on implicit theories “to make sense of the world and to guide their actions” (Molden & Dweck, 2006: 193). In a crisis, those with a fixed mindset give priority to proving their competence or avoiding showing their incompetence, whereas those with a growth mindset prioritize improving or developing their competence. Implicit theories have an important influence on goal setting (Robins & Pals, 2002) and the self-regulation process (Burnette et al., 2013). In the face of a crisis, people with a fixed mindset tend to set goals focused on performance and emotion-focused strategies (e.g., rumination) and consequently feel highly anxious (Danthony et al., 2020; Schroder et al., 2017). In contrast, people with a growth mindset tend to set goals focused on learning and employ mastery-oriented or problem-solving strategies (Nussbaum & Dweck, 2008).

Creativity scholars have examined the interactive effect of goal orientation and situation on creativity (Hirst, van Knippenberg, & Zhou, 2009, 2011). On the basis of self-control theory (Carver & Scheier, 1982), psychology scholars (Burnette et al., 2013; Dweck & Leggett, 1988; Molden & Dweck, 2006) have expounded on how the different implicit theories held by individuals lead them not only to set different goals (performance vs. learning) but also to regulate their emotions and execute strategies in distinctive ways to achieve these goals. In Study 2, we brought goal orientation into the picture in order to provide a more in-depth understanding of the moderating role of implicit theories (fixed vs. growth mindset) in the relationship between employee-experienced crisis and job anxiety or creative process engagement. We expected goal orientation, which is driven by implicit theories, to act as proximal moderator and mediate the moderating effect of implicit theories.

Implicit theories (Dweck & Leggett, 1988) postulate that a performance goal orientation stems from a fixed mindset. Those with a fixed mindset believe that personal attributes (e.g., competence or ability) are not malleable. They are chiefly concerned with social evaluation, that is, with how other people assess their competence or ability (Dweck & Leggett, 1988). A fixed mindset leads to a performance-approach orientation, or the desire to demonstrate competence and obtain favorable judgments of one’s competence, and a performance-avoidance orientation, to avoid demonstrating incompetence and unfavorable judgments (Dweck, 1986). An employee-experienced crisis threatened those with a performance-approach or performance-avoidance orientation. This is because, in a crisis situation, it is especially difficult to show high competence and much easier to commit mistakes or errors and end up showing one’s incompetence. This prevents one from obtaining the goal of achieving favorable and avoiding unfavorable judgments. Thus, an employee-experienced crisis should be positively related to job anxiety for those with a stronger performance-approach or performance-avoidance orientation.

In contrast, implicit theories (Dweck & Leggett, 1988) posit that a learning goal orientation originates from a growth mindset. Individuals with a growth mindset, who believe that personal attributes can be developed, are chiefly concerned with development and mastery (Dweck & Leggett, 1988). They are oriented to use learning (e.g., seeking information, exploring alternative strategies, and changing routines) as the key instrument to develop

their competence and ability (Dweck, 1986). Learning-goal-oriented individuals seek out challenges and persist in difficult situations because such situations can offer better opportunities to learn than routine task situations (Alexander & van Knippenberg, 2014). An employee-experienced crisis reveals problems at work (Christianson et al., 2009). For individuals with a learning goal orientation, such a crisis experience is an invitation to work toward learning and improvement. To achieve the goal of learning and growth, it is meaningful to actively engage in identifying the problem, seeking information, and generating potential solutions. Therefore, an employee-experienced crisis can lead to creative process engagement for those with a stronger learning goal orientation.

In Study 1, we examined the moderating effect of a fixed mindset on the association between employee-experienced crisis and job anxiety posited in Hypothesis 1. We also tested the moderating effect of a growth mindset on the association between employee-experienced crisis and creative process engagement proposed in Hypothesis 3. In Study 2, we further explored the proximal nature of goal orientation relative to mindsets in moderating the effect of employee-experienced crisis on anxiety or creative process engagement. Specifically, we expected that (a) a fixed mindset would strengthen the association between employee-experienced crisis and job anxiety through promoting either a performance-approach or performance-avoidance goal orientation and (b) a growth mindset would strengthen the association between employee-experienced crisis and creative process engagement through promoting a learning goal orientation.

Sample and Procedure

We collected multisource and time-lagged field data from R&D teams in five firms in the technology industry in South Korea. With the assistance of the HR departments, we invited all 287 R&D employees from the firms' 44 teams to participate. Employees and team supervisors completed questionnaires within the time window we designed for our research. At Time 1, all R&D employees and team supervisors responded to a questionnaire that included questions on employee-experienced crisis, implicit theories, goal orientation, and demographics. At Time 2 (1 month later), R&D employees completed a questionnaire on job anxiety and creative process engagement. We obtained usable responses from 260 employees and 40 teams, giving an overall response rate of 90.6% at the employee level. In the final sample, 16% of the participants were female. In terms of education level, 23.2% held a bachelor's degree, 63.5% a master's degree, and 0.9% a doctoral degree. The participants' mean age was 34.9 years, and their mean team tenure was 5.28 years.

Measures

Unless otherwise stated, we utilized the same scales as in Study 1. The Cronbach's alpha was .91 for job anxiety and .92 for creative process engagement. We separated fixed mindset from growth mindset in Study 2 in order to examine how they exert their moderating effects via performance versus learning goal orientation. The reliability coefficients were .68 and .74 for fixed and growth mindset, respectively. Elliot and Church's (1997) 18-item goal orientation scales, which were developed for the academic setting, were adapted to the work setting. The adaptations involved minor wording changes (e.g., from "in this class" to "at work" and from "course materials" to "task"). For instance, "I am striving to demonstrate my ability

relative to others in this class” was adapted to “I am striving to demonstrate my ability relative to others at work.” The literature has used the adapted scales (Gong et al., 2009). An example item from the six-item performance-approach orientation scale is “It is important to me to do a better job than others.” An example item from the six-item performance-avoidance orientation scale is “I just want to avoid doing poorly in my job.” An example from the six-item learning orientation scale is “I want to learn as much as possible from my job.” The Cronbach’s alpha coefficients were .88, .85, and .91, respectively. We used the same control variables as in Study 1.

Analytical Strategy

We conducted CFA for employee-experienced crisis, fixed mindset, growth mindset, learning goal orientation, performance-approach orientation, performance-avoidance orientation, job anxiety, and creative process engagement. We randomly assigned items of each measurement (except for fixed and growth mindset) into three parcels, as we did in Study 1. Item parceling yielded a total of 18 parcels from 52 observed items. The proposed eight-factor model demonstrated reasonable fit: $\chi^2 = 472.32$, $df = 271$, $p < .01$; CFI = .93; TLI = .92; RMSEA = .05; SRMR = .07. All items and parcels had significant loadings on their intended factors, and the proposed model showed a satisfactory fit.⁵ We then proceeded to conduct analyses using the same analytical method as in Study 1, namely, the Bayesian estimation method (Bolstad & Curran, 2016) using Mplus 8.3 (Muthén & Muthén, 1998-2017). Following Grant and Berry (2011), we performed a type of mediated moderation analysis. In the model, (a) a variable (implicit theories) moderates the association between an independent variable (employee-experienced crisis) and dependent variables (anxiety or creative process engagement), (b) the moderating variable (implicit theories) lead to a mediating variable (goal orientation); and (c) the mediating variable (goal orientation) moderates the association between an independent variable (employee-experienced crisis) and dependent variables (anxiety or creative process engagement), thereby eliminating the moderating effect of the original moderator (implicit theories).

Results and Discussion

Table 3 reports descriptive statistics (i.e., means, standard deviations, and correlations) and Cronbach’s alpha reliabilities. Table 4 presents the results from our multilevel path analytical modeling.

