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Organizational Resilience and Employee Work-Role Performance After A Crisis Situation: Exploring the Effects of Organizational Resilience on Internal Crisis Communication

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ABSTRACT

The purpose of this study is to explore the positive outcomes of organizational resilience to see how resilient employees can support an organization by adapting to and initiating changes during the recovery process following a crisis. This study focuses on organizational resilience generated by

employees, as a resilient system, through their psychological ability and positive communication behaviors. Resilient employees can help their organization bounce back to normal functioning following a crisis. A nationwide survey (*N* = 830) was conducted among full-time employees in the U.S. to examine the positive effect of organizational resilience on employee work-role performance. The results indicate that organizational resilience was positively and significantly associated with: employees' intentions for proficiency, adaptivity and proactivity of organizational members, thus contributing to organizational effectiveness after a crisis situation.

KEYWORDS:

An organizational crisis upsets and challenges an organization's basic assumptions and decision-making processes (Kovoor-Misra, Zammuto, & Mitroff, 2000; Weick, 1988), ultimately threatening organizational legitimacy and seriously impacting the organization's performance (Allen & Caillouet, 1994; Coombs, 2015). Such a crisis is a major, unpredictable event that leads an organization to face "a time of ambiguity, uncertainty, and struggle to regain control" (Miller & Heath, 2004, p. 247). Every crisis creates a great deal of uncertainty for all members of an organization, including employees (Ulmer, Sellnow, & Seeger, 2015). However, previous research has not thoroughly explored the internal aspect of crisis communication, specifically communication with employees. Instead, prior research has focused on communication with external publics to protect organizational reputation through crisis response strategies (Frandsen & Johansen, 2011, 2016; Mazzei & Ravazzani, 2014; Ravazzani, 2016). In this sense, a new theoretical approach to crisis management and communication, one that would address internal communication, is needed (Liu & Fraustino, 2014).

One effort to develop new theoretical approaches has grown recently in crisis communication: a shift from message strategies for blame-avoidance (external dimension) to strategies emphasizing *organizational resilience*. These approaches focus on the internal aspect of an organization, which are key to its "ability to bounce back" (Frandsen & Johansen, 2016, p. 64). However, there is still ample room for organizational resilience research in crisis communication and management. Existing research rarely examines concepts of organizational resilience, which can provide a broader understanding of positive behaviors that contribute to organizational effectiveness after crisis situations (Li & Stacks, 2017; Men & Bowen, 2017).

To fill this research gap, this study aims to explicate the concept of *organizational resilience* in terms of internal publics (i.e., employees), as a resilient system, and demonstrate the beneficial impact of organizational resilience on employees' work-role performance following a crisis. Thus, the purpose of this study is to explore positive outcomes of organizational resilience in demonstrating how resilient employees can support an organization by adapting to and initiating changes during the post-crisis recovery period.

Literature review

This study emphasizes an understanding of organizational resilience in terms of resilient employees (i.e., transformational perspective) (Kuntz, Malinen, & Näswall, 2017). This transformational perspective has been dominant in existing organizational resilience research (e.g., Van der Vegt, Essens, Wahlström, & George, 2015). In applying such a perspective to a crisis-specific situation, this study suggests organizational resilience as a multidimensional concept that consists of ability (competence), psychological belief (self-efficacy), and communication behaviors for sensemaking and sensegiving. Furthermore, this study explores an antecedent (organization-employee relationships) and positive outcomes (employee work-role performance) of organizational resilience after a crisis situation. In the following sections, these theoretical concepts are reviewed and proposed in a structural model.

Organizational resilience and internal crisis communication

The term *resilience* originates from the Latin verb *resilire and resilio*, meaning "leap back" (Fletcher & Sarkar, 2013, p. 15) or "bounce/jump back" (Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017, p. 740). Over the past few decades, resilience, as an interdisciplinary construct, has been widely discussed in different disciplines, including organizational science, psychology, and physics (King, Newman, & Luthans, 2016). Some scholars have conceptualized resilience in terms of a *trait* or *dispositional capacity* that helps individuals to deal with and adjust positively to adversity (e.g., Jackson, Firtko, & Edenborough, 2007). Researchers in this line of scholarship have defined resilience as the capacity to move on in a positive way from negative, traumatic, or stressful experiences (e.g., ego-resiliency and psychological resilience) (see Masten, 2004; Masten & Reed, 2002; Tugade & Fredrickson, 2004). However, other scholars have treated resilience as *a dynamic process* consisting of disruption and reintegration in which an individual displays positive adaption despite experienced adversity (Luthar et al., 2000). To distinguish the two concepts, scholars have maintained that the term *resiliency* should be used only when referring to a trait and *resilience* should be used exclusively when referring to the process or phenomenon of positive adjustment despite adversity (King, 2016; Luthar et al., 2000).

Building on these views, the concept of resilience has been extended to organization science and even crisis management, which emphasizes resilience at the organizational level (i.e., *organizational resilience*) (Olsson, 2014; Sutcliffe & Vogus, 2003). Early concepts of organizational resilience were conceptualized as the ability to bounce back following adverse events and restore normal functioning, indicating the robustness of an organizational system and infrastructure (e.g., Sutcliffe & Vogus, 2003). In contrast, a more recent perspective has emphasized organizational resilience as an organization's capacity to continually develop resources and identify opportunities to increase competitive advantages in the aftermath of a crisis (e.g., Lengnick-Hall, Beck, & Lengnick-Hall, 2011). The current perspective on organizational resilience has been described as that of resilient employees, meaning *resilient systems of an organization*, who have the capacity for ongoing development *beyond* their ability to bounce back and restore normal functioning following adversity (Kuntz et al., 2017; Rodríguez-Sánchez, Guinot, Chiva, & López-Cabralez, 2019).

The latter perspective [1] was rooted in ecological sciences, where resilience is a characteristic of a system rather than of the system's individual parts (Adger, 2000). To understand a system's resilience, Van der Vegt et al. (2015) highlighted that it is important "to identify the capabilities and capacities of

important parts of the system, and to examine how they interact with one another and with their environment to predict key performance outcomes at different levels of analysis before and after a disruptive event" (p. 6). In the same vein, organizational resilience scholars have maintained that the most important parts of organizations as complex systems are, at the most basic level, their employees (Kuntz et al., 2017). Thus, a critical source of organizational resilience is encompassed by employees' characteristics, such as their skills, abilities, cognitions, behaviors, and self-regulatory processes (Lengnick-Hall et al., 2011; Luthans, Youssef, & Avolio, 2007).

In this sense, scholars have increasingly suggested adopting the concept of organizational resilience as dependent on organizational members or employees (Grunig, 2011; Olsson, 2014). These suggestions have highlighted its role in effective crisis communication and management (Frandsen & Johansen, 2016). In crisis management literature, specifically, organizational resilience reflects organizational members' *effective crisis management processes*, which facilitate coordination, information sharing, and collective sense making (Buzzanell, 2010; Chamlee-Wright & Storr, 2011; Ödlund, 2010). Specifically, Olsson (2014) suggested receiver-oriented communication – providing information for internal publics (i.e., organizational members or employees) – to maximize survival and revival in the event of a crisis, in order to instill resilience in the organization (i.e., resilience-oriented crisis communication). Frandsen and Johansen (2016) maintained that organizational members' interactions through communication play a key role in an organization's resilience.

In addition, organization management literature has underlined the importance of organizational members to organizational resilience during crisis situations. Mallack (1998) insisted that organizational members or employees must learn how to be resilient because they can then quickly design and implement positive adaptive behaviors that match the crisis situation. In the same vein, individual (i.e., organizational member) resilience within an organization can contribute to its organizational resilience, through the individual's ability to employ emotions and to help the company quickly engage in creative and positive crisis communication (French & Holden, 2012; Tugade & Fredrickson, 2004). Moreover, as internal publics, employees can have a "vested interest" in organizations' crisis recovery by providing a recovery spotlight, unlike external publics and media (Austin, Liu, & Jin, 2014, p. 846). Furthermore, the vast majority of studies have indicated that resilience is most likely when employees have the relevant and specific knowledge necessary to make a decision and resolve a problem (King et al., 2016; Kuntz et al., 2017; Powley, 2009; Sutcliffe & Vogus, 2003; Youssef & Luthans, 2007).

Organizational resilience: employees' ability, belief, and communication behaviors

As previously mentioned, understanding organizational resilience in terms of resilient employees (with the employees as a resilient system) has dominated existing research (Van der Vegt et al., 2015). In this regard, organizational resilience can be generated by resilient employees who demonstrate not only their ability to recover from adversity, but also their capacity to utilize and proactively develop personal and workplace resources (King et al., 2016). In doing so, they show continual adaptation through psychological resources, and through development and enactment of resilient behaviors (Kuntz et al., 2017). Applying such perspectives to a crisis-specific situation, crisis management researchers have emphasized organizational resilience as the organizational members' (i.e., employees') ability or capacity to engage in desirable (communication) behaviors when responding to a

crisis situation (Agarwal & Buzzanell, 2015; Buzzanell, 2010, 2018; Guenthner, 2012; Kendra & Wachtendorf, 2003; Weick, 1993).

For instance, Weick (1993) suggested that organizational members' capacities for problem-solving and communication behaviors (e.g., seeking and exchanging new information) are sources of resilience for organizational members who need to comprehend and respond to a crisis in their organization. Kendra and Wachtendorf (2003) highlighted that organizational "resilience appears to be as much a set of attitudes about desirable actions by organizational representatives as it is about developing new capabilities" (p. 42). In addition, Buzzanell (2010, 2018) insisted that the construction of resilience is a collaborative exchange that invites organizational members' communicative processes to contribute to individual/group well-being. Kuntz, Näswall, and Malinen (2016) also emphasized the behavioral capability of employees to leverage work resources in order to ensure organizational resilience through continual adaptation, well-being, and growth at work.

In addition, organizational resilience can be understood more specifically as a collection of organizational processes aimed at enhancing an organization's overall *competence* (especially the ability to learn), as well as restoring *efficacy* through its ability to quickly process feedback and to flexibly rearrange or transfer knowledge and resources to deal with crisis situations (Sutcliffe & Vogus, 2003). In this regard, organizational resilience is more likely when individuals have experiences that add to their competences (or expertise) and self-efficacy, motivating them to succeed in their future endeavors (Masten & Reed, 2002). For this reason, employees' *competence* and *self-efficacy*, which increase the likelihood of positive adjustment, are suggested as factors to consider in assessing organizational resilience in effective internal crisis communication (Sutcliffe & Vogus, 2003).

