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STACIE WILSON MUMPOWER
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FRAMING LEADER MESSAGES FOR HIGHLY RELIABLE ORGANIZING

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DEPARTMENT OF COMMUNICATION

BY

Dr. Ryan S. Bisel, Chair

Dr. Michael W. Kramer

Dr. Amy J. Johnson

Dr. Ioana Cionea

Dr. Shane Connelly

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Dedication

This dissertation is dedicated to the Lord, for His purpose in my life; to my wonderful husband, Stephan, who is my soulmate and unwavering support; to my dad, who started this academic fire in me so many years ago; to my mom, who listened and listened and listened; and to my sister, Desiree, who always knew I could do it even when I didn't.

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Abstract

This dissertation tests high-reliability organization (HRO) theory's claim that strategic leadership messages can direct followers' sensemaking in adaptive ways (Weick & Sutcliffe, 2015). Specifically, two experiments tested whether mindfulness-based leader language choice enhanced followers' performance during a planning task. The experiments also tested the relationship between leader language choice and followers' willingness to speak up with dissent—an outcome known to be prominent in mindful, learning organizations (Kassing, 2011). In the first experiment, working adults ($N = 197$) in a single high-reliability organization (i.e., U.S. Army) read one of four leader message conditions prior to engaging in a scenario planning task. Leader message conditions varied by framing density, mindfulness language, and optimism. Results indicated no significant differences between leader message treatments for any of the predicted outcomes—self-reported feelings of mindfulness, participants' performance during a planning task, and willingness to speak up with dissent.

A second experiment was conducted to answer whether mindfulness-based leader messages are influential in the case of a general working adults sample ($N = 481$). Results did, indeed, indicate statistically significant differences in participants' performance during a planning task. Specifically, participants generated more numerous contingencies during planning when exposed to the framing- and mindfulness-dense leader message as compared with an optimistic leader message. Furthermore, participants generated significantly higher quality contingencies during planning when exposed to a mindfulness-based leader message dense with metaphors as compared with participants who received a leader message with few or no metaphors to reinforce the

need for mindfulness. Finally, consistent with HRO theorizing, participants exposed to an optimistic leader message produced significantly lower quality contingencies during planning as compared with participants who received a mindfulness-based leader message. Results indicated no significant differences between leader message treatments for self-reported feelings of mindfulness or willingness to speak up with dissent. A post-hoc analysis was conducted to compare the two samples. Again, consistent with HRO theorizing, results indicated that participants drawn from a single high-reliability organization performed better on the planning task than participants sampled from a general working adult population, regardless of leader message condition.

This dissertation contributes to organizational communication literature in three primary ways: First, results confirmed leadership communication can, indeed, stimulate followers' adaptive sensemaking, which can be seen in improved performance during a planning task. Second, this research is consistent with HRO theorists' claim that lessons drawn from HROs are transferable for improving the performance of working adults outside the HRO context. Third, the observation that participants from the single HRO outperformed their general working adult counterparts on the planning task supported the notion that mindfulness is, in fact, being routinized by their HRO culture. The dissertation concludes with practical recommendations for leadership communication practice.

Chapter 1: Introduction

Recent events illustrate how a few human errors in the context of organizing can link and amplify quickly to generate catastrophe (e.g., AirAsia plane crash, 2015). Such organizational catastrophes increase the need for methods of encouraging higher reliability and safety in organizations. Flight crew error, safety management, and deficiencies in maintaining standard operations and checking were among the top contributors of airline accidents between 2010 and 2014 (International Air Transportation Association, 2015). Well known organizational catastrophes, such as the Texas City Refinery Explosion in 2005 (Health and Safety Executive; HSE, n.d.), the Chernobyl nuclear plant accident in 1986 (Health and Safety Executive; HSE, n.d.), and the Thermal Oxide Reprocessing Plant leak at Sellafield (Burrows, Philips & Milliken, 2006) were attributed to human error. Incidence of sometimes fatal workplace accidents and extreme circumstances caused by human error (e.g., falls, fires, explosions, exposure to harmful substances; U.S. Bureau of Labor Statistics, 2014) or external forces, such as weather that requires immediate and effective response (e.g., 2016 tornado outbreaks from dual-coast storm conditions caused by El Niño and 2016 Hurricane Matthew that pummeled Caribbean islands and the U.S. east coast), underscore the importance of organizations' reliable performances that can suppress human error.