Consistent with what we found in Study 1, the results in Table 4 show that, first, employee-experienced crisis and fixed mindset interacted to predict job anxiety ($B = .24$, $PSD = .11$, 95% CI [.01, .45]; column 2, Table 4). Under a strong fixed mindset (one standard deviation above its mean), the relationship between employee-experienced crisis and job anxiety was positive ($B = .51$, $PSD = .14$, 95% CI [.24, .78]). Under a weak fixed mindset (one standard deviation below its mean), the relationship was nonsignificant ($B = .10$, $PSD = .15$, 95% CI [−.19, .40]). Secondly, fixed mindset was significantly associated with performance-approach goal orientation ($B = .28$, $PSD = .09$, 95% CI [.11, .45]; column 4, Table 4). Third, employee-experienced crisis and performance-approach goal

Table 3
Descriptive Statistics and Zero-Order Correlations of Study Variables for Study 2

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender (Time 1)	0.16	0.37														
2. Age (Time 1)	34.91	6.84	-.19**													
3. Team tenure (Time 1)	5.28	5.03	-.17**	.67**												
4. Education_Master (Time 1)	0.64	0.48	.04	-.21**	-.25**											
5. Education_PhD (Time 1)	0.09	0.29	.01	.34**	-.26**	-.42**										
6. Employee-experienced crisis (Time 1)	3.77	1.11	-.06	.22**	.14*	.02	.12									
7. Supervisor-experienced crisis (Time 1)	4.33	0.91	.09	.17**	.06	-.04	.38**	.16*								
8. Fixed mindset (Time 1)	4.30	.86	-.03	.13*	.16*	.01	.12	.21**	-.02	(.68)						
9. Growth mindset (Time 1)	3.87	0.94	-.02	.00	-.14*	-.10	-.06	-.13	-.09	-.17*	(.74)					
10. Performance approach goal orientation (Time 1)	4.48	1.07	-.03	.14*	.05	-.03	.06	.10	.11	.20**	.20**	(.88)				
11. Performance avoidance goal orientation (Time 1)	3.71	1.13	.05	.01	.03	-.09	.03	.15*	.03	.31**	.09	.37**	(.85)			
12. Learning goal orientation (Time 1)	5.44	0.98	.02	.10	-.02	-.09	.21**	-.15**	.02	.13	.20**	.41**	.08	(.91)		
13. Job anxiety (Time 2)	3.66	1.36	.00	.03	.10	.04	-.02	.22**	.04	.08	-.08	-.07	.42**	-.15*	(.91)	
14. Creative process engagement (Time 2)	5.10	0.85	.07	.05	-.07	.02	.08	.06	.15*	.05	.09	.15*	-.07	.36**	-.05	(.92)

Note: $N = 260$. Age was measured in years. Gender was coded 1 for females and 0 for males. Where applicable, alpha coefficients are presented in parentheses on the diagonal.

* $p < .05$

** $p < .01$

Table 4
Multilevel Path Analyses Results for Study 2

Variable	Model 1			Model 2			Model 3		
	Job Anxiety (Time 2) <i>B</i> (<i>PSD</i>) [95% CI]	Creative Process Engagement (Time 2) <i>B</i> (<i>PSD</i>) [95% CI]	Performance- Approach Goal Orientation (Time 1) <i>B</i> (<i>PSD</i>) [95% CI]	Job Anxiety (Time 2) <i>B</i> (<i>PSD</i>) [95% CI]	Performance- Avoidance Goal Orientation (Time 1) <i>B</i> (<i>PSD</i>) [95% CI]	Job Anxiety (Time 2) <i>B</i> (<i>PSD</i>) [95% CI]	Learning Goal Orientation (Time 1) <i>B</i> (<i>PSD</i>) [95% CI]	Creative Process Engagement (Time 2) <i>B</i> (<i>PSD</i>) [95% CI]	
Gender (Time 1)	.11 (.30) [−.46, .70]	.21 (.20) [−.18, .60]	−.07 (.19) [−.45, .29]	.06 (.29) [−.52, .63]	.24 (.19) [−.12, .61]	−.09 (.28) [−.65, .46]	−.16 (.16) [−.48, .16]	.18 (.19) [−.17, .55]	
Age (Time 1)	−.03 (.03) [−.09, .01]	.03 (.02) [0.00, .07]	.03 (.01) [0.00, .06]	−.04 (.03) [−.10, .02]	.00 (.01) [−.03, .02]	−.03 (.03) [−.09, .05]	.00 (.02) [−.03, .03]	.02 (.02) [−.02, .06]	
Team tenure (Time 1)	.09 (.04) [0.01, .16]	−.03 (.03) [−.09, .02]	−.01 (.02) [−.05, .03]	.09 (.04) [0.01, .17]	.02 (.02) [−.03, .06]	.09 (.04) [0.01, .16]	.00 (.02) [−.04, .04]	−.02 (.03) [−.07, .03]	
Education_Master (Time 1)	.00 (.35) [−.67, .69]	−.10 (.25) [−.60, .37]	−.04 (.16) [−.36, .27]	−.04 (.35) [−.73, .65]	−.15 (.16) [−.47, .17]	.14 (.34) [−.53, .80]	.01 (.14) [−.26, .28]	−.14 (.23) [−.57, .31]	
Education_PhD (Time 1)	−.69 (.55) [−1.75, 0.38]	−.02 (.37) [−.74, .71]	−.09 (.29) [−.66, .49]	−.83 (.56) [−1.92, 0.28]	.20 (.30) [−.78, .38]	−.60 (.54) [−1.66, 0.45]	.53 (.26) [0.03, 1.03]	−.39 (.37) [−1.11, 0.34]	
Employee-experienced crisis (Time 1)	.31 (.11) [0.04, .24]	.10 (.07) [−.05, .23]		.26 (.11) [0.05, .47]		.21 (.10) [0.00, .41]		.04 (.07) [−.09, .18]	
Fixed mindset (Time 1)	.18 (.13) [−.08, .43]		.28 (.09) [0.11, .45]	.22 (.13) [−.04, .48]	.36 (.09) [0.19, .53]	.02 (.13) [−.23, .28]	.29 (.07) [0.16, .43]	.02 (.08) [−.13, .17]	
Growth mindset (Time 1)		.09 (.08) [−.07, .26]							
Performance approach goal orientation (Time 1)				−.08 (.10) [−.28, .13]					
Performance avoidance goal orientation (Time 1)						.46 (.10) [0.26, .66]			
Learning goal orientation (Time 1)									
Employee-Experienced Crisis × Employee-Experienced Crisis	.24 (.11) [0.01, .45]			.10 (.12) [−.14, .34]		.12 (.12) [−.12, .36]		.37 (.08) [0.21, .53]	
Employee-Experienced Crisis × Growth Mindset (Time 1)		.17 (.07) [0.03, .30]						.11 (.08) [−.04, .26]	
Employee-Experienced Crisis × Performance-Approach Goal Orientation (Time 1)				.26 (.11) [0.04, .47]					
Employee-Experienced Crisis × Performance-Avoidance Goal Orientation (Time 1)						.26 (.11) [0.04, .48]			
Employee-Experienced Crisis × Learning Goal Orientation (Time 1)	.19	.13	.09	.23	.11	.30	.12	.28	
Employee-level <i>R</i> ²	.60	.63	—	.65	—	.57	—	.69	
Team-level <i>R</i> ²									
								.21 (.09) [0.04, .38]	