Taking together the ways of viewing organizational resilience described above, this study focuses on employees' competence, self-efficacy, and communication behaviors for problem-solving, which have been found as critical sources of capacity for organizational resilience in the context of an organizational crisis. Resilience research indicates that organizational members' *self-efficacy* and *competence*, as well as *positive voluntary communication behaviors*, are interrelated and reinforced by each other in crisis situations (Sutcliffe & Vogus, 2003). Employees' positive communication behaviors for their organization tend to serve self-efficacy or competence (Weick, 1995). These characteristics of employee ability (competence) and psychological belief (self-efficacy) motivate individuals to engage in effective communication processes, increasing the likelihood of positive adjustment (Bunderson & Sutcliffe, 2002). Such actions subsequently reinforce a sense of organizational members' competence and efficacy, and organizational resilience reflects an outcome of the reinforcing nature of this cycle (Masten & Reed, 2002). Furthermore, organizational resilience has been suggested as a multidimensional concept [2] (e.g., Bouaziz & Smaoui Hachicha, 2018).

Employee competence
In psychology and management research, the concept of *competence* has been defined as "an individual's belief in his or her capability to perform activities with skill" (Spreitzer, 1995, p.1443). Based on this concept, employees' competence refers to their ability to apply knowledge, understanding, and skills to perform commensurate with the standards required in employment, including solving problems and meeting changing demands (Thompson, 1995). Employee competencies (or competency) have been used interchangeably in the literature, since they are similar

concepts (Cheng, Dainty, & Moore, 2003). Regardless, employee competencies (or competency) are a collection of knowledge, skills, abilities, and other characteristics (KSAOs) – or the individual KSAOs – that are needed for effective performance in the jobs in question (Campion et al., 2011). Therefore, employee competence is closely related to performance or outcomes, and involves the description of tasks, functions, and objectives, while employee competency, or competencies focuses more on "the behaviors underpinning successful performance" in the workplace (Bartram, 2012, p. 4–5). In an organization, employees can demonstrate their competence by applying their competencies, knowledge, and skills in a goal-directed manner (Bartram, 2012).

Resilience studies have indicated that increasing competence (i.e., psychological belief in an individual's ability) as well as improving application of competency or competencies (i.e., behavioral repertoires) lead individuals to be better able to respond effectively to unfamiliar or challenging situations; that is, resilience can be engendered in a problematic situation or a crisis (Sutcliffe & Vogus, 2003; Wruck & Jensen, 1994). Consequently, this study encompasses competence and competencies by defining *employee competence* here as *an individual's belief in his or her capability to perform activities with skill and to apply knowledge, understanding and skills in performing to the standards required in employment, including solving problems and meeting changing demands*.

Employee self-efficacy
One more condition that enables individuals to reflect resilience is self-efficacy because building self-efficacy or restoring feelings of efficacy makes individuals able to adapt to future challenges (Masten & Reed, 2002; Powley, 2009). Bandura (1991) defined self-efficacy as "people's beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (p. 257). The concept of self-efficacy was introduced into the research to deal with coping behaviors in the context of behavior modification (Ajzen, 2002; Bandura, 1977). In this regard, self-efficacy has been assessed in reference to handling a specific situation or performing a specific behavior, rather than generalized feelings of mastery (Ashford, 1988; Bandura, 1977). Therefore, scholars have examined self-efficacy tied to a specific situation or behavior (e.g., Vardaman, Amis, Dyson, Wright, & Van de Graaff Randolph, 2012). Specifically, their studies have focused on change-related self-efficacy, not general self-efficacy, that refers to "one's belief in his or her ability to perform capably during change" (Ashford, 1988; Vardaman et al., 2012, p. 840).

The extant studies have demonstrated how the concept of self-efficacy, especially change-related self-efficacy, can be applied to crisis or a turbulent situation in order to facilitate resilience (Sutcliffe & Vogus, 2003; Weick & Sutcliffe, 2001). Individuals with a high level of self-efficacy are more likely to respond actively to negative feedback or bad news with increased effort and motivation, while those with low levels of self-efficacy tend to lessen their efforts (Bandura & Cervone, 1986). Further, efficacious individuals tend to view challenging situations as learning experiences rather than traps, and as opportunities to demonstrate skills rather than as threats (Ashford, 1988). Thus, self-efficacy can contribute to resilience by fostering or restoring the capacity for adaptability (e.g., motivating the employees to succeed in their future endeavors) and positive functioning (e.g., viewing the situation as a learning experience) (Egeland, Carlson, & Sroufe, 1993; Lundberg, Törnqvist, & Nadjm-Tehrani, 2012; Masten & Reed, 2002). In the context of internal crisis communication, therefore, this study defines *employee self-efficacy* here as *employees' psychological beliefs about their capabilities to*

exercise control over their own level of functioning and over negative events that affect their lives and organization, including crisis or turbulent situations.

Employee communication behaviors (ECB) [3] *for sensemaking and sensegiving*
Employees' *voluntary communication behaviors* – actively seeking and sharing valuable and positive organization-related information – reflect organizational resilience in the context of crisis (Albu & Wehmeier, 2014; Lundberg et al., 2012; Weick, 1995). Weick (1988) maintained that action is a way to learn and build an understanding of unknown environments; that is, "actions determine the situations" in times of crisis (p. 306). Hutter and Kuhlicke (2013) highlighted that resilience can be understood as a process of sensemaking that encompasses "attempts to actively shape the context of talk and action" (p. 304). Moreover, employees' communication activities across organizational boundaries – obtaining and disseminating information (i.e., boundary spanning) – help sensemaking, in that control is given to or received from other organizations (Lundberg et al., 2012).

Sensemaking has been conceptualized in a range of definitions, and there is no clear consensus on the concept (Maitlis & Sonenshein, 2010; Stieglitz, Mirbabaie, & Milde, 2018). Taking an integrative approach to the concept, Maitlis and Christianson (2014) defined *sensemaking* as *a process* engaged in by organizational members who seek to clarify what is going on by extracting and bracketing cues from the environment through cycles of interpretation and action. [4] Other scholars have emphasized sensemaking as *the process of meaning creation* through communication behaviors in a crisis, because sensemaking in the context of a crisis involves making some plausible sense of cues, in addition to the sense that is made through connecting a cue to a frame (Gioia & Chittipeddi, 1991; Maitlis & Sonenshein, 2010; Stieglitz et al., 2018).

Public relations research has indicated that the sensemaking processes can be explained by *information-seeking behavior* (i.e., active information acquisition), which constructs *cognitive building blocks*, leading to proactive information collection in the problematic or crisis situation (Kim, Hung-Baesecke, Yang, & Grunig, 2013; Kruglanski, 1989). As such, the employees' sensemaking process is "the search for shared meaning" through active information-seeking behavior in order to inform themselves as to what is going on in the crisis situation (Colville, Pye, & Carter, 2013, p. 1204). Scholars have maintained that information-seeking behaviors, as *voluntary employee communication behaviors*, should involve searching for and obtaining valuable organization-related information from internal and external constituencies (sensemaking process) for effective internal crisis communication (Kim, 2018; Kim & Rhee, 2011).

In this sense, this study proposes a new concept, *employee communication behavior for sensemaking*, by adopting positive information-seeking behavior to explain employees' resilient behavioral capability (sensemaking process) in a crisis situation. It is defined here as *employees' active and voluntary communicative behaviors that create a shared understanding of information when employees search for and obtain valuable and positive organization-related information from internal and external constituencies*.

Furthermore, extant studies have demonstrated that employees – as individuals conveying voluntary communication behaviors in a crisis – disseminate acquired information internally and externally, to relevant internal personnel and groups (i.e., *information-forwarding behavior*: active transmission)

(Heide & Simonsson, 2014; Kim et al., 2013). In particular, researchers have found that employees most active in transmitting information select information and circulate it to mobilize attention, legitimacy, and resources toward their problem solving in a crisis (Kim, 2018; Kim & Rhee, 2011; Mazzei, Kim, & Dell'Oro, 2012). Employees also do this to shape organizational reputation internally and externally (Men & Stacks, 2013). In this regard, sensemaking processes can likewise be influenced by the communication behaviors of others (Kim, 2018).

Previous studies have indicated that employees' information-forwarding behavior, as a voluntary and positive communication behavior, transmits valuable organization-related information to internal and external constituencies, which explains the process of attempting to influence sensemaking in a crisis (Albu & Wehmeier, 2014; Kim & Rhee, 2011). Such a process has been conceptualized as *sensegiving*, which is referred to in crisis communication as attempts to affect the *meaning construction of others* toward a preferred redefinition of organizational reality (Gioia & Chittipeddi, 1991; Maitlis & Christianson, 2014). Accordingly, this study proposes a new concept of *employee communication behavior for sensegiving* based on active information-forwarding. This new concept is defined here as *employees' active and voluntary communicative behaviors to influence others' sense by forwarding valuable and positive organization-related information to internal and external constituencies*.

Connecting organizational resilience with organization-employee relationships

The OER concept originated from OPR (i.e., organization-public relationships), referring to the relationship between an organization and its publics, which has continued to attract considerable attention in the field of public relations (Kang & Sung, 2017; Men, 2014; Men & Sung, 2019). As with the concept of OPR, OER has been conceptualized in terms of four dimensions of relationship quality (Hon & Grunig, 1999; Kang & Sung, 2017; Men, 2014; Men & Sung, 2019). Hon and Grunig's (1999) four dimensions originated from Huang's (1997) scales. All represent relational quality as key indicators and have been widely used in research and practice: control mutuality, trust, relational satisfaction, and relational commitment.

Control mutuality is "the degree to which parties agree on who has the rightful power to influence one another" (Hon & Grunig, 1999, p. 19). Trust refers to "one party's level of confidence in and willingness to open oneself to the other party" (Hon & Grunig, 1999, p. 19). Satisfaction is the degree of positive feelings one party has about another party (Hon & Grunig, 1999). Commitment is "the extent to which one party believes and feels that the relationship is worth spending energy to maintain and promote" (Hon & Grunig, 1999, p. 20). Therefore, OER is defined as *the degree to which an organization and its employees trust one another, agree on who has the rightful power to influence, experience satisfaction with each other, and commit themselves to the other* (Men, 2014; Men & Sung, 2019).