The potential for human error to link and proliferate throughout a social system signals the need for organizational cultures (i.e., patterns of shared values and assumptions; Schein, 2004) that embody highly reliable, highly creative organizing. Organizations that tend to perform reliably on a regular basis and maintain a safety

culture are referred to as high-reliability organizations (HROs; Weick & Sutcliffe, 2007, 2015). HROs are those organizations that operate when the potential for disaster is overwhelming, but, nonetheless tend to maintain safe functioning in spite of turbulent environments (Weick & Sutcliffe, 2007, 2015). Examples of these organizations include nuclear power plants, wildland firefighting teams, all branches of the military, and police forces. Scholars recognize the importance of reliable safety cultures and are exploring the cultural practices typical of HROs in order to improve teamwork in hospital settings (Baker, Day & Salas, 2006; Tamuz & Harrison, 2006; Wilson, Burke, Priest, & Salas, 2005), create high-performance health systems (Gauthier, Davis, & Schoenbaum, 2006), enhance patient safety in medical settings (Sutcliffe, 2011) and enhance patient safety in intensive care units (Christianson, Sutcliffe, Miller, & Iwashyna, 2011), bolster crisis management and communication in the coal industry (Miller & Horsley, 2009), establish stability in banking (Young, 2012), and reduce the potential for accidents in virtually all organization types (Roberts & Bea, 2001).

Even organizations not structured specifically to deal with imminent turbulence or potential hazard to human life (i.e., general organization types; e.g., employment offices, grocery stores) must be prepared to respond reliably in the face of unforeseen and unexpected circumstances such as fires, active shooters, or employee medical emergencies. Suppression of error and the enhancement of mindful action during intense circumstances are clearly important for optimal organizational functioning, no matter the specific task-domain. Now more than ever scholars need to investigate how leader messages can encourage more reliable organizing and safety in both HRO and organizational cultures more generally.

This dissertation explores how a leadership communication perspective suggests the possibility that the suppression of human error in organizing can be guided—that the adaptive sensemaking of others can be guided—through innovative leadership messaging. Sensemaking refers to the notion that individuals enact certain communicative behaviors within an organizational setting (which is inherently social) in order to make sense of equivocal inputs from the environment (Weick, 1995). A leadership communication perspective directs our attention to the possibility that the suppression of human error can be routinized through communication patterns that awaken mindfulness and sensitivity to discriminatory detail that would not be present otherwise. In other words, the premise of this study is that leadership messaging has the potential to engender more adaptive follower sensemaking.

The purpose of this dissertation is to investigate experimentally whether strategic leadership messages can enhance the mindfulness and adaptiveness of followers' sensemaking. Ample qualitative case study investigations and theoretical papers provide evidence to suggest leader messaging can shape organizational members' sensemaking (Bierly, Gallagher, & Spender, 2008; Hill & Levenhagen, 1995; Maitlis & Lawrence, 2007; Minei & Bisel, 2013) and stimulate effective sensemaking through heedful interrelating (Baran & Scott, 2010), but those associations have not yet been tested experimentally. Additionally, this study shifts the theoretical lens on sensemaking and high-reliability theory to the actual processing of leadership messages in ways that enhance organizational members' mindfulness and reliability, as observable in their own language production.

Weick and Sutcliffe (2007, 2015) identify a set of core value commitments embedded in HRO cultures that, when enacted, generate high reliability; however, those value commitments lie at a level of abstraction above the kinds of messaging capable of inculcating value commitments and motivating mindful collective action. Not all leadership messages are created equal and some are more persuasive than others in shifting followers' assumptions and expectations (e.g., Biesel & Barge, 2011; Fairhurst, 2005, 2007, 2011; Fairhurst & Connaughton, 2014; Fairhurst & Sarr, 1996; Fiss & Zajac, 2006; Hill & Levenhagen, 1995). In fact, decades of literature examining language priming demonstrates that "much of our behavior is controlled by primes rather than under our immediate control" (Langer, 2014, p. 7). Carefully constructed leader messages have the potential to elicit a more mindful approach from followers and subsequently higher reliability performances and organizational communication. The following section details HRO theory more fully and reviews relevant literature that forms the theoretical foundation for this dissertation.