Note. *N* = 260 at Level 1 for employees (employee level), and *N* = 40 at Level 2 for teams (team level). The results of the control variable at the team level are not presented to save space. *B* = unstandardized path coefficients; *PSD* = standard deviation of the posterior distribution; CI = credibility interval. As in Model 3, in Model 2, we tested whether growth mindset causes learning goal orientation (*B* = .29, *PSD* = .07, 95% CI [0.16, .43]). Also, we tested whether learning goal orientation moderates the association between employee-experienced crisis and creative process engagement (*B* = .20, *PSD* = .09, 95% CI [0.03, .38]), thereby eliminating the moderating effect of growth mindset (*B* = .11, *PSD* = .08, 95% CI [−.05, .26]). The results are largely similar to those of Model 3; we do not report them to save space.

orientation interacted to predict job anxiety ($B = .26$, $PSD = .11$, 95% CI [.04, .47]; column 5, Table 4). Under a strong performance-approach goal orientation (one standard deviation above its mean), the relationship between employee-experienced crisis and job anxiety was positive ($B = .53$, $PSD = .14$, 95% CI [.26, .80]). Under a weak performance-approach goal orientation (one standard deviation below its mean), the relationship was nonsignificant ($B = -.01$, $PSD = .17$, 95% CI [-.36, .33]). When we included the moderating effect of performance-approach goal orientation, the moderating effect of fixed mindset became nonsignificant ($B = .10$, $PSD = .12$, 95% CI [-.14, .34]; column 5, Table 4).

Additionally, our results show that fixed mindset was significantly associated with performance-avoidance goal orientation ($B = .36$, $PSD = .09$, 95% CI [.19, .53]; column 6, Table 4). And employee-experienced crisis and performance-avoidance goal orientation interacted to predict job anxiety ($B = .26$, $PSD = .11$, 95% CI [.04, .48]; column 7, Table 4). Under a strong performance-avoidance goal orientation (one standard deviation above its mean), the relationship between employee-experienced crisis and job anxiety was positive ($B = .50$, $PSD = .14$, 95% CI [.23, .77]). Under a weak performance-avoidance goal orientation (one standard deviation below its mean), the relationship was nonsignificant ($B = -.09$, $PSD = .18$, 95% CI [-.45, .27]). When we included the moderating effect of performance-avoidance goal orientation, the moderating effect of fixed mindset became nonsignificant ($B = .12$, $PSD = .12$, 95% CI [-.12, .36]; column 7, Table 4).

Finally, employee-experienced crisis and growth mindset interacted to predict creative process engagement ($B = .17$, $PSD = .07$, 95% CI [.03, .30]; column 3, Table 4). Under a strong growth mindset (one standard deviation above its mean), the relationship between employee-experienced crisis and creative process engagement was positive ($B = .25$, $PSD = .07$, 95% CI [.07, .43]). Under a weak growth mindset (one standard deviation below its mean), the relationship was nonsignificant ($B = -.06$, $PSD = .10$, 95% CI [-.26, .13]). Growth mindset was also significantly associated with learning goal orientation ($B = .29$, $PSD = .07$, 95% CI [.16, .43]; column 8, Table 4). And employee-experienced crisis and learning goal orientation interacted to predict creative process engagement ($B = .21$, $PSD = .09$, 95% CI [.04, .38]; column 9, Table 4). Under a strong learning goal orientation (one standard deviation above its mean), the relationship between employee-experienced crisis and creative process engagement was positive ($B = .25$, $PSD = .09$, 95% CI [.07, .43]). Under a weak learning goal orientation (one standard deviation below its mean), the relationship was nonsignificant ($B = -.16$, $PSD = .12$, 95% CI [-.41, .08]). When we included the moderating effect of learning goal orientation, the moderating effect of growth mindset became nonsignificant ($B = .11$, $PSD = .08$, 95% CI [-.04, .26]; column 9, Table 4).

To sum up, the results of Study 2 constructively extend the findings of Study 1. We found that fixed mindset strengthened the relationship between employee-experienced crisis and job anxiety and that performance-approach and performance-avoidance goal orientation mediated this moderating effect. We also found that growth mindset strengthened the relationship between employee-experienced crisis and creative process engagement and that learning goal orientation mediated this moderating effect. Overall, these results suggest that goal orientation is more proximal than mindset when it comes to moderating the effect of employee-experienced crisis.

General Discussion

Theoretical Implications

Our objective was to ascertain when and how an employee-experienced crisis stifles or stimulates employee creativity. First, we contribute to the creativity literature by focusing on the role of employee-experienced crisis (Billings et al., 1980) and introducing crisis in a team as a key context (Johns, 2006, 2017) for employee creativity specifically. Most organizational crisis studies have focused on leaders' crisis perceptions and reactions (James et al., 2011). In contrast, we shed light on employees' experiences of a crisis. The emergent role of frontline employees can be more effective in a crisis (Stallings & Quarantelli, 1985; Wenger, 1992) than leaders' perceptions of the crisis and command-and-control approaches (Drabek, 2005). We provide insight into how employees can become critical actors who perceive a crisis independently and take action accordingly.

Additionally, we show that a team crisis can serve as a context where employees experience a crisis directly. Previous crisis studies have generally focused on a single event—such as the *Challenger* disaster (Starbuck & Milliken, 1988), the Mann Gulch disaster (Weick, 1993), or the 1996 Mount Everest climbing disaster (Kayes, 2004)—as the crisis context. Departing from the approach of conducting an analysis of a single event and using a categorical measure of a crisis event (i.e., occurrence vs. nonoccurrence), we developed the notion of employee-experienced crisis to capture the impact an employee experiences from team crisis event(s), thus building upon the model of crisis perception (Billings et al., 1980). The concept of employee-experienced crisis and its measurement have a more direct bearing on, and thus are more proximal to, an individual's cognitive, emotional, and behavioral processes. We found that employee-experienced crisis serves as a psychological basis for how employees can perform creatively in a team crisis. Our measurement reflects the view that individual employees experience team crisis events at different levels of intensity. It also provides a basis for further theoretical and empirical research on the impact of crisis events on individual employees.

Second, we introduced implicit theories to complement and extend the predictions of threat-rigidity theory regarding creativity. Minimal conceptual developments and empirical investigations have focused on when and how an employee-experienced crisis can stimulate employee creativity. As a starting point, threat-rigidity theory buttressed our research in terms of the underlying mechanisms (e.g., increased job anxiety, reduced creative process engagement). This theory does not explicitly consider an individual's difference or its role in employees' reaction to an employee-experienced crisis. Consequently, threat-rigidity theory does not specify who would counter employee-experienced crisis differently. Implicit theories, on the other hand, suggest how fixed and growth mindsets can affect emotion-regulation processes (Burnette et al., 2013; Molden & Dweck, 2006). For those with a fixed mindset, an employee-experienced crisis leads to maladaptive regulation strategies (e.g., rumination; Aldao et al., 2010). For those with a growth mindset, however, an employee-experienced crisis leads to adaptive regulation strategies (e.g., brainstorming solutions or planning a course of action; Aldao et al., 2010). Implicit theories fill the theoretical void by placing an individual's emotion regulation process at the center. The integration of threat-rigidity and implicit theories can significantly advance our understanding of when and how an employee-experienced crisis in a team can affect creativity.

Furthermore, implicit theories provide motivational stimulus for employees to take different actions in response to the crisis they experience. Individuals' implicit theories can therefore serve as a key boundary condition under which an employee-experienced crisis stifles or stimulates creativity. Our finding in this regard extends person-in-situation creativity research (Amabile, 1983; van Knippenberg & Hirst, 2020; Woodman et al., 1993; Zhou & Hoever, 2014) by introducing to the creativity literature a novel and fundamental trait (i.e., fixed and growth mindsets). In particular, van Knippenberg and Hirst (2020) provide a key motivational lens for understanding individuals' reactions to situations. Consistent with this lens, we found that an employee-experienced crisis does not always induce anxiety; rather, it does so only for those with a fixed mindset. Importantly, with a growth mindset, an employee-experienced crisis stimulates creative process engagement and thus improves creativity. A theoretical implication of this is that the threat-rigidity account of an employee-experienced crisis applies only when employees have a fixed mindset.