Resilience scholars have suggested that the internal relationship (i.e., organization-employee relationships: OER) between employees and an organization fosters organizational resilience (Cameron, Bright, & Caza, 2004; Spreitzer, Sufcliffe, Dutton, Sonenshein, & Grant, 2005; Sutcliffe & Vogus, 2003). In particular, the scholars have considered how trust, communication, mutual respect, and high-quality relationships facilitate coordination and learning in crisis situations (Dutton, Worline, Frost, & Lilius, 2006). A series of studies consistently have found that positive relationships can help employees reduce the negative effects of work stressors on work outcomes (Moyle & Parkes, 1999; Schaubroeck & Fink, 1998). For this reason, positive OERs are considered "the key coping resources

that enabled individuals and organizations to develop resilience" in the face of adverse situations (Gittell, Cameron, Lim, & Rivas, 2006, p. 303; see also Carver, Scheier, & Weintraub, 1989).

Through investigating factors of resilience in U.S. airline companies after the tragedy of September 11, Gittell et al. (2006) found that the relationship between employees and their organization could serve as a collective coping mechanism in the face of adversity. Following Gittell et al.'s (2006) study, French and Holden (2012) argued that positive relationships between organization management and employees at work are "a prerequisite to organizational resilience" (p. 214), because strong, positive employee relationships build a reservoir of goodwill that can buffer bad news. Powley (2009) also suggested that the relationship factor can activate resilience "through intersecting and interactions that ensure the persistence of relationships within an organization" (p. 1318). More recently, Kahn, Barton, and Fellows (2013) maintained that positive relationships allow organizations to "be better positioned to remain resilient during crises" (p. 393). Agarwal and Buzzanell's (2015) study indicated that employees' resilience can be sustained through different identification network ties, such as familial, ideological (e.g., humanitarian), and spiritual ones that "can fulfill real needs and encourage workers' identities and connections" (p. 422).

Internal crisis communication research has emphasized the importance of understanding the OER concept, because crisis response is an outcome of intra-organization relationships (Taylor, 2012). Deep-trust relationships with employees can help an organization cope better during a crisis and reduce misalignments of internal crisis communication (Mazzei & Ravazzani, 2011; O'Hair, Friedrich, Wiemann, & Wiemann, 1995). In this sense, researchers have suggested that communication managers need to highly value the relational role throughout the organization (Mazzei & Ravazzani, 2014; Veil, Sellnow, & Heald, 2011); in addition, an integrated framework for the study of internal crisis communication must start with understanding the relationships between an organization and its internal publics (i.e., employees) (Frandsen & Johansen, 2011).

Beyond crisis situations within an organization, moreover, scholars found that high-quality relationships not only can facilitate employees' information sharing, collective sensemaking, and problem solving (Carmeli, Friedman, & Tishler, 2013), but can also better prepare employees to quickly "bounce back" after setbacks (Meneghel, Borgogni, Miraglia, Salanova, & Martínez, 2016a). Hence, the internal relationship (i.e., OER) between employees and an organization can foster organizational resilience. Therefore, this study posits the following hypothesis:

Hypothesis 1: Positive organization-employee relationships will positively affect organizational resilience in a crisis situation.

Employee work performance behaviors as outcome of organizational resilience

In the face of high uncertainty (e.g., crisis situations), employees are expected to proactively engage in work behaviors that benefit their organization. The proactive aspect here is important, as the most effective work behaviors in such a situation cannot be prescribed in advance (Ghitulescu, 2012; Griffin, Neal, & Parker, 2007). The importance of proactive employees is articulated by some organizational studies, which state that organizational success increasingly depends on employees taking personal responsibility for change through personal initiative and proactive behavior, especially in uncertain environments (i.e., crisis situations) (Crant, 2000; Morrisson & Phelps, 1999).

Such proactive employee work behaviors have been traditionally divided into *in-role performance* – defined as "fulfillment of tasks that employees are expected to carry out as part of the formal job requirements" – and *extra-role performance* – referring to "behavior that is beneficial to the organization and goes beyond job requirement" (e.g., prosocial behaviors and organizational citizenship behaviors [OCB]) (Meneghel, Martínez, & Salanova, 2016b, p. 242; see also Goodman & Svyantek, 1999). However, previous constructs for work-role performance have been criticized due to partial overlap and a lack of theoretical framework for differentiating and integrating the constructs to organizational effectiveness (Griffin et al., 2007; Rotundo & Sackett, 2002). Moreover, many discretionary behaviors (in- and extra-role performances) do not focus on the full range of employee performances, but emphasize interpersonal helping and compliance (Ghitulescu, 2012).

To fill the gap, a new model of work-role performance was developed and has been tested to account for the full range of behaviors that contribute to organizational effectiveness, including OCB, personal initiative, and adaptive and proactive behaviors (Ghitulescu, 2012; Griffin et al., 2007; Marques-Quinteiro & Curral, 2012; Strauss, Griffin, & Rafferty, 2009). Particularly in times of uncertainty, such work-role performance is divided into three different sub-dimensions: organizational member proficiency, adaptivity, and proactivity (Ghitulescu, 2012; Griffin et al., 2007; Griffin, Parker, & Mason, 2010). Researchers have integrated these sub-dimensions into a comprehensive model of work-role performance that examined proficiency, adaptivity, and proactivity separately because these behavioral forms are distinguished theoretically and empirically from each other (e.g., Ghitulescu, 2012; Griffin et al., 2007). Strauss et al. (2009) also emphasized the distinctive examination of these behavioral forms in the work-role performance directed at an organization in order to demonstrate the possible practical implications that provide "promising avenues for evaluating and rewarding individual behavior that has long-term benefits for organizations" (p. 287). Since this study explores a full range of employee proactive behaviors as outcomes of organizational resilience in crisis situations (in times of uncertainty), Griffin et al.'s (2007) new model of work-role performance is adopted as the outcome of organizational resilience in this study.

In the model of work-role performance, proficiency refers to the extent to which an individual meets role requirements that can be formalized, planned, and specified in advance (Griffin et al., 2007; Strauss et al., 2009). In the context of an organization, proficiency – also called *organizational member proficiency* – describes behaviors that reflect "the degree to which an individual meets the expectations and requirements of his or her role as a member of an organization" (Griffin et al., 2007, p. 331). Griffin et al. (2007) argued that organizational member proficiency is similar to the concepts *organizational support* (Johnson, 2003), *organizational loyalty* and *civic virtue* (Podsakoff, MacKenzie, Paine, & Bachrach, 2000), and *organization role behavior* (Welbourne, Johnson, & Erez, 1998).

Adaptivity means the extent to which an individual adapts to changes in a work system or in work roles (Griffin et al., 2007). *Organizational member adaptivity* is "the degree to which individuals cope with, respond to, and/or support changes that affect their roles as organization members" (Griffin et al., 2007, p. 332).

Proactivity involves the extent to which an individual engages in self-starting and future-directed behavior, or takes self-directed action to anticipate or initiate change in the work system or work roles

(Grant & Ashford, 2008; Griffin et al., 2010). *Organization member proactivity* accounts for individual behavior that changes the way an organization works; it is focused not only on work groups or departments, but also on the organization as a whole, going beyond OCB (Podsakoff et al., 2000; Strauss et al., 2009).

Such work-role performance, understood as positive employee behavior, has drawn much attention from organizational science researchers, who demonstrate positive organizational resilience outcomes in adverse or crisis situations (Meneghel et al., 2016b; Paul, Bamel, & Garg, 2016). Such organizational studies have focused on internal changes resulting from a crisis, emphasizing how organizations change and adapt to shifting societal environments, perspectives, and concepts of legitimacy after a crisis (Paquette, 2015). In this sense, Nikandrou and Tsachouridi (2015) specified work-role performance in the context of a crisis situation as "the extent to which individuals are willing to abandon personal interests to support their organization through undertaking extra responsibility and risks, and making sacrifices if necessary" (e.g., accepting a temporary pay-cut) (p. 1826).

In the same vein, organizational members with high levels of resilience are likely to perceive setbacks and adverse situations as challenges or opportunities for growth (Carmeli et al., 2013). In fact, such resilient organizational members are less likely to experience the potentially damaging effects of threatening situations, and are thus more likely to contribute to high performance through their cooperation and coordination (Salanova, Llorens, & Schaufeli, 2011; West, Patera, & Carsten, 2009). Furthermore, Strauss, Niven, McClelland, and Cheung (2015) provided empirical evidence that organizational resilience can enhance work-role performance, especially adaptivity of the organizational workforce to cope effectively with uncertainty, which can lead to better employee job performance. Recently, Meneghel et al.'s (2016b) survey study based on 40 companies in Spain found that resilience is positively related to employee work-role performance, contributing to better operationalization of team performance in the organization. In addition, recent resilience studies yielded clear evidence of positive association between organizational resilience and employee proactive behaviors in the workplace. Paul et al. (2016) found the effects of resilience on extra-role performance (i.e., OCB) in manufacturing industries in India. Caniëls and Batten (2018) also demonstrated the positive effects of organizational resilience on proactive work behaviors such as taking charge, voice, individual innovation, and problem prevention. Following the findings from previous studies, therefore, this study posits the following hypotheses:

Hypothesis 2: Organizational resilience will positively influence employee intentions toward organization member proficiency after a crisis situation.

Hypothesis 3: Organizational resilience will positively influence employee intentions toward organization member adaptivity after a crisis situation.

*Hypothesis 4: Organizational resilience will positively influence employee intentions toward organization member proactivity after a crisis situation.*

Based on the literature, this study proposes a theoretical model (see Figure 1).