Chapter 2: Literature Review

Collective Sensemaking and High-Reliability Organizations (HRO)

Weick's (1983) notion that organizations are better thought of as *organizing* was an important insight to the development of the field of organizational communication. Weick was keen to avoid treating organizations as accomplished, stable products, and encouraged organizational theorists to explore the interpretive, time-bound, and processual nature of organizing (Daft & Weick, 1984; Weick, 1983). Given this perspective, it is not surprising that Weick's (1995) theory of sensemaking emphasized the communicative nature of organizations. For Weick, organizations are inseparable from the interpretive activities of members. In the sensemaking process, organizational members assign meaning to events (Weick, 1995) intersubjectively through communication (Kramer, 2013; Kramer & Miller, 2013). By answering the interrelated questions, "what is the story?" and "what, therefore, should we do?" in discourse, organizational members talk into being their understanding of their organization's identity, environment, and strategy (Bisel, Zanin, Rozzell, Baird, & Rygaard, 2016; Weick, Sutcliffe, & Obstfeld, 2005).

Studies of organizational sensemaking since the early 1970s revealed the often routinized and mindless nature of sensemaking in modern organizing (Frederickson, 1986; Michael, 1973; Mintzberg, 1979). Modern organizing methods standardize work activities to coordinate more efficiently the basic functions of the organization and its operators (Mintzberg, 1979). This standardization of work processes seeks to create consistency and uniformity in order to streamline work for enhanced output and productivity; however, conforming to a routine standard of activity suggests work can

be experienced often as a set of situations that do not demand full, mindful attention. To engage in mindful attention suggests a vigilant approach to work activities (Langer, 1997); *mindfulness* means to be aware of a current context and to notice or pay attention to a variety of perspectives (Langer, 1989). Standardization programs, though, intended to improve quality through simplified processes and tight structures, create environments in which members can ignore complexity, and ultimately neutralize mindfulness (Weick, Sutcliffe, & Obstfeld, 2008). Sensemaking about a standardized form of work activity, then, often becomes somewhat mindless as organizational members conduct daily labors habitually without much cognitive load. The often mindless and routinized nature of sensemaking can also be present in the decision-making processes, including task planning, of organizational members. Drawing on theories and findings from cognitive psychology, organizational decision-making literature explored the tendency of decision-makers to simplify their perceptions of problems, known as cognitive simplification processes (Hogarth & Makridakis, 1981; Schwenk, 1984). Simplified perceptions serve to repress awareness of uncertain environments (Michael, 1973). When organizational members simplify their perceptions of problems, they are less likely to search for alternatives and disconfirming evidence to inform decision-making (Hogarth & Makridakis, 1981; Schwenk, 1984). This tendency to avoid contemplating alternatives and disconfirming assumptions, is a form of *mindless* sensemaking (Burgoon & Langer, 1995; Weick et al., 2008).

Current investigations of sensemaking in organizations remain quite active (Colville, Brown, & Pye, 2015; Dougherty & Smythe, 2004; Gray, Butler, & Sharma, 2015; Kramer, 2016; Ploeger & Bisel, 2013), but an offshoot of sensemaking studies