Additionally, implicit theories contribute to the crisis management literature by offering a unifying framework for understanding what kind of people adopt improved coping strategies to respond to crises. Although crisis management scholars have become interested in unraveling who reacts to a crisis optimistically and constructively (Williams et al., 2017), they have yet to take implicit theories into consideration. Implicit theories proffer a fundamental motivational stimulus for responding to crisis (Dweck & Leggett, 1988). By introducing implicit theories—particularly, the growth mindset—to crisis management, we address the critical question of how organizations can improve recognition of, and tap into, the serendipity that crises can represent (Williams et al., 2017).

Finally, our study contributes to the literature on implicit theories. At the center of implicit theories is an individual's differential reactions based on that model. Often using student samples and grades as the performance measure, research in social or educational psychology has shown that those with a growth mindset tend to perform better than those with a fixed mindset (Yeager et al., 2019). Management scholars have applied implicit theories to cross-cultural adjustment (Chao, Takeuchi, & Farh, 2017), procedural justice (Heslin & VandeWalle, 2011), and performance appraisal (Heslin, Latham, & VandeWalle, 2005), among other domains. These studies have largely focused on the main effects of implicit theories and associated mechanisms. A key argument of implicit theories often used in these investigations is that a growth mindset can better cope with disruptions, rejection, or failure than a fixed mindset: Individuals with a growth mindset do not suffer, or suffer less, from anxiety, and they exert more effort and search for more effective task strategies. With a focus on employee-experienced crisis, we directly examined different (negative or positive) effects (anxiety or creative process engagement) of employee-experienced crisis vis-à-vis a fixed versus growth mindset. Therefore, we directly tested and supported the central tenet of implicit theories.

Limitations and Future Research Directions

This study has some limitations. Regardless of the origin of a team crisis event, conceptually, individuals are likely to feel ego threatened by it because it could expose their competence as insufficient and trigger the potential/actual failure of a team project, for which individual members share responsibility. Our construct, employee-experienced crisis, defined as the impact an employee experiences from a crisis, further captures this ego-relevant threat.

While this conceptual tenet applies to different cultural contexts, it is possible that in a high in-group collectivist culture, individuals are more likely to take an externally triggered team crisis event personally. In other words, they are more likely to feel ego threatened by an externally triggered team crisis event that impacts the team and its members. This is because they perceive greater interdependence within the team and among its members, take pride in the success of the team, and take responsibility for its failure. We tested our hypotheses in a high in-group collectivist culture (i.e., China). We encourage future research to replicate our study in a lower in-group collectivist culture and ascertain whether our findings can be generalized to such a cultural context.

Second, we examined implicit theories as a boundary condition for the impact of employee-experienced crisis. More studies on implicit theories are needed in the context of a crisis. First, while fixed and growth mindsets are relatively stable, they can also be developed, especially over the long term (Dweck, 2017). It is possible that an individual could foster a growth mindset through effectively coping with and creatively responding to a crisis (Ashford et al., 2020). Future research could use a longitudinal design to explore whether a growth mindset can change after a crisis event or develop during a period of crisis. Second, we found that a growth mindset plays a positive role in the context of an employee-experienced crisis in a team. Individuals with a growth mindset may even need a crisis to feel challenged, and they may thrive in such a situation. That said, in a well-ordered, well-routinized, and well-systemized organizational context, individuals with a fixed mindset may fare better than those with a growth mindset (Zhu et al., 2015). If a problem can be pre-specified with an easy-to-identify solution, individuals with a fixed mindset could be able to solve it more efficiently than those with a growth mindset.

Third, we suggest that future research pay attention primarily to the role of goal orientation and secondarily to implicit theories when examining crisis and creativity from a person-in-situation perspective. Creativity researchers have focused on goal orientation as a prime and proximal personal trait that can interact with creativity-relevant situations (for a review, see van Knippenberg & Hirst, 2020). Our Study 2 also supported the idea that goal orientation acts as a proximal moderator. We therefore encourage future research to use goal orientation as a malleable individual difference to deepen our knowledge of the person-in-situation perspective. As Payne, Youngcourt, and Beaubien's (2007) meta-analysis revealed, goal orientation can be shaped by individual traits (e.g., implicit theories, need for achievement, personality, and self-esteem). Although our study extends understanding of goal orientation in creativity by examining its more stable and fundamental personal-trait (i.e., implicit theories) antecedent, future research should explore other antecedents of goal orientation when examining various reactions to a crisis situation.

Additionally, we encourage scholars to examine whether leaders' personal traits are relevant moderators for the link between individual team members' experienced crisis and creativity (James et al., 2011). Recently, crisis management scholars (König et al., 2020) have focused on leaders' personal traits that filter information regarding a crisis and lead organizational members to creative reactions to the crisis. As our study sheds light on the role of implicit theories in crises, future research can use growth and fixed mindsets to capture leaders' personal traits in the context of a crisis. It is possible that when leaders have a growth mindset, team members are more likely to respond to an experienced crisis by

exchanging information and hence developing creative solutions because they model the leader's approach to handling crisis. We encourage future research to examine the possibility that supervisors' implicit theories moderate the relationship between team members' experienced crisis and creativity.

Finally, we examined when the positive or negative mechanism linking employee-experienced crisis and creativity is more likely to hold but did not study the direct relationship between employee-experienced crisis and creativity. Because of our study's focus, we neither proposed nor examined the moderation effect of implicit theories on the direct link between employee-experienced crisis and creativity. We acknowledge that the moderating effect on the direct link (without mediators) was not significant in Study 1, suggesting relatively weak evidence for a direct relationship. Future research may focus on and examine the direct link and other potential moderators for it.

Managerial Implications

To achieve effective crisis management, managers should lead employees not to feel emotionally overwhelmed and coach them to formulate and execute coping strategies for learning and creative problem solving. In this regard, our findings suggest that managers (a) should boost employees' rational (i.e., creative) but not emotional (i.e., anxious) reactions and (b) boost learning and problem solving rather than rigidity and fecklessness. The inadequacy of an employee's current competence—which is common in a crisis situation—is not necessarily problematic as long as the employee believes that such competence is malleable and can be enhanced through facing challenges. This is because an individual with a strong growth mindset and learning goal orientation does not react rigidly but rather engages in creative processes and demonstrates creativity, and an individual with a weak fixed mindset and performance-approach or performance-avoidance orientation reacts anxiously and consequently suffers in creativity. Managers are therefore advised to hire those with a growth mindset or learning goal orientation to unleash the upside of an employee-experienced crisis. Managers are also advised to match individuals with a growth mindset and learning goal orientation to jobs that are more likely to experience crises.

In addition, we have shown that goal orientations mediate the moderating effect of mindsets. Because goal orientations are more malleable, organizations can not only hire employees based on goal orientation but also take measures to shape learning orientation (e.g., through leadership, coaching, and company culture). For example, to keep up in our ever-changing world, Google strives to hire "learning animals," that is, highly learning-goal-oriented employees (Dweck, 2017) who "have the smarts to handle massive change and the character to love it" (Schmidt & Rosenberg, 2014: 102). Google creates new opportunities for them to keep learning new things and responding to unexpected events. Furthermore, managers can coach employees on how to bring out and act upon a learning orientation at work. Through their coaching, employees will recognize effective strategies or approaches to a crisis, which lead to personal development and discovery. Finally, organizations can also develop a culture that encourages employees to learn new things and grow. Such a culture would instill in employees a learning goal orientation and inspire them to creatively respond to crises.