Figure 1. A proposed model of organization resilience and its antecedent and outcomes. OER: organization-employee relationships. Org. Resilience: Organizational resilience.
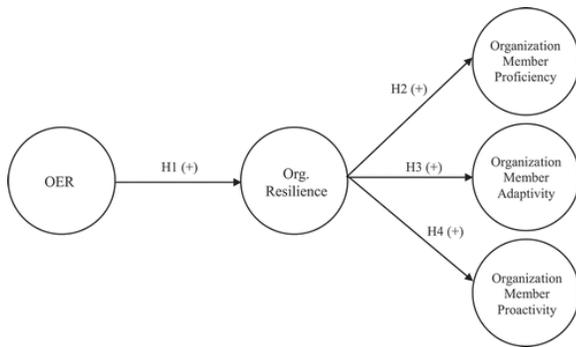
Method

Participants

For this study, an online survey was conducted. The total number of participants was 816, after deleting outliers and surveys with missing data (*N* = 14). The average age of the participants was 36.87 years old (*SD* = 10.21), ranging from 19 to 67 years old. Forty-nine point five percent of the sample (*n* = 404) was male, and 50.5% (*n* = 412) was female. The dominant participants were White (68.6%, *n* = 560), followed by 10.8% (*n* = 88) Asian or Asian American, 10.0% (*n* = 82) African American, 7.2% (*n* = 59) Hispanic/Latino, and 3.3% (*n* = 27) of other races. 11.5% of respondents (*n* = 93) had a high school degree or less, 29.0% (*n* = 237) had a two-year associate degree or less, 33.6% (*n* = 274) had a bachelor's degree or less than a four-year university level, and 26.0% (*n* = 212) had a post-graduate degree or less.

With regard to the job profile information, the average tenure length of respondents was 7.62 years (*SD* = 7.04). Forty-four percent of the participants (*n* = 359) were working at managerial positions (e.g., supervisor, manager, and director), and 56% were non-managers (e.g., associate, administrative worker, and technician). The sizes of respondents' organizations varied in terms of the number of employees – 12.3% (*n* = 100) had between 300 and 499 employees, 23.8% (*n* = 194) had between 500 and 999, 25.1% (*n* = 205) had between 1,000 and 4,999, 14.2% (*n* = 116) had between 5,000 and 9,999, and 24.6% (*n* = 201) had 10,000 or more.

Procedure

To recruit individual employees who worked for a variety of medium and large corporations, an online survey firm, Qualtrics.com, was used. Qualtrics.com is a respected resource for research related to employment because it has a wide range of potential respondents (1.8 million panel members), and it allows researchers to reach specific demographics (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2013). The Qualtrics.com samples used in this study were a) all employees who worked full-time in medium and large corporations (defined as at least 300 employees); b) selected to represent the 2017 U.S. Census with respect to gender and state population levels; c) chosen to represent the most prevalent industries in accordance with the 2017 Bureau of Labor Statistics of the United States Department of Labor.

The Qualtrics data collection procedure helped this study ensure that only employees qualified for this study took the online survey. Before the online survey was launched, this study was approved by the

Institutional Review Board (IRB) (IRB# HR-3313) at a large university in the Midwestern United States. The firm solicited the participants with an online survey link, which contained an informed consent form and a questionnaire built into the web-based tool for building surveys (i.e., Qualtrics.com). For this study, a pretest (N = 100) and a main test (N = 830) using Qualtrics.com's participant panels were conducted in April 2017. The first round pretest (N = 100) was implemented to check and revise measurements and resolve other issues. [5] The main test was conducted among 830 full-time employees working in middle-sized and large companies. Participants in the main test were different than employees in the pretest. All subjects participated in both tests voluntarily and received a monetary reward (i.e., gift cards in the amount of 4.80 USD) for a participation incentive.

After a participant agreed via an informed consent form to take the survey, a question followed to determine in which industry sector he or she currently worked. The categories of industry sectors were based on information from the Bureau of Labor Statistics, in the United States Department of Labor. The Bureau of Labor Statistics describes employment by 16 major industry sectors, both goods-producing (e.g., mining and construction) and service-providing (e.g., utilities, wholesale trade, and retail trade) (http://www.bls.gov).

Respondents then answered questions measuring organization-employee relationships (OER). To measure organizational resilience in a crisis situation, brief crisis scenarios were presented, with several sentences tailored to their industries. For each of these major industry sectors, a hypothetical crisis scenario was described. These were written by a freelance journalist hired for the purpose. The hypothetical crises were modeled on actual crises, so that they would seem plausible to respondents (i.e., ecological validity) (Lyon & Cameron, 2004). Furthermore, in each case the respondent's organization could have been perceived as the cause of the crisis (internal locus) to gauge the participant's response to a crisis [6] (Coombs, 2019; Coombs & Holladay, 1996). The scenario each participant read aligned with the industry he or she indicated at the beginning of the survey.

The 16 scenarios tailored to participants' industry sectors were presented to help participants better understand the questions that asked them to provide concrete information about the organizational resilience variable. A good script is an important strategy in survey research, because the script can help respondents understand the questions exactly as worded (Fowler, 2009). All scenarios are provided in Appendix.

The participants then answered the same questions, measuring four dimensions of organizational resilience: self-efficacy, competence, information seeking behaviors, and forwarding behaviors. In addition, other questions for employee work-role performance were presented to measure participants' intentions toward organization member proficiency, adaptivity, and proactivity after the crisis situation. Demographic information such as age, education, income, and race was asked at the end of the survey.

Measures

The question items were mostly adopted from previous research. All items used a 7-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (7). The final items used for measures are provided in Table 1.

Table 1. Composite reliability and construct validity of OER, organizational resilience, and work role performance (*N* = 816).

Latent variables	Measurement items	β	R^2
Organization-employee Relationship (OER)	*Trust*		
	TR1: My company treats people like me fairly and justly.	.85	.73
	TR2: Whenever my company makes an important decision, I know it will be concerned about people like me.	.90	.78
	TR3: My company can be relied on to keep its promises.	.90	.80
	TR4: I believe that my company takes the opinions of people like me into account when making decisions.	.89	.79
	TR5: I feel very confident about my company's skills.	.82	.68
	TR6: My company has the ability to accomplish what it says it will do.	.78	.59
	Control Mutuality		
	CM1: My company and people like me are attentive to what each other say.	.85	.72
	CM2: My company believes the opinions of people like me are legitimate.	.93	.86
	CM3: My company really listens to what people like me have to say.	.93	.85
	CM4: The management of my company gives people like me enough say in the decision-making process.	.87	.82
	CM5: I believe people like me have influence on the decision-makers of my company.	.85	.78
	Commitment		
	CO1: I feel that my company is trying to maintain a long-term commitment to people like me.	.91	.79
	CO2: I can see that my company wants to maintain a relationship with people like me.	.92	.78
	CO3: There is a long-lasting bond between my company and people like me.	.93	.73
	CO4: Compared to other companies, I value my relationship with my company more.	.87	.00
	CO5: I feel a sense of loyalty to my company	.82	.68
	Satisfaction		
	ST1: I am happy with my company.	.89	.81
	ST2: Both my company and people like me benefit from the relationship.	.89	.80
	ST3: Most people like me are happy in their interactions with my company.	.91	.82
	ST4: Generally speaking, I am pleased with the relationship my company has established with people like me.	.93	.87
	ST5: Most people enjoy dealing with my company.	.85	.75
	- Composite Reliability (CR):.98		
	- Average Variance Extracted (AVE):.94		
	- Average Shared Variance (ASV):.33		
Organizational Resilience	*Competence*		
	COM1: I am confident about my ability to do my job regarding the crisis.	.70	.49

	COM2: I am self-assured about my capabilities to perform my work activities regarding the crisis.	.71	.51
	COM3: I have mastered the skills necessary for my job regarding the crisis.	.72	.52
	COM4: I would analyze complex problems in depth.	.79	.59
	COM5: I would deal with problems or faults (which could be through my own work, someone else's work or equipment).	.77	.60
	COM6: I would spot problems or defaults (which could be through my own work, someone else's work or equipment).	.81	.63
	COM7: I would think of solutions to problems (which could be through my own work, someone else's work or equipment).	.79	.64
	COM8: I would deal with people and to interact with them.	.80	.66
	COM9: I would persuade or influence others.	.81	.48
	COM10: I would counsel, advise or care for others.	.69	.67
	COM11: I would instruct, train or teach people, individually or in groups.	.82	.66
	COM12: I would join a group effort.	.82	.55
	COM13: I would help other members of my team.	.74	.68
	COM14: I would listen carefully to colleagues.	.82	.65
	Self-Efficacy		
	EF1: Whatever this issue or crisis takes me, I am sure I would be able to handle it.	.82	.67
	EF2: I think I will be able to do all that is demanded of me following this crisis.	.86	.75
	EF3: I believe I would perform well in my job situation following this crisis.	.84	.71
	EF4: Though I may need some training, I would have little doubt I can perform well following this crisis.	.69	.47
	EF5: I would be confident that I can respond in the best way to protect myself and/or my family during a crisis.	.84	.71
	EF6: I know I would be able to find the information I need during a crisis situation.	.83	.69
	EF7: I would have adequate resources to respond to crisis situation in the recommended way.	.83	.68
	EF8: During a crisis situation, I know I would be able to take the steps necessary to protect myself.	.81	.66
	EF9: I would have the means to respond to any crisis situation in the best way possible.	.82	.66
	EF10: I would follow response protocols issued by spokespeople directly involved in the crisis.	.57	.76
Organizational Resilience			
	EF11: I would evaluate information from several different sources during a crisis when deciding how to react.	.70	.49
	EF12: I would follow response protocols issued by my organization during a crisis situation.	.74	.55
	EF13: During a crisis, I would collect as much information as I can before taking action.	.69	.48
	Communication behavior for sensemaking		