explored the unusually mindful, yet, routinized practices, of high-reliability organizations (HRO) and their members. HROs (e.g., police forces, aircraft carriers, emergency medical response teams, firefighters) are those in which the potential for disaster is an overwhelming, continual threat; however, those threats are consistently evaded through effective collective sensemaking and mindful organizing (Sutcliffe & Vogus, 2014; Weick & Sutcliffe, 2015). HROs work to manage a tenuous balance between the apparent oxymoronic nature of routinizing the mindful (Weick et al., 2008). HROs organize for high reliability in the face of continual threat through diverse yet stable, repeated cognitive processes, and variable “routinized activity manifest in performance” (Weick et al., 2008, p. 36). In other words, HROs engage in mindful (diverse) cognitive processes that resist the temptation to simplify by developing requisite variety, which allows them to create complex systems that can be *routinely* applied to complex environments. When these routines are re-enacted each time, however, they “unfold in slightly different ways” (Weick et al., 2008, p. 36). In this way, HROs strive to be adaptive in changing contexts. Furthermore, HROs engage in a form of high-reliability *organizing* in which their “ongoing collective efforts to improve and maintain reliability” are a result of highly adaptive and mindful collective sensemaking (Weick & Sutcliffe, 2015, p. 35). Collective sensemaking suggests members of a group or organization make sense of and impose order on a given set of circumstances as a result of joint, rather than individual, action. For example, Roberson (2006) found teams that made sense of their collective experiences through active discussion had stronger procedural and distributive justice climates. These teams converged on collective meanings in their organizing. Organizing refers to the

coordinated efforts of organizational members to achieve a set of common objectives. Sensemaking and organizing are not separate activities, but instead are interrelated (Weick & Sutcliffe, 2007, 2015; Weick et al., 2005). Organizational members' recognize their collective efforts are interrelated "meshed contributions" that work in tandem to produce reliable outcomes in both expected *and* unexpected circumstances (Weick & Sutcliffe, 2015, p. 85).

Organizing to achieve reliability requires a mindful approach to work activities embodied during collective sensemaking. HROs practice this mindful organizing through a set of routinized principles in which their interactions collectively reduce errors that yield reliable operations, thereby reducing risk of catastrophic failure (Barbour & Gill, 2014; Barrett, Novak, Venette, & Shumate, 2006; Sutcliffe & Vogus, 2014). The routinized principles of HROs refer to common, communicative and behavioral practices that reinforce the emergence of a culture that fosters heightened, continuous, and discriminatory attention to detail. An organizational culture is the culmination of an organization's shared values, beliefs (Schein, 2004), meaning, and interpretations (Lee & Barnett, 1997; Smircich, 1983). Members socialize one another through communication, continually creating and recreating shared cultural norms and rituals (Kramer, 2010). These shared assumptions shape organizational members' interactions (Martin, 1992) and are shaped by members' messaging in a structural manner (Bisel, Messersmith, & Keyton, 2010; Giddens, 1979; Keyton, 2014; Kramer & Miller, 2013). Messaging in high-reliability cultures reinforces shared meanings about how safety and reliability are accomplished. In particular, research in HROs demonstrates that these organizations enact five principles, or value commitments, in

their organizational culture that facilitate a focus on *anticipation* and *containment*, which, in turn, produce reliable systems that are not easily or quickly disabled by human error (Weick & Sutcliffe, 2015). These five principles, or value commitments, are termed (1) preoccupation with failure, (2) willingness to speak up, (3) sensitivity to operations, (4) deference to expertise, and (5) commitment to resilience. Exemplary research of HROs in action include studies of U.S. Naval flight operations (Rochlin, 1989), nuclear powered aircraft carriers (Roberts, Rousseau, & LaPorte, 1994; Roberts, Stout, & Halpern, 1994), nuclear submarines (Bierly & Spender, 1995; Bierly et al., 2008), nuclear power plants (Barbour & Gill, 2014; Bourrier, 1996; Carroll, 1998) railroad operations (Busby, 2006; Roth, Multer, & Raslear, 2006), and firefighting operations (Baran & Scott, 2010; Minei & Bisel, 2013).

When organizational members enact a posture of *anticipation*, they identify expected and unforeseen situations, and develop preemptive responses—a form of *prospective* sensemaking. One of the ways HROs routinize mindful and prospective sensemaking is by scenario planning. In scenario planning, HROs enact anticipatory value commitments by asking the right questions, inviting disagreement, and exploring negative consequences. HROs cultivate rich fantasies that outline explicitly what could go wrong and work to ensure all members can articulate those potential future mistakes. These fantasy-like scenarios allow HRO members to generate feedback prospectively and in advance of actual experience for effective action or corrective action. During the scenario planning process, HRO members may recognize they do not have a response repertoire for some imagined issue and, in turn, can create one. Organizational members working to achieve high reliability *anticipate* potential issues that could disrupt a

system and lead to disaster in three ways—(1) a preoccupation with failure, (2) a reluctance to simplify, and (3) sensitivity to operations (Weick & Sutcliffe, 2011, 2015).