Conclusion

In conclusion, employee-experienced crisis is a double-edged sword. Therefore, it is imperative to ascertain when and how it stifles or fuels creativity. We found that it reduces creativity via increased job anxiety for those with a strong fixed mindset but stimulates creativity via enhanced creative process engagement for those with a strong growth mindset. We therefore extend the predictions of threat-rigidity theory regarding the relationship between employee-experienced crisis and creativity by introducing implicit theories as important boundary conditions.

Appendix A

Crisis Event Indicators Generated From the Interview

1. Competitors (e.g., competing firms or their research-and-development teams) matched or exceeded the product, technology, or design that your team was specifically working on.
2. A new trend in the technological environment made your team's project(s) less valuable or even obsolete.
3. Customers' product preferences or requirements radically changed after your team kicked off the project(s).
4. Costs (e.g., labor, equipment, materials) exceeded the given budget for the task(s) or project(s), and additional financial support was not available.
5. Your team failed to meet the design goal or criteria essential for the project(s) (e.g., the specific needs of a client, design efficiency, stable operating system).
6. Your team missed milestones or interim deadlines of the task(s) or project(s).
7. Your team received a reduced budget relative to the demands of the task(s) or project(s).
8. Conflict in ideas or approaches to the work emerged in the task(s) or project(s).
9. Your team received stretch task(s) or project(s) that it was ill prepared for (e.g., requiring higher skills, new members, extra resources).
10. Administrative offices did not provide necessary support (e.g., human resources, facilities) for your team's task(s) or project(s).

Appendix B

Index Validation Procedure

To validate our employee-experienced crisis index, we collected a sample through Amazon's Mechanical Turk. Using screening questions, we limited participation to full-time employees working in science, engineering, computer science, or research and development in the United States and received responses from 263 individuals. Among the participants, 79.0% were under 40 years old and 38.8% were female. Respondents' mean tenure with their current team was 49.7 months. In terms of education level, 73% held a bachelor's degree, 19.4% had a master's degree, and 4.6% had a doctoral degree.

We followed the analytical procedure on constructs with formative indicators. Employee-experienced crisis is a construct with formative indicators because the team crisis event items can be specified as different dimensions or facets that form or induce a construct (Hinkin, 1998). For instance, an R&D team member might not simultaneously experience a reduced budget relative to a project's demands and a radical change in the customers' product preferences after the team began the project. This is different from constructs with reflective indicators in which each indicator is supposed to describe the same dimension of the construct; therefore, each indicator is exchangeable (Edwards, 2011). In our analyses, we followed Edwards and Bagozzi's (2000) formative measurement model (also see Edwards, 2011). Specifically, each item of employee-experienced crisis described a unique facet of a construct, and the construct served as a combination of multiple facets.

Specifically, there are two parts to Edwards and Bagozzi's (2000) measurement model. The first is the reflective measure of a facet (for each crisis event); the second is the formative construct (i.e., employee-experienced crisis) with all facets. In the first part, we adopted four items from Morgeson's (2005) event disruption scale. The Cronbach's alpha for the event disruption scale (four items) of each crisis event ranged from .92 to .96. In the second part, we constructed the formative construct (i.e., employee-experienced crisis) with all the facets. Our measurement model had an acceptable fit: $\chi^2 = 1400.41$, $df = 695$, $p < .01$; comparative fit index = .94; Tucker-Lewis index = .94; root mean square error of approximation = .06; standardized root mean square residual = .03. The results indicated small to moderate shared variances among all the facets of employee-experienced crisis, ranging from .22 to .49. We note that as different crisis events represent distinctive facets of the construct, the shared variances among those facets are not necessarily equal. For instance, "Costs (e.g., labor, equipment, and materials) exceeded the given budget and additional financial support was not available" and "Your team received a reduced budget relative to the demands of the project(s)" shared no more than 24% of the variance (.492).

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Notes

1. We first conducted an extensive literature review on organizational crises—externally triggered and internally induced crises—that may unexpectedly arise in a team. To ensure that our review was sufficiently comprehensive and rigorous, we adopted established procedures. We adopted four criteria to identify crisis events in research-and-development (R&D) teams: They should (a) be objective events that may influence individuals' tasks and working processes in a team rather than employees' subjective feelings about the crisis (e.g., "I feel there is a crisis"; Akgün, Lynn, & Byrne, 2006), (b) have a specific and direct bearing on R&D team tasks or projects and not merely be general changes or manifestations of turmoil in the environment (Jaworski & Kohli, 1993) or environmental jolts (Meyer, 1982), (c) not be totally beyond the control of the R&D team itself (e.g., mergers or acquisitions among firms) and thus be reasonably within the influence scope of R&D employees (Drazin, Glynn, & Kazanjian, 1999), and (d) potentially present not only a threat (Sutton, 1987) but also an opportunity (Sitkin, See, Miller, Lawless, & Carton, 2011). For instance, organizational death did not meet these criteria as it is beyond the purview of the R&D team and fails to provide a foreseeable opportunity for creativity within the organization. Our review identified 12 crisis events. Next, we conducted interviews with 12 managers from R&D labs in the Korean aerospace industry. We asked how

each of the 12 events could be critical to R&D employees. For instance, we learned that general competition in the industry may not be disruptive for specific employees in an R&D team; however, if a competitor matched or exceeded the product, technology, or design on which an R&D team was specifically working, then the competition was viewed as a crisis event. We went over the list of crisis events one by one with the interviewees, and this process resulted in a final list of 10 crisis events. The interviews were conducted by the first author and a research assistant. Each interview entailed four sessions, and each session included three interviewees. The interviewers spent approximately 3 hr on each interview session. The interviewers made the following three requests in each session: (a) "Please tell us about crisis events your R&D team members have experienced"; (b) "For the crisis events that you pointed out, please explain how the events derailed employees' performance"; and (c) "If the crisis events made your team more creative, then tell us why and how they actually enhanced members' creativity."