	IS1: I would meet and check with suppliers and government officials to collect new information.	.77	.59
	IS2: I would voluntarily meet and check with those people who have grievances with organization.	.84	.70
	IS3: I would voluntarily check people's feedback on this issue or crisis.	.82	.67
	IS4: I would search for new information and subscribe to Listserv, newsletters, publications for organization.	.80	.64
	IS5: I would even after working hours contact strategic publics and stakeholders for their complaints and new information and share the information with colleagues.	.85	.72
	IS6: I would make extra effort to cultivate and maintain relationships with external stakeholders and strategic publics.	.84	.71
	IS7: I would meet people who work for similar businesses and check rumors and news about organization or business.	.83	.70
	IS8: I would start conversation or give information to relevant colleagues about new trends or unusual signals related to work.	.79	.62
	Communication behavior for sensegiving		
	IF3: I would say good things to friends and neighbors about positive aspects of the management and company.	.80	.63
	IF4: I would recommend my organization and its service/products to people.	.81	.66
	IF5: I would attempt to persuade people who have negative opinions about my organization.	.82	.67
	IF6: I would refute prejudiced or stereotyped opinions about my organization.	.82	.67
	IF7: I would argue with those who criticized my organization and business.	.67	.45
	IF8: I would become upset and tend to speak up when encountering ignorant or biased opinions about my organization.	.60	.36
	- Composite Reliability (CR):.90		
	- Average Variance Extracted (AVE):.70		
	- Average Shared Variance (ASV):.58		
Organization Member Proficiency	PF1: I would present a positive image of the organization to other people (e.g., clients) after the crisis.	.84	.71
	PF2: I would defend the organization if others criticize it after the crisis.	.83	.68
	PF3: I would talk about the organization in positive ways after the crisis.	.90	.81
	- Composite Reliability (CR):.89		
	- Average Variance Extracted (AVE):.73		
	- Average Shared Variance (ASV):.63		
Organization Member Adaptivity	AD1: I would respond flexibly to overall changes in the organization (e.g., changes in management) after the crisis.	.87	.76
	AD2: I would cope with changes in the way the organization operates after the crisis.	.88	.78
	AD3: I would learn skills or acquired information that help me adjust to overall changes in the organization after the crisis.	.87	.76
	- Composite Reliability (CR):.91		
	- Average Variance Extracted (AVE):.77		
	- Average Shared Variance (ASV):.60		

Organization Member Proactivity	PA1: I would make suggestions to improve the overall effectiveness of the organization (e.g., by suggesting changes to administrative procedures) after the crisis.	.88	.77
	PA2: I would involve myself in changes that are helping improve the overall effectiveness of the organization after the crisis.	.89	.79
	PA3: I would come up with ways of increasing efficiency within the organization after the crisis.	.88	.77
	- Composite Reliability (CR):.91		
	- Average Variance Extracted (AVE):.78		
	- Average Shared Variance (ASV):.59		

β: Standardized Loading Estimate, R^2: Explained Variance. Construct validity (standardized loading estimate >.50, convergent validity: AVE >.50, discriminant validity: AVE > ASV), and composite reliability (CR >.70) were successfully established in all measurement items (Hair et al., 2010) Confirmatory factor analysis (CFA) model goodness-of-fit indices met all of the joint criteria by Hu and Bentler (1999) and Hair et al. (2010): χ2 (2358, N = 816) = 6991.18, p <.001, χ2/df = 2.97, Comparative Fit Index (CFI) =.93, Tucker Lewis Index (TLI) =.92, Root Mean Square Error of Approximation (RMSEA) =.05, 90% CI [.04,.05], PCLOSE:.87, and Standardized Root Mean Residual (SRMR) =.07

For the organization-employee relationships (OER), this study used Hon and Grunig's (1999) and Grunig and Huang's (2000) measures, which originated from Huang's (1997) four-dimensions measure. The measure this study used includes trust (6 items, Cronbach's alpha (αα= .94) (e.g., my company treats people like me fairly and justly), control mutuality (5 items, α α = .95) (e.g., my company really listens to what people like me have to say), commitment (5 items, α α = .95) (e.g., I feel that this company is trying to maintain a long-term commitment to me), and satisfaction (5 items,α α = .95) (e.g., both the organization and I benefit from the relationship).

Due to a lack of measurement for organizational resilience, this study measured four different dimensions using employee competence, self-efficacy, and communication behaviors for information seeking and forwarding. To ensure dimensionalities, exploratory factor analysis for organizational resilience revealed four factors with 41 items retained (oblique rotation method with PROMAX [7]): competence with 14, self-efficacy with 13, information seeking with eight, and information forwarding with six. Factor loading in two items (i.e., EF 14, IF 1) did not meet the minimal level (.40), and two items also had cross-loadings (i.e., EF15, IF2). Hence, those four items were deleted from further analysis. [8] Competence was measured by 14 items (α α = .96) from Spreitzer's (1995) competency and Leoni's (2012) key competencies (e.g., I would be confident about my ability to do my job regarding the crisis). The 13 items measuring self-efficacy were based on Ashford's (1988) change-specific efficacy and Avery and Park's (2016) crisis efficacy (α α = .96) (e.g., wherever this crisis takes me, I am sure I can handle it). Kim et al.'s (2010) communicative action in problem solving (CAPS) and Kim and Rhee's (2012) employee communication behavior (ECB) were adopted to measure employee communication behaviors for information seeking with eight items (α α = .94) (e.g., I would voluntary check people's feedback on the crisis), and information forwarding with six items (α α = .90) (e.g., I would write positive comments or advocate for my organization on the Internet).

Employee intention for work-role performance was measured by three different dimensions – organizational member proficiency, adaptivity, and proactivity – with Griffin et al.'s (2007) measures: three items for organizational member proficiency (α α = .89) (e.g., I would defend the organization if

others criticize it after the crisis), three items for organizational adaptivity (α α = .91) (e.g., I would cope with changes in the way the organization operates after the crisis), and three items for organizational proactivity (α α = .91) (e.g., I would involve myself in changes that are helping improve the overall effectiveness of the organization).

Control variables

This study included participants' demographic information (age, gender, income, education, and race or ethnic groups), job profile factors (length of tenure, organization sizes with employee numbers, and job position), different industry sectors, and crisis history (employee's direct experience with a similar crisis) as control variables in the analysis. The variables, especially demographic information and job profile factors, are often considered to be substantive constructs that might influence endogenous variables in this study. Previous research has indicated that demographic information and job profile factors can impact organizational resilience (e.g., Gover & Duxbury, 2018; Rodríguez-Sánchez et al., 2019) and employee work role performance (e.g., Strauss et al., 2009). Scholars have also suggested that organizational resilience is positively or negatively influenced by employees' crisis experiences because they can encode new knowledge into organizational routine based on their learning from or misinterpretation of prior experience with similar crises (e.g., Bonanno, Westphal, & Mancini, 2011; Williams et al., 2017).

Results

Preliminary analysis: multiple ordinary least squares regressions for control variables

A series of multiple ordinary least squares (OLS) regression analyses using STATA 13 were conducted to assess how the control variables, including the demographic (age, gender, race, income, and education), job profile (work position, company size, and the length of tenure), and different industry factors, [9] affected two endogenous variables (organizational resilience and employee work-role performance). The regression models revealed that only the length of tenure (organizational resilience: b = 0.02, t = 3.77, proficiency: b = 0.01, t = 2.48, adaptivity: b = 0.01, t = 3.05), gender (adaptivity: b = 0.15, t = 2.27, proactivity: b = 0.15, t = 2.35), and crisis history (organizational resilience: b = 0.18, t = 2.42) yielded statistically significant effects, but impacts were minimal, for organizational resilience and employee work-role performance. Hence, these three variables were controlled in the further analysis using structural equation modeling for hypothesis testing.

Hypothesis testing: two-step structural equation modeling

For further analysis, structural equation modeling (SEM) using AMOS 22 was run as the primary statistical analysis for hypothesis testing. [10] For hypothesis testing, this study conducted a two-step structural equation modeling, including measurement and structural phases (Kline, 2016; Mueller & Hancock, 2008). The two-step (phase) process is recommended over an all-in-one approach, since it allows a researcher to realize misspecification and address it before the structure is assessed among latent constructs (Hair, Black, Babin, & Anderson, 2010; Mueller & Hancock, 2008).

Confirmatory factor analysis (CFA)

In the measurement phase, confirmatory factor analysis (CFA) based on EFA results was conducted to analyze and select the best measurement items for each construct. Using AMOS 22, this study ran CFA. In the CFA model, organizational resilience was included as a second-order factor, because the second-

order model that contains two layers of latent construct (i.e., organizational resilience) (χ^2 (694, N = 816) = 2572.65, p = .00, χ^2/df = 3.71, CFI = .94, TLI = .93, RMSEA = .06, SRMR = .06) was better than a first-order model (i.e., correlational relationships among the constructs) (χ^2 (772, N = 816) = 5505.19, p = .00, χ^2/df = 7.13, CFI = .85, TLI = .84, RMSEA = .09, SRMR = .06) (Hair et al., 2010). OER was also included as a second-order factor in the CFA model, due to theoretical specification (Kim & Rhee, 2012). All dimensions of work role performance were included the first-order factors as developed and tested in the existing research (Griffin et al., 2007; Strauss et al., 2009). In other words, the CFA model included two second-order factors (OER and organizational resilience) and three first-order factors (proficiency, adaptivity, and proactivity).

In assessing measurement model validity, the CFA model achieved the acceptable model fit, χ^2 (2358, N = 816) = 6991.18, p < .001, χ^2/df = 2.97, CFI = .93, TLI = .92, RMSEA = .05, 90% CI [0.04, 0.05], PCLOSE: .87, SRMR = .07 in terms of joint criteria from Hu and Bentler (1999) (i.e., CFI ≥ .95 and SRMR ≤ .80 or RMSEA ≤ .05 and SRMR ≤ .08) and Hair et al. (2010) (i.e., χ^2/df ≤ 3.00, TLI ≥ .90, SRMR ≤ .08 with CFI ≥ .92, and RMSEA ≤ .07 with CFI ≥ .92). In addition, construct validity and composite reliability of all measurement items were checked in terms of Hair et al.'s (2010) golden rule for construct validity (standardized loading estimate >.50, convergent validity: average variance extracted (AVE) >.50, discriminant validity: AVE > average shared squared variance (ASV)), and for composite reliability (CR >.70)). For construct validity, this study assessed standardized loading estimate, convergent validity, and discriminant validity. All standardized loading estimates for latent variables were greater than .50 with statistical significance; AVE for each variable was greater than .50 (OER: .94, organizational resilience:.70, proficiency: .73, adaptability: .77, proactivity: .78), thus achieving convergent validity; and AVE was greater than ASV for each variable (OER: .33, organizational resilience: .58, proficiency: .63, adaptability: .60, proactivity: .59), thus achieving discriminant validity. Composite reliability was successfully established (CR > .70) in all measurement items, as well (OER: .98, organizational resilience: .90, proficiency: .89, adaptability: .91, proactivity: .91) (Hair et al., 2010) (see Table 1).