First, HROs enact a chronic concern for error and wariness by working to identify and articulate explicitly any potential mistakes that could be made. That pattern is termed, *preoccupation with failure*, and its goal involves the continuous noticing of small, subtle changes and anomalies that mark emerging discrepancies in the system and cue the possibility of failure. “Effective HROs organize socially around failure rather than success in ways that induce an ongoing state of mindfulness” (Weick et al., 2008, p. 61). For example, a preemptive, prescribed burn ignited to control a burning forest fire requires collective, continual assessment of what *could* go wrong, such as further spreading of fire or injury to firefighters. A preemptive approach also requires continual attention to discrepancies, such as with dwindling manpower or resources. Anticipatory language that signals alertness and wariness might include phrases like “We haven’t made that mistake that way before” (Weick & Sutcliffe, 2015, p. 46). In one HRO study, Heimann (2005) highlights failures in foresight in the NASA Challenger and Columbia shuttle catastrophes that may have been mitigated by the kind of vigilant attention to discrepancies characteristic of this first value commitment. Language use, in particular, can direct attention to subtle occurrences that might otherwise go unconsidered. Consequently, discourses embedded with musings of a system’s contingent nature can serve to evoke the kind of mindful awareness necessary for vigilant action.

Second, HROs enact a *reluctance to simplify* by focusing on complexity and the development of differentiations in categories to allow for the creation of a richer set of

precautions. HROs avoid crude labels because oversimplification masks complete and nuanced pictures of the setting. Statements that embody a reluctance to simplify might include “We need to be continuously aware that all the potential modes...could fail...and not everything has yet been exhaustively deduced” (Weick & Sutcliffe, 2015, p. 46). In identifying this communicative behavior, HRO theorists, themselves, recognize how language use in HROs is the location of values that enact and encourage mindfulness to generate superior reliability.

Third, a *sensitivity to operations* refers to being responsive in an ongoing manner by monitoring and detecting trouble while it is still small and tractable. Being sensitive to operations means being attentive to the front line where workers have unique situational awareness. In the prescribed fire example, firefighters would enact this principle by remaining watchful of the burn as it is happening in order to detect points where the fire may get out of control. Careful observers may also notice symptoms of fatigue that indicate a firefighter on the front line may not operate equipment safely. Successful sensitivity to operations requires the heedful interrelating of organizational members (Weick & Sutcliffe, 2015). Heedful interrelating refers to the interrelated, contributions of people engaged in collective action. Weick and Roberts (1993) illustrate operations on an aircraft carrier flight deck to exemplify how organizational errors decrease when heedful interrelating, or collective mind, and mindful comprehension increase. Anticipatory principles both espouse and enact an important fundamental behavior—collective, ongoing, mindful communication. This communication, in turn, nourishes and fuels decision-making capabilities. People report errors, others listen to avoid similar mistakes, and adjustments are made. People take

deliberate steps to avoid oversimplification and communicate mistakes in the process to eliminate future errors, others listen, and adjustments are made. Frontline workers (e.g., the firefighter on the hose, the EMT in the back of an ambulance with the patient, the nuclear reactor maintenance crew member adjusting faulty equipment) communicate the state of affairs to decision-makers, others listen, and adjustments are made.

In contrast to the prospective enactment of *anticipatory* values, organizational members posture themselves to keep a system functioning in a reliable fashion when enacting *containment principles*. HROs focus on *containment* of the system in two ways—(1) a commitment to resilience and (2) a deference to expertise. First, a *commitment to resilience* means that HRO members work to mitigate unexpected error, often through redundancy, so that errors do not disable the system. As a result, systems are resilient. Weick and Sutcliffe (2015) explain that this resilience results from the abilities of a system to, (1) maintain functioning during flux, (2) absorb strain rather than fail, and (3) adapt in order to perform after a disruption. Resiliency is possible because HROs cultivate an environment in which individuals are committed to improving their ability to assess a situation and respond quickly without knowing the exact situation until it occurs. According to Weick and Sutcliffe (2015), “reliable systems spend time improving their capacity to do a quick study, to develop swift trust, to engage in just-in-time learning, to imagine detailed next steps, and to recombine fragments of potentially relevant past experience” (p. 94). In other words, organizational actors examine a situation and formulate a new solution based on past experience. For example, two pilots’ evolving experience during their successful crash landing of United Airlines Flight 232 was captured on the cockpit audio recorder. As