2. We thank the associate editor and one of the reviewers for this suggestion. The correlation between fixed mindset and growth mindset was $-.32$, showing that they are two distinct, negatively related dimensions.
3. Following one reviewer's comment, we also tested the effect of employee-experienced crisis on different dimensions of creative process engagement. The results are substantively identical. Detailed results are available upon request.
4. To evaluate discriminant validity among our measures, we compared the fit of the four-factor model with that of several alternative models. The fit of the four-factor model was better than that of the following models: (a) the three-factor model that combined employee-experienced crisis and implicit theories measured at Time 1 ($\chi^2 = 698.51$, $df = 51$, $p < .01$; comparative fit index [CFI] = .78; Tucker-Lewis index [TLI] = .71; root mean square error of approximation [RMSEA] = .16; standardized root mean square residual [SRMR] = .12): $\Delta\chi^2 = 212.38$, $\Delta df = 3$, $p < .01$; (b) the other three-factor model that combined job anxiety and creative process engagement measured at Time 2 ($\chi^2 = 621.75$, $df = 51$, $p < .01$; CFI = .80; TLI = .75; RMSEA = .15; SRMR = .12): $\Delta\chi^2 = 384.41$, $\Delta df = 3$, $p < .01$; (c) the two-factor model that combined variables that were rated at the same time into one factor ($\chi^2 = 1123.82$, $df = 53$, $p < .01$; CFI = .63; TLI = .54; RMSEA = .20; SRMR = .16): $\Delta\chi^2 = 488.32$, $\Delta df = 5$, $p < .01$; and (d) a single-factor model ($\chi^2 = 2067.46$, $df = 54$, $p < .01$; CFI = .31; TLI = .16; RMSEA = .27; SRMR = .24): $\Delta\chi^2 = 1064.63$, $\Delta df = 6$, $p < .01$. The Satorra-Bentler chi-square test (<http://www.statmodel.com/chidiff.shtml>) was applied in the comparisons between the models.
5. To evaluate discriminant validity, we compared the fit of the proposed eight-factor model with that of several alternative models. The fit of the eight-factor model was better than that of the following models: (a) the seven-factor model that combined fixed mindset and growth mindset ($\chi^2 = 757.42$, $df = 278$, $p < .01$; CFI = .84; TLI = .81; RMSEA = .08; SRMR = .11): $\Delta\chi^2 = 212.56$, $\Delta df = 11$, $p < .01$; (b) the six-factor model that combined the three goal orientations ($\chi^2 = 1206.87$, $df = 284$, $p < .01$; CFI = .69; TLI = .65; RMSEA = .11; SRMR = .13): $\Delta\chi^2 = 719.05$, $\Delta df = 13$, $p < .01$; (c) the four-factor model that combined fixed mindset, growth mindset, and three goal orientations ($\chi^2 = 17103.63$, $df = 293$, $p < .01$; CFI = .53; TLI = .48; RMSEA = .14; SRMR = .15): $\Delta\chi^2 = 1145.42$, $\Delta df = 22$, $p < .01$; (d) the three-factor model that combined implicit theories and goal orientation into one factor and combined creative process engagement and job anxiety into one factor ($\chi^2 = 2096.92$, $df = 296$, $p < .01$; CFI = .40; TLI = .34; RMSEA = .15; SRMR = .17): $\Delta\chi^2 = 1437.23$, $\Delta df = 25$, $p < .01$; (e) the two-factor model that combined all variables except for employee-experienced crisis ($\chi^2 = 2193.84$, $df = 298$, $p < .01$; CFI = .37; TLI = .31; RMSEA = .16; SRMR = .18): $\Delta\chi^2 = 1285.12$, $\Delta df = 27$, $p < .01$; and (f) a single-factor model ($\chi^2 = 2862.89$, $df = 299$, $p < .01$; CFI = .15; TLI = .07; RMSEA = .18; SRMR = .20): $\Delta\chi^2 = 2955.40$, $\Delta df = 28$, $p < .01$. The Satorra-Bentler chi-square test was applied in the comparisons between the models.

References

- Acar, O. A., Tarakci, M., & van Knippenberg, D. 2019. Creativity and innovation under constraints: A cross-disciplinary integrative review. *Journal of Management*, 45: 96-121.
- Aiken, L. S., & West, S. G. 1991. *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.
- Akgün, A. E., Lynn, G. S., & Byrne, J. C. 2006. Antecedents and consequences of unlearning in new product development teams. *Journal of Production Innovation Management*, 23: 73-88.

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. 2010. Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, 30: 217-237.
- Alexander, L., & van Knippenberg, D. 2014. Teams in pursuit of radical innovation: A goal orientation perspective. *Academy of Management Review*, 39: 423-438.
- Amabile, T. M. 1983. The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, 45: 357-376.
- Amabile, T. M., & Conti, R. 1999. Changes in the work environment for creativity during downsizing. *Academy of Management Journal*, 42: 630-640.
- Amabile, T. M., & Pratt, M. G. 2016. The dynamic componential model of creativity and innovation in organizations: making progress, making meaning. *Research in Organizational Behavior*, 36: 157-183.
- Anderson, N., Potočník, K., & Zhou, J. 2014. Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40: 1297-1333.
- Ashford, S. J., Sytch, M., & Greer, L. L. 2020. 5 Ways a crisis can help you cultivate a growth mindset. *Harvard Business Review*. Retrieved from <https://hbr.org/2020/08/5-ways-a-crisis-can-help-you-cultivate-a-growth-mindset>.
- Astrachan, J. H. 2004. Organizational departures: the impact of separation anxiety as studied in a mergers and acquisitions simulation. *Journal of Applied Behavioral Science*, 40: 91-110.
- Bakker, A. B., & Xanthopoulou, D. 2009. The crossover of daily work engagement: Test of an actor-partner interdependence model. *Journal of Applied Psychology*, 94: 1562-1571.
- Bandalos, D. L. 2002. The effects of item parceling on goodness-of-fit and parameter estimate bias in structural equation modeling. *Structural Equation Modeling*, 9: 78-102.
- Billings, R. S., Milburn, T. W., & Schaalman, M. L. 1980. A model of crisis perception: A theoretical and empirical analysis. *Administrative Science Quarterly*, 25: 300-316.
- Blau, P. M. 1977. *Inequality and heterogeneity: A primitive theory of social structure*. New York: Free Press.
- Bloom, P. 2016. Back to the capitalist future: fantasy and the paradox of crisis. *Culture and Organization*, 22: 158-177.
- Bolstad, W. M., & Curran, J. M. 2016. *Introduction to Bayesian statistics*. Hoboken, NJ: Wiley.
- Brislin, R. W. 1986. The wording and translation of research instruments. In W. J. Lonner, & J. W. Berry (Eds.), *Field methods in cross-cultural research*: 137-164. Beverly Hills, CA: Sage.
- Brockner, J., & James, E. H. 2008. Toward an understanding of when executives see crisis as opportunity. *Journal of Applied Behavioral Science*, 44: 94-115.
- Bunderson, J. S., & Boumgarden, P. 2010. Structure and learning in self-managed teams: Why "bureaucratic" teams can be better learners. *Organization Science*, 21: 609-624.
- Bundy, J., Pfarrer, M. D., Short, C. E., & Coombs, W. T. 2017. Crises and crisis management: Integration, interpretation, and research development. *Journal of Management*, 43: 1661-1692.
- Burnette, J. L., O'Boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. 2013. Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin*, 139: 655-701.
- Carver, C. S., & Scheier, M. F. 1982. Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, 92: 111-135.
- Catmull, E., & Wallace, A. 2014. *Creativity, Inc: Overcoming the unseen forces that stand in the way of true inspiration*. New York: Random House.
- Chao, M. M., Takeuchi, R., & Farh, J. L. 2017. Enhancing cultural intelligence: The roles of implicit culture beliefs and adjustment. *Personnel Psychology*, 70: 257-292.
- Choi, J. N., Sung, S. Y., & Kim, M. U. 2010. How do groups react to unexpected threats? Crisis management in organizational teams. *Social Behavior and Personality: An International Journal*, 38: 805-828.
- Christianson, M. K., Farkas, M. T., Sutcliffe, K. M., & Weick, K. E. 2009. Learning through rare events: Significant interruptions at the Baltimore & Ohio Railroad Museum. *Organization Science*, 20: 846-860.
- Coombs, W. T., & Holladay, S. J. 2005. An exploratory study of stakeholder emotions: Affect and crises. *Research on Emotion in Organizations*, 1: 263-280.
- Danthony, S., Mascaret, N., & Cury, F. 2020. Test anxiety in physical education: The predictive role of gender, age, and implicit theories of athletic ability. *European Physical Education Review*, 26: 128-143.