Structural equation modeling (SEM)
To test hypotheses, structural equation modeling (SEM) was run to test the proposed structural model that includes OER, organizational resilience, and employee work-role performance. Since the model [11] includes the mediating role of organizational resilience between OER and the three dimensions of employee work-role performance, a bias-corrected bootstrapping procedure (N = 5,000) with 95% confidence intervals was conducted to test the hypotheses (Byrne, 2016). Testing mediation through SEM is strongly recommended because 1) a *true* direct effect can be distinguished from one that is an artifact of errors in variables and 2) the discriminant validity of a mediator can be demonstrated by having multi-item scales (Hayes, 2009; Iacobucci, 2008; Zhao, Lynch, & Chen, 2010).

Prior to hypothesis testing, the paths in the second order factors – OER and organizational resilience – were assessed. This study confirmed that all paths were positively and statistically significant in representing the latent factors (OER and organizational resilience). The four dimensions of trust (β = .99, p < .001, 95% CI [0.98, 0.99]), control mutuality (β = .97, p < .001, 95% CI [0.96, 0.98]), commitment (β = .96, p < .01, 95% CI [0.95, 0.98]), and satisfaction (β = .96, p < .001, 95% CI [0.94, 0.97]) successfully represented OER. Organizational resilience was represented by the four factors of

competence (β = .84, *p* < .001, 95% CI [0.77, 0.90]), self-efficacy (β = .83, *p* < .001, 95% CI [0.77, 0.88]), employee communication behavior for sensemaking (β = .70, *p* < .001, 95% CI [0.63, 0.75]), and employee communication behavior for sensegiving (β = .84, *p* < .001, 95% CI [0.79, 0.89]).

Regarding the structural model specifying hypotheses (H1-H4), OER, as an antecedent, positively affected organizational resilience (H1), β = .64, *p* < .001, 95% CI [0.58, 0.70]. Paths between the three dimensions of employee work-role performance and organizational resilience were positively strong, with statistical significance as well. Specifically, organizational resilience positively influenced proficiency (H2: β = 0.92, *p* < .01, 95% CI [0.89, 0.95]), adaptivity (H3: β = 0.88, *p* < .01, 95% CI [0.84, 0.92]), and proactivity (H4: β = 0.89, *p* < .001, 95% CI [0.86, 0.92]).

Control variables had minimal impacts on endogenous variables. The length of tenure was statistically significant only for organizational resilience (β = .15, *p* < .001, 95% CI [0.10, 0.20]) and adaptivity (β = .04, *p* < .05, 95% CI [0.00, 0.08], not for proficiency performance (β = .03, *p* = .15, 95% CI [-0.10, 0.07]). The gender factor influenced adaptivity with statistical significance (β = .04, *p* < .05, 95% CI [0.00, 0.08]), not for proactivity (β = .04, *p* = .06, 95% CI [0.00, 0.09]). The prior crisis history factor was positively and statistically significant only for organizational resilience (β = .07, *p* < .05, 95% CI [0.02, 0.13]).

The SEM model achieved an acceptable model fit, χ^2 = 7617.93, *df* = 2581, χ^2/df = 2.95, *p* < .001, CFI = .92, TLI = .92, RMSEA = .05, 90% CI [.04,.05], PCLOSE: .92, and SRMR = .07, in terms of joint criteria from Hu and Bentler (1999) (i.e., CFI ≥ .95 and SRMR ≤ .80 or RMSEA ≤ .05 and SRMR ≤ .08) and Hair et al. (2010) (i.e., χ^2/df ≤ 3.00, TLI ≥ .90, SRMR ≤ .08 with CFI ≥ .92, and RMSEA ≤ .07 with CFI ≥ .92). Therefore, all hypotheses were supported (see Table 2 and Figure 2).

Table 2. Hypothesis testing in the proposed SEM model using bootstrapping (*N* = 5,000).

Hs	Parameters			β	S.E.	Critical Ratio (z)	*p*	95% CI
H1	OER	→	Org. Resilience	.64	.02	16.61	***	[0.58, 0.70]
H2	Org. Resilience	→	Proficiency	.92	.05	21.82	**	[0.89, 0.95]
H3	Org. Resilience	→	Adaptivity	.88	.06	22.04	**	[0.84, 0.92]
H4	Org. Resilience	→	Proactivity	.89	.06	22.17	**	[0.86, 0.92]
-	Trust^	→	OER	.99	-	-	***	[0.98, 1.00]
-	Control Mutuality	→	OER	.97	.03	29.98	***	[0.96, 0.98]
-	Commitment	→	OER	.96	.03	33.49	**	[0.95, 0.98]
-	Satisfaction	→	OER	.96	.03	32.16	***	[0.94, 0.97]
-	Competence^	→	Org. Resilience	.84	-	-	***	[0.77, 0.90]
-	Self-efficacy	→	Org. Resilience	.83	.05	18.37	***	[0.77, 0.88]
-	Communication behavior for sensemaking	→	Org. Resilience	.70	.06	16.80	***	[0.63, 0.75]

				β	S.E.			CI
-	Communication behavior for sensegiving	→	Org.	.84	.06	19.53	***	[0.79, 0.89]
			Resilience					
CV	Length of tenure	→	Org.	.15	.00	5.17	***	[0.10, 0.20]
			Resilience					
	Crisis history	→	Org.	.07	.06	2.51	*	[0.02, 0.13]
			Resilience					
	Length of tenure	→	Adaptivity	.04	.00	1.91	*	[0.00, 0.08]
	Gender	→	Adaptivity	.04	.05	2.07	*	[0.00, 0.08]

β: Standardized Loading Estimate, S.E.: bootstrap standard errors, CI: confidence intervals, OER: the quality of organization-employee relationships, Org. Resilience: Organizational Resilience, CV: control variables. ^ Paths from trust to OER and from competence to organizational resilience were constrained into 1 because OER and organizational resilience are constructed by second-order factors. ***p <.001, **p <.01, *p <.05.

Figure 2. A proposed model of organization resilience and its antecedent and outcomes.
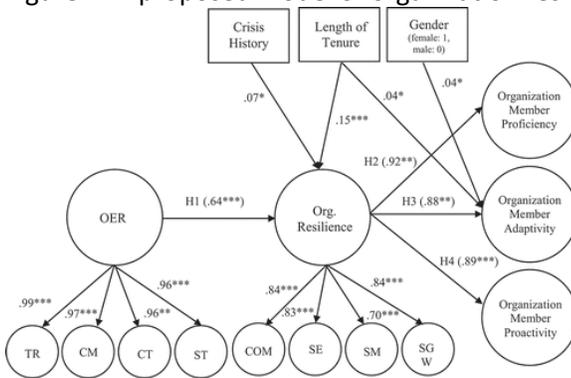
Discussion

In terms of a new perspective on crisis communication, this study aimed to explore organizational resilience and its positive impact on employee work-role performance, viewed as employees' proactive behaviors for the benefit of their organization, after a crisis situation. Structural equation modeling (SEM) revealed that organization-employee relationships (OER) positively affected organizational resilience, and organizational resilience, in turn, resulted in positive impacts on employee intentions toward organization member proficiency, adaptability, and proactivity after crisis situations. This was demonstrated regardless of participants' industry areas, organization size, job position, and demographic factors.

Organizational resilience and organization-employee relationships as its antecedent

This study found that OER is a positive and strong antecedent for organizational resilience. In line with previous studies (e.g., Powley, 2009), the results corroborate how organization's members draw on relational sources to be resilient in a crisis. Specifically, the findings indicate that organizations should manage and maintain OER as "unique organizational resources" for organizational resilience in crisis situations (Ni, 2006, p. 257). In the context of crisis situations, the unique organizational resources reflecting employees' trust, commitment, control mutuality, and satisfaction could enhance employees' psychological ability and belief (that is, competence and self-efficacy) to manage the crisis, as well as increase voluntary positive communication behaviors such as searching for and forwarding

positive information about their organization (sensemaking and sensegiving processes). As a fairly robust mechanism, the positive association between OER and organizational resilience demonstrates that OERs are valuable in "helping their organizations take advantage of opportunities and neutralize threats in the environment" (Ni, 2006, p. 266).

More importantly, such findings substantiate previous research (e.g., French & Holden, 2012) that shows OER's positive effect on organizational resilience by providing an explanation of how OER functions as a reservoir of goodwill that can buffer an organization's negative crisis outcomes. The results suggest that OER should be built to help employees enhance: their ability to apply knowledge, understanding, and skills (competency) to crisis situations; their psychological belief about their capabilities to control the situation (self-efficacy); and their voluntary communication behaviors of seeking out and disseminating valuable and positive organization-related information to others. These developments lead to a buffer against negative consequences for the organization during and after a crisis. In this regard, this study also extends the positive effect of OER to organizational resilience in internal crisis communication research, as it offers results beyond the existing studies (e.g., Mazzei & Ravazzani, 2011) regarding the positive impacts of OER on employee communication behaviors.

Employee work role performance as organizational resilience outcomes

In applying a new model of employee work-role performance to crisis communication, this study has revealed that, after crisis situations, organizational resilience can help employees contribute to their organization through their proactive behaviors – especially work performance – organization member proficiency, adaptability, and proactivity. More specifically, this study revealed that employees with enhanced competence, self-efficacy, and voluntary positive communication behaviors are more likely to support the organization through their proficiency, to cope with changes (organization member adaptability), and to engage in future-directed behavior or take self-directed action to initiate changes (organization member proactivity) after a crisis situation.

During or after a crisis situation, an organization must adapt in the face of internal changes. A variety of perspectives and models suggest that a crisis may also be understood as a force of organizational change, since it may serve as an attention-getting event, forcing management to focus on a problem that may previously have been neglected (Seeger, Ulmer, Novak, & Sellnow, 2005). In this regard, this study provided empirical evidence showing how an organization can benefit from organizational resilience to not only cope with the changes (e.g., changing roles) caused by a crisis, but also to generate positive employee behaviors – including proactive extra-role behaviors beyond their job descriptions – after the crisis. This will, in turn, increase the organization's effectiveness. The results confirmed previous research concerning the positive effects of resilience on employee positive behaviors in the workplace (e.g., Paul et al., 2016). They also further account for how such resilience can help the organization to use setbacks as opportunities for growth (i.e., organizational renewal and survival).

With regard to employee's prior crisis history as a control variable, this study showed those who had a similar crisis experience would be likely to be resilient in the crisis situation. The result supports the findings of previous research demonstrating the positive impact of prior crisis experience on organizational resilience because of crisis learning (e.g., Bonanno et al., 2011). However, more research should be conducted to validate this finding in terms of more specific crisis situations or different time

dimensions. Scholars have argued that learning from crisis situations to enhance organizational resilience could weaken over time. Specifically, organizations may gradually place more emphasis on other organizational goals, such as efficiency or innovation, rather than crisis management, thereby leading to diminished crisis learning as time goes by after a crisis (Williams et al., 2017).