the articulated decision-making unfolded, the pilots used phrases like “what do you want to do?” “I don’t know” “let’s try this” “do you think that will work?” (Weick & Sutcliffe, 2015, p. 105). Their language use illustrates real-time resilience in action in which the pilots assess, reframe, and act in ways that adapt to a tumultuous circumstance. Pirson (2014) describes this kind of adeptness aptly: “Being vigilant and remaining aware of the changing environment, mindful decision makers are able to adapt more swiftly and appropriately to situational shifts” (p. 467).

A culture that engenders reliability in preparation and practice can maintain systems during times of flux, and adjust effectively before, during and after a disruptive event or in times of undue, continual stress. Bierly et al.’s (2008) study of the platform strategy of a U.S. nuclear attack submarine demonstrates HROs’ ability to innovate and change. The commitment to resilience containment principle highlights the *retrospective* nature of HROs. Sensemaking theory describes retrospection as a constant looking back in order to narrate what has happened for ourselves so that we can be informed about what to do next and reduce our own sense of uncertainty about the future (Weick, 1995). Being committed to resilience means being committed to a continual state of improvement, derived from a willingness to identify problems in situ and correct (as identified above), or recognize, past mistakes as learning moments for future improvements. For example, after action reviews (AARs) are common organizational communication exercises that encourage a learning culture of improvement through bracketed time devoted to collective, retrospective sensemaking (Allen, Baran, & Scott, 2010; Minei & Bisel, 2013; Scott, Allen, Bonilla, Baran, & Murphy, 2013). During AARs, HROs report errors, detail near miss experiences in

reflective discussion to raise awareness about potential liabilities, and articulate mistakes to avoid in the future. This sensemaking shapes HROs' adaptation to changing environments, and allow HROs to collect best practices and lessons for which they hold each other accountable.

Second, HROs enact *deference to expertise* by cultivating diversity and increased intricacy in complex systems by allowing inflexible hierarchies to bend when it is deemed necessary to “push decision-making down and around” to those who know unfolding situations the best (Weick & Sutcliffe, 2007, p. 16). A firefighter at the hose in the prescribed burn example would have more accurate and timely information about fire behavior to make calculated decisions, than middle and upper managers, communicating from areas removed from the action. A leader deciding to defer decision-making to front line workers might use language like this: “I draw more disparate perspectives from others [on the scene]...and I get more people to own what they see and to communicate it” (Weick & Sutcliffe, 2007, p. 11). In sum, HRO functioning is the integrated and extrapolated ongoing acting, formulating, story constructing, and monitoring that are “products of the mindfulness created by all five processes [principles], rather than activities specifically tied to operations” (Weick et al., 2008, p. 45).

Past and current HRO literature tends to apply these HRO principles to organizations in the heat of disaster (e.g., Bourrier, 1996; Busby, 2006); however, HROs are not always in the midst of crisis and often must practice value commitments in the daily grind of expected routine in order to be prepared to respond in the event unexpected circumstances arise (e.g., hospital wings with patients needing routine care).

Military training battalions are another example of HROs whose immediate function is to prepare troops for potential combat in other units designed for that mission. HRO value commitments must still be applied persistently in training environments. While HRO theorists have gone so far as to propose strategic language that might indicate HRO value commitments, to date, no experimental investigations have verified the association between leader messaging focused on reliability and improved adaptive sensemaking that leads to reliable outcomes.