- Dawson, K. M., O'Brien, K. E., & Beehr, T. A. 2016. The role of hindrance stressors in the job demand-control-support model of occupational stress: A proposed theory revision. *Journal of Organizational Behavior*, 37: 397-415.
- Diamantopoulos, A., & Siguaw, J. A. 2006. Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, 17: 263-282.
- Diamantopoulos, A., & Winklhofer, H. M. 2001. Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research*, 38: 269-277.
- Dimotakis, N., Mitchell, D., & Maurer, T. 2017. Positive and negative assessment center feedback in relation to development self-efficacy, feedback seeking, and promotion. *Journal of Applied Psychology*, 102: 1514-1527.
- Drabek, T. E. 2005. Predicting disaster response effectiveness. *International Journal of Mass Emergencies and Disasters*, 23: 49-72.
- Drazin, R., Glynn, M. A., & Kazanjian, R. K. 1999. Multilevel theorizing about creativity in organizations: A sense-making perspective. *Academy of Management Review*, 24: 286-307.
- Dutton, J. E. 1986. The processing of crisis and non-crisis strategic issues. *Journal of Management Studies*, 23: 501-517.
- Dweck, C. S. 1986. Motivational processes affecting learning. *American Psychologist*, 41: 1040-1048.
- Dweck, C. S. 1999. *Self-theories: Their role in motivation, personality and development*. Philadelphia: Psychology Press.
- Dweck, C. S. 2017. *Mindset: The new psychology of success*. New York: Ballantine Books.
- Dweck, C. S., & Leggett, E. L. 1988. A social-cognitive approach to motivation and personality. *Psychological Review*, 95: 256-273.
- Dweck, C. S., & Yeager, D. S. 2019. Mindsets: A view from two eras. *Perspectives on Psychological Science*, 14: 481-496.
- Edwards, J. R. 2011. The fallacy of formative measurement. *Organizational Research Methods*, 14: 370-388.
- Edwards, J. R., & Bagozzi, R. P. 2000. On the nature and direction of relationships between constructs and measures. *Psychological Methods*, 5: 155-174.
- Edwards, J. R., & Lambert, L. S. 2007. Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12: 1-22.
- Elliot, A. J., & Church, M. A. 1997. A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72: 218-232.
- Eysenck, M. W., & Calvo, M. G. 1992. Anxiety and performance: The processing efficiency theory. *Cognition & Emotion*, 6: 409-434.
- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. 2007. Anxiety and cognitive performance: Attentional control theory. *Emotion (Washington, D.C.)*, 7: 336-353.
- Farmer, S. M., Tierney, P., & Kung-Mcintyre, K. 2003. Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal*, 46: 618-630.
- Floyd, F. J., & Widaman, K. F. 1995. Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 7: 286-299.
- Ford, C. M. 1996. A theory of individual creative action in multiple social domains. *Academy of Management Review*, 21: 1112-1142.
- Gong, Y., Huang, J. C., & Farh, J. L. 2009. Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52: 765-778.
- Gong, Y., Kim, T. Y., Lee, D. R., & Zhu, J. 2013. A multilevel model of team goal orientation, information exchange, and creativity. *Academy of Management Journal*, 56: 827-851.
- Grant, A. M., & Berry, J. W. 2011. The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity. *Academy of Management Journal*, 54: 73-96.
- Han, G. H., Harms, P. D., & Bai, Y. 2017. Nightmare bosses: The impact of abusive supervision on employees' sleep, emotions, and creativity. *Journal of Business Ethics*, 145: 21-31.
- Harris, T. B., Li, N., Boswell, W. R., Zhang, X. A., & Xie, Z. 2014. Getting what's new from newcomers: Empowering leadership, creativity, and adjustment in the socialization context. *Personnel Psychology*, 67: 567-604.
- Hayes, A. F., & Preacher, K. J. 2010. Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear. *Multivariate Behavioral Research*, 45: 627-660.
- Hermann, C. F. 1963. Some consequences of crisis which limit the viability of organizations. *Administrative Science Quarterly*, 8: 61-82.

- Heslin, P. A., Latham, G. P., & VandeWalle, D. 2005. The effect of implicit person theory on performance appraisals. *Journal of Applied Psychology*, 90: 842-856.
- Heslin, P. A., & VandeWalle, D. 2011. Performance appraisal procedural justice: The role of a manager's implicit person theory. *Journal of Management*, 37: 1694-1718.
- Heyman, G. D., & Dweck, C. S. 1992. Achievement goals and intrinsic motivation: Their relation and their role in adaptive motivation. *Motivation and Emotion*, 16: 231-247.
- Hinkin, T. R. 1998. A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1: 104-121.
- Hirst, G., van Knippenberg, D., Chen, C. H., & Sacramento, C. A. 2011. How does bureaucracy impact individual creativity? A cross-level investigation of team contextual influences on goal orientation-creativity relationships. *Academy of Management Journal*, 54: 624-641.
- Hirst, G., van Knippenberg, D., & Zhou, J. 2009. A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal*, 52: 280-293.
- Hülshager, U. R., Anderson, N., & Salgado, J. F. 2009. Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology*, 94: 1128-1145.
- James, E. H., Wooten, L. P., & Dushek, K. 2011. Crisis management: Informing a new leadership research agenda. *Academy of Management Annals*, 5: 455-493.
- Jaworski, B. J., & Kohli, A. K. 1993. Market orientation: antecedents and consequences. *Journal of Marketing*, 57: 53-70.
- Johns, G. 2006. The essential impact of context on organizational behavior. *Academy of Management Review*, 31: 386-408.
- Johns, G. 2017. Reflections on the 2016 decade award: Incorporating context in organizational research. *Academy of Management Review*, 42: 577-595.
- Jordan, A. H., & Audia, P. G. 2012. Self-enhancement and learning from performance feedback. *Academy of Management Review*, 37: 211-231.
- Kaplan, S., LaPort, K., & Waller, M. J. 2013. The role of positive affectivity in team effectiveness during crises. *Journal of Organizational Behavior*, 34: 473-491.
- Kappes, A., & Schikowski, A. 2013. Implicit theories of emotion shape regulation of negative affect. *Cognition and Emotion*, 27: 952-960.
- Kayes, D. C. 2004. The 1996 Mount Everest climbing disaster: The breakdown of learning in teams. *Human Relations*, 57: 1263-1284.
- King, R. B., & dela Rosa, E. D. 2019. Are your emotions under your control or not? Implicit theories of emotion predict well-being via cognitive reappraisal. *Personality and Individual Differences*, 138: 177-182.
- König, A., Graf-Vlachy, L., Bundy, J., & Little, L. M. 2020. A blessing and a curse: How CEOs' trait empathy affects their management of organizational crises. *Academy of Management Review*, 45: 130-153.
- Kruglanski, A. W., & Webster, D. M. 1996. Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, 103: 263-283.
- Kruschke, J. K., Aguinis, H., & Joo, H. 2012. The time has come: Bayesian methods for data analysis in the organizational sciences. *Organizational Research Methods*, 15: 722-752.
- Kwan, H. K., Zhang, X., Liu, J., & Lee, C. 2018. Workplace ostracism and employee creativity: An integrative approach incorporating pragmatic and engagement roles. *Journal of Applied Psychology*, 103: 1358-1366.
- Lampel, J., Shamsie, J., & Shapira, Z. 2009. Experiencing the improbable: Rare events and organizational learning. *Organization Science*, 20: 835-845.
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. 2002. To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling*, 9: 151-173.
- Mannor, M. J., Wowak, A. J., Bartkus, V. O., & Gomez-Mejia, L. R. 2016. Heavy lies the crown? How job anxiety affects top executive decision making in gain and loss contexts. *Strategic Management Journal*, 37: 1968-1989.
- Matsunaga, M. 2008. Item parceling in structural equation modeling: A primer. *Communication Methods and Measures*, 2: 260-293.
- McCarthy, J. M., Trougakos, J. P., & Cheng, B. H. 2016. Are anxious workers less productive workers? It depends on the quality of social exchange. *Journal of Applied Psychology*, 101: 279-291.
- Mehta, R., & Zhu, M. 2016. Creating when you have less: the impact of resource scarcity on product use creativity. *Journal of Consumer Research*, 42: 767-782.
- Meyer, A. D. 1982. Adapting to environmental jolts. *Administrative Science Quarterly*, 27: 515-537.