Regarding other control variables, the length of tenure was statistically significant for organizational resilience and employee work-role performance, especially adaptivity, although effective sizes were low. Previous research indicated that employees with longer tenure might not only develop higher levels of a tacit knowledge and a broader repertoire of work behaviors (Ghitulescu, 2012), but also have more responsibilities and seniority that require higher levels of work-role performance (Strauss et al., 2009). The adaptivity was also influenced by gender in this study, as the result showed that one unit change in the female factor resulted in a 4% increase in adaptivity, controlling for other effects. Thus, the results demonstrate how previous crisis experience and some demographic and job-profile factors function, and that they should be controlled as substantive constructs for organizational resilience and employee work-role performance.

Implications

Application of the multidimensional concept for organizational resilience to internal crisis communication theory and practice

Presenting a new theoretical approach to crisis communication, this study focused on internal crisis communication through organizational resilience. In doing so, this study paved the way for theoretical development in crisis communications by providing a new measure for organizational resilience. In this study, the analyses of the dimensionality of organizational resilience – including the initial item analysis using EFA and measurement model through CFA – operationalized and demonstrated how four dimensions logically and systematically represent organizational resilience (a latent construct). In the SEM analysis, a series of structural relationships were also fully specified between the latent construct and measured variables in a theoretical model. In the theoretical model, employees' competence, self-efficacy, and communication behaviors for sensemaking and sensegiving (the measured variables) were strongly and positively associated with organizational resilience. Thus, organizational resilience encompassing four dimensions was statistically and empirically tested in this study and was found to be a reliable and valid measure of the concept of organizational resilience that could be applied to future research.

Furthermore, the four-dimensional measure of organizational resilience substantiates conceptual processes for organizational resilience characterized by qualitative studies in the context of internal crisis communication. Literature has indicated that organizational resilience is an outcome of the self-reinforcing nature of the cycle pertaining to competence, self-efficacy, and adaptive organizational members' behaviors for sensemaking and sensegiving (e.g., Sutcliffe & Vogus, 2003). However, the processes for developing organizational resilience have been remained in ambiguous concepts or have been built on a weak empirical and theoretical base (Boin & Van Eeten, 2013). Empirical evidence of construct validity regarding the four-dimensional measure for organizational resilience not only corroborates the conceptual processes quantitatively but also prescribes the processes systematically

and practically. The result can be added into empirical and theoretical efforts to explain the processes for building organizational resilience in the context of internal crisis communication.

More importantly, in practice the multidimensional concept for organizational resilience can be useful for organizations in assessing and building the adaptive capacity to bounce back after crises. In other words, the four-dimensional measure of organizational resilience can help organizations evaluate their resilience as a proactive assessment, not just a retrospective one. Organizational resilience has been evaluated by retrospective assessment through case studies examining organizational resilience in times of crisis (e.g., Agarwal & Buzzanell, 2015; Hutter & Kuhlicke, 2013). Such existing studies give rise to the challenge of how organizations can build the capacity of organizational resilience and proactively assess the effectiveness of their internal crisis communication (Denhardt & Denhardt, 2010). In this regard, this study suggests that crisis managers can prepare for organizational crises by developing and implementing an internal communication program that focuses on enhancing employees' abilities, psychological beliefs, and communication behaviors. Such a strategy recognizes that these characteristics in employees function as critical sources of organizational resilience.

Integrating organizational resilience into relationship management and work-role performance for effective internal crisis communication

The positive association between OER and organizational resilience provides a fundamental rationale for understanding and communicating with employees as internal publics. By building favorable relationships with employees, an organization can expect its resilience to endure during a crisis. In turn, it can also expect to see an increase in proactive employee work-role behaviors, such as proficiency, adaptivity, and proactivity. These behaviors will support the organization and contribute to its effectiveness after the crisis. When applying the results to practice, public relations practitioners are advised to emphasize managing and maintaining OER as unique organizational resources for their organization and organizational members, along with developing a crisis plan or message strategies. The results of this study should be added to the current OER research on effective crisis management beyond reputation and communication behaviors.

By considering employee work role-performance as an outcome of organizational resilience, this study aimed to fill a theoretical development research gap in crisis communication. This gap has been described as the need for a broader understanding of positive behaviors that contribute to organizational effectiveness after crisis situations (Li & Stacks, 2017; Men & Bowen, 2017). Furthermore, this study's results can be added to a future-oriented perspective in crisis communication, one that emphasizes rebuilding and recovery efforts through resilience. Crises disrupt "the status quo in basic ways, allowing for new assumptions, methods, and organizational values to emerge" (Seeger et al., 2005, p. 92). Such opportunities are not always taken into consideration in existing crisis management resources (e.g., crisis plans) (Frandsen & Johansen, 2016). In some post-crisis contexts, adapting to changes after a crisis requires rebuilding or renewal through cooperation, and through more proactive behaviors from employees (Paquette, 2015; Ulmer et al., 2015). By exploring organizational resilience outcomes, this study shows how organizations are able to immediately embark on rebuilding or renewal through organizational member proficiency, adaptability, and proactivity following a crisis; this perspective is not considered much in mainstream

crisis communication theories, which focus on strategic portrayal of causation and blame or on restoring a damaged image or reputation (Liu & Fraustino, 2014).

Furthermore, this study enriches the current body of knowledge on the theoretical implications of crisis communication research. Resilience scholars suggest that integration of other theories into research not only guide empirical investigations, but also offers an opportunity to apply established theoretical concepts to resilience (King et al., 2016). By integrating organizational resilience into relationship management and work-role performance, this study guides crisis communication researchers on how organizational resilience can be applied to effective crisis communication. It also provides an opportunity to explore how organizational resilience can be theoretically developed in future crisis communication research and study. Beyond crisis response (message) strategies emphasized by dominant crisis communication theories, this study provides empirical evidence for how organizational resilience goes beyond restoration to include the development of new capabilities, and an expanded ability to keep pace with and even create new opportunities (employees' proactive work-role behaviors) (Lengnick-Hall et al., 2011). In doing so, this study emphasizes that employees are fundamental as a resilient system for an organization, thereby encouraging more scholarly attention to internal publics for theoretical development in crisis communication, because employees' importance is not sufficiently explored in the extant theories.

Limitations and suggestions for future research

This study has some limitations that should be addressed in future research. First, this study relied on self-report instrumentation to measure organizational resilience through employees' competence, self-efficacy, and communication behaviors for sensemaking and sensegiving, as well as work-role performance. In future research, a more objective evaluation of these variables and better control for method bias are needed to strengthen the validity of the results (Meneghel et al., 2016b). Furthermore, future research based on objective evaluation should adopt a longitudinal perspective that provides a strong inference of causality, showing the dynamic nature of how organizational resilience contributes to organizational renewal through employee work-role performance (Gover & Duxbury, 2018). In addition, future research based on a longitudinal perspective should also provide a comprehensive answer for how the control factors (the length of tenure, gender, and crisis history) could affect organizational resilience and work-role performance.

Relatedly, this study did not include any question to check the participants' attention throughout the process of a survey administration that relied on self-report measurement scales. For this reason, the results in this study could be challenged on the grounds that some participants may not have paid sufficient attention to the questions and instructions and read the crisis scenario carefully. Previous research has found that at least 5 percent of respondents answer scale items inattentively in survey research, and such inattentive responses could directly threaten validity and reliability of scale measurement, leading to misleading findings and conclusions (e.g., Kung, Kwok, & Brown, 2018; Silber, Danner, & Rammstedt, 2019). To ensure valid and reliable results, attention check questions (e.g., instructed-response items) should be considered to screen out careless survey respondents in future research.

Second, this study did not include the effects of communications strategies, such as communication timing and message strategies, on organizational resilience and subsequent behavioral outcomes. Existing studies have paid substantial attention to theoretical development in crisis communication research, emphasizing the importance of message strategies to enhance external publics' (e.g., customers') supportive behaviors toward an organization during and after a crisis (Claeys & Coombs, 2019). Future research applying communications strategies to the internal context of an organization should examine how crisis communication strategies can facilitate (or impede) organizational resilience and its subsequent outcomes – including employee work-role performance – for organizations in crisis situations.

Third, the data for this study were collected based on non-probability sampling (i.e., purposive online sampling). To offset sampling bias from the nonprobability sampling, the survey firm used quota sampling (Qualtris.com). However, the survey firm may have introduced bias resulting from the selection of respondents within the quota (Brick, 2011). To be able to apply this study's theoretical model to broader contexts that highlight the concept of resilience for crisis management – including public sector organizations such as governments and communities – probability sampling methods should be adopted in future research (Brick, 2011).

Lastly, qualitative research methods, including in-depth interviews and focus groups, can be performed in future studies to maintain a person-centric approach to the study of resilience in the characterization of adversity. This is important because employees' experienced levels of adversity (crisis) would be different (King et al., 2016). In some cases, an organizational crisis may be an adverse circumstance for some employees to overcome, while it may not present adversity for other employees. As such, participants may have evaluated differently the severity of the situation provided by a crisis scenario in this study. By engaging in qualitative research based on a person-centric approach, future research should consider how employees experience different levels of crisis situation, based on their evaluations of the severity.

Summary

In conclusion, this study explored organizational resilience and its positive impact on employees' proactive behaviors for the benefit of their organization following a crisis situation. In doing so, this study proposed and tested a theoretical model that consisted of a new four-dimensional measure for organizational resilience and its relational antecedent (organization-employee relationship) and positive impacts on work-role performance (proficiency, adaptivity and proactivity) as organizational members. The structural model revealed strong and positive associations, regardless of employees' industry areas, organization size, job position, prior crisis history, and demographic factors. These findings contribute to the theoretical development of internal crisis communication as well as the enhancement of organizational effectiveness during post-crisis recovery.

Disclosure statement

Notes

1. This perspective is the transformational view of organizational resilience tied to a dynamic process-oriented perspective that emphasizes an organization's capacity for resilience as embedded in a set of individuals' knowledge, skills, and abilities (King et al., 2016; Kuntz et al., 2017). The transformational perspective regards individual (e.g., employee) resilience as the organizational capacity to utilize and generate resources, stemming from the interaction between intrapersonal factors that affect one's ability to overcome challenges, and from a supportive environment .