- Miron-Spektor, E., Ingram, A., Keller, J., Smith, W. K., & Lewis, M. W. 2018. Microfoundations of organizational paradox: The problem is how we think about the problem. *Academy of Management Journal*, 61: 26-45.
- Mitroff, I. I. 2005. *Why some companies emerge stronger and better from a crisis: 7 Essential lessons for surviving disaster*. New York: American Management Association.
- Molden, D. C., & Dweck, C. S. 2006. Finding "meaning" in psychology: A lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, 61: 192-203.
- Molden, D. C., Plaks, J. E., & Dweck, C. S. 2006. "Meaningful" social inferences: Effects of implicit theories on inferential processes. *Journal of Experimental Social Psychology*, 42: 738-752.
- Morgeson, F. P. 2005. The external leadership of self-managing teams: Intervening in the context of novel and disruptive events. *Journal of Applied Psychology*, 90: 497-508.
- Muthén, L. K., & Muthén, B. O. 1998-2017. *Mplus user's guide* (8th ed.). Los Angeles: Muthén & Muthén.
- Nasser, F., & Wisenbaker, J. 2003. A Monte Carlo study investigating the impact of item parceling on measures of fit in confirmatory factor analysis. *Educational and Psychological Measurement*, 63: 729-757.
- Ng, T. W., & Feldman, D. C. 2011. Affective organizational commitment and citizenship behavior: Linear and non-linear moderating effects of organizational tenure. *Journal of Vocational Behavior*, 79: 528-537.
- Nolen-Hoeksema, S. 2000. The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, 109: 504-511.
- Nussbaum, A. D., & Dweck, C. S. 2008. Defensiveness versus remediation: Self-theories and modes of self-esteem maintenance. *Personality and Social Psychology Bulletin*, 34: 599-612.
- Ocasio, W. C. 1995. The enactment of economic adversity: A reconciliation of theories of failure-induced change and threat-rigidity. *Research in Organizational Behavior*, 17: 287-331.
- Parker, D. F., & DeCotiis, T. A. 1983. Organizational determinants of job stress. *Organizational Behavior and Human Performance*, 32: 160-177.
- Payne, S. C., Youngcourt, S. S., & Beaubien, J. M. 2007. A meta-analytic examination of the goal orientation nomological net. *Journal of Applied Psychology*, 92: 128-150.
- Pearson, C. M., & Clair, J. A. 1998. Reframing crisis management. *Academy of Management Review*, 23: 59-76.
- Proudfoot, D., Kay, A. C., & Koval, C. Z. 2015. A gender bias in the attribution of creativity: Archival and experimental evidence for the perceived association between masculinity and creative thinking. *Psychological Science*, 26: 1751-1761.
- Rerup, C. 2009. Attentional triangulation: Learning from unexpected rare crises. *Organization Science*, 20: 876-893.
- Robins, R. W., & Pals, J. L. 2002. Implicit self-theories in the academic domain: Implications for goal orientation, attributions, affect, and self-esteem change. *Self and Identity*, 1: 313-336.
- Roets, A., Kruglanski, A. W., Kossowska, M., Pierro, A., & Hong, Y. Y. 2015. The motivated gatekeeper of our minds: New directions in need for closure theory and research. *Advances in Experimental Social Psychology*, 52: 221-283.
- Roux-Dufort, C. 2009. The devil lies in details! How crises build up within organizations. *Journal of Contingencies and Crisis Management*, 17: 4-11.
- Sarkar, S., & Osievskey, O. 2018. Organizational change and rigidity during crisis: A review of the paradox. *European Management Journal*, 36: 47-58.
- Schmidt, E., & Rosenberg, J. 2014. *How Google works*. New York: Grand Central.
- Schroder, H. S., Yalch, M. M., Dawood, S., Callahan, C. P., Donnellan, M. B., & Moser, J. S. 2017. Growth mindset of anxiety buffers the link between stressful life events and psychological distress and coping strategies. *Personality and Individual Differences*, 110: 23-26.
- Shepherd, D. A., Patzelt, H., & Wolfe, M. 2011. Moving forward from project failure: Negative emotions, affective commitment, and learning from the experience. *Academy of Management Journal*, 54: 1229-1259.
- Simon, L. S., Hurst, C., Kelley, K., & Judge, T. A. 2015. Understanding cycles of abuse: A multimotive approach. *Journal of Applied Psychology*, 100: 1798-1810.
- Simonton, D. K. 2017. Creative productivity across the life span. In J. A. Plucker (Ed.), *Creativity and innovation: Theory, research, and practice*: 119-132. Waco, TX: Prufrock Press.
- Sitkin, S. B., See, K. E., Miller, C. C., Lawless, M. W., & Carton, A. M. 2011. The paradox of stretch goals: organizations in pursuit of the seemingly impossible. *Academy of Management Review*, 36: 544-566.
- Sprigg, C. A., Stride, C. B., Wall, T. D., Holman, D. J., & Smith, P. R. 2007. Work characteristics, musculoskeletal disorders, and the mediating role of psychological strain: A study of call center employees. *Journal of Applied Psychology*, 92: 1456-1466.

- Stallings, R. A., & Quarantelli, E. L. 1985. Emergent citizen groups and emergency management. *Public Administration Review*, 45: 93-100.
- Starbuck, W. H., & Milliken, F. J. 1988. *Challenger*: Fine-tuning the odds until something breaks. *Journal of Management Studies*, 25: 319-340.
- Staw, B. M., Sandelands, L. E., & Dutton, J. E. 1981. Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, 26: 501-524.
- Stoker, J. I., Garretsen, H., & Soudis, D. 2019. Tightening the leash after a threat: A multi-level event study on leadership behavior following the financial crisis. *Leadership Quarterly*, 30: 199-214.
- Sutton, R. I. 1987. The process of organizational death: Disbanding and reconnecting. *Administrative Science Quarterly*, 32: 542-569.
- Tabesh, P., & Vera, D. M. 2020. Top managers' improvisational decision-making in crisis: A paradox perspective. *Management Decision*, 58: 2235-2256.
- Unsworth, K. L., & Clegg, C. W. 2010. Why do employees undertake creative action? *Journal of Occupational and Organizational Psychology*, 83: 77-99.
- van Knippenberg, D., & Hirst, G. 2020. A motivational lens model of Person $\times$ Situation interactions in employee creativity. *Journal of Applied Psychology*, 105: 1129-1144.
- Weick, K. E. 1993. The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quarterly*, 38: 628-652.
- Wenger, D. E. 1992. *Emergent and volunteer behavior during disaster: Research findings and planning implications*. College Station: Texas A&M University Hazard Reduction Recover Center.
- Williams, T. A., Gruber, D. A., Sutcliffe, K. M., Shepherd, D. A., & Zhao, E. Y. 2017. Organizational response to adversity: fusing crisis management and resilience research streams. *Academy of Management Annals*, 11: 733-769.
- Woodman, R. W., Sawyer, J. E., & Griffin, R. W. 1993. Toward a theory of organizational creativity. *Academy of Management Review*, 18: 293-321.
- Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., & Muller, C., . . . Paunesku, D. 2019. A national experiment reveals where a growth mindset improves achievement. *Nature*, 573: 364-369.
- Zhang, X., & Bartol, K. M. 2010. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, 53: 107-128.
- Zhou, J., & Hoever, I. J. 2014. Research on workplace creativity: A review and redirection. *Annual Review Organizational Psychology and Organizational Behavior*, 1: 333-359.
- Zhu, W., He, H., Treviño, L. K., Chao, M. M., & Wang, W. 2015. Ethical leadership and follower voice and performance: The role of follower identifications and entity morality beliefs. *Leadership Quarterly*, 26: 702-707.
- Zyphur, M. J., & Oswald, F. L. 2015. Bayesian Estimation and inference: A user's guide. *Journal of Management*, 41: 390-420.