2. Various dimensions of organizational resilience have been suggested in literature, but there has been no consensus on its dimensions and measurements. For the different dimensions of organizational resilience, see Bouaziz and Smaoui Hachicha's (2018) work.

3. Employee communication behaviors (ECB) originated from Kim and Grunig's (2011) situational theory of problem solving and are conceptualized by megaphoning (i.e., positive external communication behaviors), scouting (i.e., positive internal communication behaviors), and microboundary spanning (i.e., an integration of megaphoning and scouting) in the domains of information acquisition and transmission (Kim & Rhee, 2011). This study adopts the concepts of ECB in public relations, especially microboundary spanning as employees' voluntary communicative efforts (i.e., active information acquisition and transmission internally and externally), to investigate employees' communicative actions that facilitate resilience in crisis situations. This study then redefines ECB as more resilient communicative actions named *employee communication behaviors for sensemaking* (i.e., information seeking) and *sensegiving* (i.e., information forwarding).

4. The theoretical foundation of the sensemaking process stems from *cognitive processes* as *sense* is created by attributing meaning to environmental stimuli (Maitlis & Christianson, 2014; Stieglitz et al., 2018).

5. In the pretest (N = 100), accuracy of instruments, believability of scenarios, and clarity of the questions were checked quantitatively and qualitatively. A 7-point semantic differential scale was used, ranging from inaccurate, unbelievable, or unclear (1) to accurate, believable, or clear (7). Respondents in the pretest answered that the scenarios were accurate (M = 5.51, SD = 1.24) and believable (M = 5.32, SD = 1.32) and all questions were clear (M = 6.52, SD = 1.07). There was no additional question or comment about the instruments, including questions and scenarios, according to pretest results.

6. Weiner's (1972) attribution theory argues that causality is largely attributed to locus (internal or external cause). Coombs (2015) has applied attribution theory to situational crisis communication theory (SCCT) to suggest that internal locus, i.e., attributing causality to the organization, causes publics to assign a strong level of responsibility for a crisis to that organization (e.g., preventable crises: human-error accidents and organizational misdeeds), resulting in negative outcomes for the organization.

7. To make extracted factors more interpretable, this study chose oblique rotation methods (i.e., PROMAX), because the methods are widely advised (Netemyer et al., 2003). A simplest case of rotation is an orthogonal factor rotation that keeps factors uncorrelated, in which the axes are maintained at 90 degrees (Hair et al., 2010). When not constrained to be orthogonal, the rotational procedure is called oblique factor rotation (Netemeyer et al., 2003). Oblique factor rotation allows correlated factors, instead of maintaining independence between the rotated factors (Hair et al., 2010). In most cases, oblique rotation is considered best suitable method for obtaining several theoretically meaningful factors or constructs because few constructs in the real world are uncorrelated (Hair et al., 2010; Netemeyer et al., 2003). Hence, this study used the oblique rotation method to interpret factors after extracting.

8. To retain items for further analysis (i.e., confirmatory factor analysis), this study considered Hair et al.'s (2010) and Netemeyer et al.'s (2003) suggestions (i.e., greater than.40 but no greater than.90) for factor loadings. Hair et al. (2010) and Netemeyer et al. (2003) suggest that factor loadings with.40 are considered to meet the minimal level for interpretation of structure. Regarding high factor loading, Netemeyer et al. (2003) maintains that items with extremely high loadings (i.e., >.90) could be "indicative of wording redundancy that does not add substantively to a scale's internal consistency or

validity" (p. 125). When considering internal consistency estimates, only items with corrected item-to-total correlations greater than.50 and Cronbach's α greater than.70 (for reliability of all the items), were retained as acceptable (Clark & Watson, 1995; Hair et al., 2010).

9. Age, gender, race, income, education, the length of tenure (work years), job position, company size with employees, industry sectors, and crisis history were included as control variables in the regression models. All categorical factors, including race and industry sectors, were recoded as dichotomous variables. For instance, race was recoded as Black (Black: 1, other races: 0), Asian (Asian: 1, others: 0), and Other races (Other races such as Hispanic and Native Americans: 1, others: 0) – White race group was a reference group because of its majority number. Industry factors were also recoded as 15 dichotomous variables (k-1 factor) (e.g., Agriculture: 1, others: 0, Mining: 1, others: 0, Construction: 1, others: 0, and so on), as the Health Care and Social Assistance industry (n = 128, 15.7%) was used as a reference group. Regarding the crisis history, the majority of employees did not have direct experience (n = 655, 80.27%), and less than 20% of respondents (n = 161, 19.73%) had a similar crisis in the last five years. The crisis factor was also recoded as a dummy variable (No: 0 and Yes: 1) to be included in the regression models.

10. To demonstrate the structural model, a statistical procedure using structural equation modeling (SEM) can be useful to explain structural associations controlling for the effects of other variables (Hair et al., 2010). SEM models are typically used in nonexperimental situations in which the exogenous constructs are not experimentally controlled variables (Kline, 2016). In many cases, the observed attitude and behavior variables have affected each other and the measured variables are simultaneously related. Many structural models of social behavior should contain simultaneous relationships (Hanushek & Jackson, 1977). In this sense, the analysis of full simultaneous systems is more important in social science research (Hanushek & Jackson, 1977). In the context of one survey, particularly, it is certainly not possible to observe the independent changes in exogenous and endogenous variables required to estimate the magnitudes of these two influences separately (Kline, 2016). Therefore, the hierarchical model (i.e., relationship between and cause and effect) estimated is replaced by a more complete model that includes equations simultaneously modeling both exogenous and endogenous variables as functions of each other and additional appropriate explanatory variables (Hair et al., 2010). Consequently, statistical procedures, using SEM that include a set of exogenous variables that are also expected to determine endogenous variable, should be used for this study, which tests a structural model that provides empirical evidence for the antecedent and the positive outcome of organizational resilience.

11. The structural model (OER→ organizational resilience → work-role performance) proposed in this study is *a complete (or full) mediation model* (i.e., *X→M→Y*) because OER (*X*) affects organizational resilience (*M*), which in turn affects work-role performance (*Y*) (Danner, Hagemann, & Fiedler, 2015; Hayes, 2009; Iacobucci, 2008). Hayes (2009) explains a mediator, *M*, that is causally between *X* and *Y* and that accounts at least in part for the association of *X* and *Y*. He also maintains that "it is possible for *M* to be causally between *X* and *Y* even if *X* and *Y* aren't associated" (Hayes, 2009, p. 413).

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Appendix. The 16 scenarios tailored to participants' industry sectors

1) [Agriculture, forestry, fishing & hunting]

Today, it is reported that a tractor overturn incident occurred in the small town. The exact extent of injury and property damage is under investigation. The cause is speculated by poor rolling system of the tractor produced by your company.

2) [Mining, quarrying, and oil and gas extraction crisis situation]

Today, it is reported that an explosion just occurred in a small coalmining (or oil and gas extraction) town where your company is operated. The exact extent of injury and property damage is under investigation. The cause is speculated by poor mining (or oil and gas) safety conditions in your company.

3) [Construction]

Today, it is reported that a mast climbing platform north of the mast collapsed at a condominium project under construction. The exact extent of injury and property damage is under investigation. The cause is speculated by poor construction safety conditions in your company.

4) [Manufacturing]

Today, it is reported that a laptop produced by your company suddenly exploded into flames at a public conference, in what could have been a deadly accident. The exact extent of injury and property damage is under investigation. The cause is speculated by your company's manufacturing defects.

5) [Wholesale trade]

Today, it is reported that a theft incident of goods occurred in your company. The exact extent of injury and property damage is under investigation. The cause is speculated by your company's poor security systems including malfunction of locks lights and alarms.

6) [Retail trade]

Today, it is reported that an oil and fuel in one of your company retail stores leaked onto the roadway. The exact extent of injury and property damage caused by the incident is under investigation. The cause is speculated by your company's (the store's) poor maintenance systems.

7) [Transportation and warehousing]

Today, it is reported that a train operated by your company derailed and caught fire in the valley town. The passengers were forced to be evacuated, and the exact extent of injury and property damage caused by the incident is under investigation. The cause is speculated by the train operator's in your company recklessness.

8) [Utilities]

Today, it is reported that an electrical-related house fire occurred. The exact extent of injury and property damage is under investigation. The cause is speculated by your company's household wiring system that could range from overloaded circuits.

9) [Information]

Today, it is reported that hackers' multiple cyber-attacks occurred in the wired and wireless telecommunications companies that operate the security software produced in your company. The exact extent of property damage, including loss of data and theft of system resources, is under investigation. The cause is speculated by your company's poor security system of information technology.

10) [Financial Activities]

Today, it is reported that your bank company has lost computer data containing personal information, including social security number and account information. The exact amount of property damage, including loss of data and theft of system resources, is under investigation. The cause is speculated by the vulnerability of your company's banking program.

11) [Professional & Business services]

Today, it is reported that a steel storage tank at the site of your company collapsed, breaching a concrete bund spilling a mixed waste onto the site. The exact extent of injury and property damage is under investigation. The cause is speculated by your company's poor maintenance management system.

12) [Education services]

Today, it is reported that a playground accident occurred in your school. The exact extent of injury and property damage is under investigation. The cause is speculated by your school's dangerous physical conditions, especially unsafe playground equipment by poor maintenance.

13) [Health care and social assistance]

Today, it is reported that a violent act-related incident occurred in your health care center. The exact extent of injury and property damage is under investigation. The cause is speculated by your school's neglect of workplace violence prevention for nurses.

14) [Leisure and hospitality]

Today, it is reported that a slip incident occurred in the swimming pool at your company hotel. The exact extent of injury and property damage is under investigation. The cause is speculated by your school's failure to supervise the pool.

15) [Other services]

Today, it is reported that a machinery accident related to rotary hydro-extractors in laundries occurred at one of your company branches. The exact extent of injury and property damage is under investigation. The cause is speculated by your company's inadequate interlocking arrangement.

16) [Public Sector]

Today, it is reported that the victims who have applied for disaster assistance are frustrated by the approval process. The exact casual factor of the process is under investigation. The cause is speculated by the government's inappropriate process on a case by case basis.