Guiding Adaptive Sensemaking

Yukl (2012) suggested that leadership in organizations is about influencing both individual and collective efforts in ways that lead to desired objectives. This dissertation explores the possibility that the communicative behaviors of leaders—leadership messaging—can influence or direct followers’ sensemaking in adaptive ways. Sensemaking is considered an evolutionary process that emerges as organizational members attempt to understand events and determine appropriate actions (Weick, 1995). While an evolutionary process might imply that organizational sensemaking unfolds with a lack of conscious directedness, Weick himself presumes that some organizational sensemaking is more adaptive than others: “The underlying assumption in each case is that ignorance and knowledge coexist, which means that *adaptive* sensemaking both honors and rejects the past” (Weick et al., 2005, p. 412, emphasis added). In this evolutionary process, organizational members engage in a recursive and iterative process of enactment, selection, and retention (Choo, 2006; Weick et al., 2015). In the course of ecological change, organizational members enact more or less sense into the environment through the selection of extracted cues from the contextual

conditions and determine, based on current and retrospective assessment of identity and information, what will be retained as interpreted meaning and categories. Selection of extracted cues are updated, sorted and categorized, or bracketed (Weick, 1995), as a means of guiding enactment in sensemaking (Jennings & Greenwood, 2003). The fact that enactment is guided by selection of cues suggests the types of cues communicated by others, such as leaders, have the capability to guide the sensemaking and subsequent actions of those extracting cues from the environment.

Additionally, what is formed into categories or mental models in selection, which guides enactment, is retained (retention) as information that can be used to inform subsequent selection and enactment choices (Choo, 2006; Weick et al., 2005). Selection and enactment, in particular, reflect the interpretive, somewhat less rational, and potentially automatic nature of decision-making in the sensemaking process (Jennings & Greenwood, 2003). Left unguided, organizational members' choices, decisions and actions—their sensemaking—may be directed by interpreted meaning from both current and retained cues in ways that *satisfice* (i.e., satisfy and suffice) the desire to return to a normal state. In this way, members honor familiar past categories without also rejecting old categories in search for new ones. Yet, *adaptive* sensemaking requires the combination of honoring and rejecting classifications in ambivalent ways (Weick et al., 2005). Take, for example, Bagdasarov, Johnson, MacDougall, Steele, Connelly, and Mumford's (2016) study of sensemaking's mediating role of the relationship between mental models and ethical decision-making. The researchers found that providing new knowledge to participants through training created more complex mental models, which led to more effective ethical decision-making. Their findings

confirmed Mumford, Connelly, Brown, Murphy, Hill, Antes, et al.'s (2008) theoretical proposition that mental models can guide individuals' ethical decision-making and demonstrated that shaping individuals' current mental models by guiding their sensemaking with strategic information yields improved decision-making. Presumably, by imputing cues strategically into the environment in interdependent interactions to assist in more adaptive approaches to enactment, selection and retention, this evolutionary sensemaking process can, at times, resemble guided evolution or husbandry.

Importantly, sensemaking is always grounded in identity concern (Weick, 1995). An individual's self-concept is negotiated and constituted in interactions with organizational members, particularly when someone's identity is inconsistent with circumstances or changing contexts. Organizational members will situate themselves in a given context to reshape and redefine their identities in relation to others. When negative images threaten one's socially sustained identity, one may alter one's sense of those images by redefining their own images or the organizational identity. Dougherty and Smythe's (2004) case study of an unexpected serial sexual harassment incident by a third-party alumnus donor illustrates organizational members' deep need to reaffirm important self-concepts to be consistent with organizational identity. Three distinct aspects elucidate identity concern in the sensemaking processes of the case. First, the victims delayed reporting the sexual harassment to maintain a self-concept consistent with the organizational belief that it was inconceivable sexual harassment would ever occur. Second, the same cultural belief caused some members to dismiss the event as friendly interaction, consistent with their own and organizational identities, thereby both

perpetuating and resisting sexual harassment. Third, despite divergent assessments of the incident, the department sought a collective version of the event in which members constructed a new organizational identity, intolerant of sexual harassment. This example offers insight about how people may resist suggestions that challenge individual, group, or organizational identities.

In the same vein, identity *defense* can be a powerful force that drives decision, choice, and action in *maladaptive* ways, particularly when issues and events make it necessary to look inward at one's own or an organization's mistakes and failures. Identity defense is a form of maladaptive sensemaking (Brown & Starkey, 2000; Ploeger & Bisel, 2013) that can have serious consequences in organizations that face turbulent environments on an ongoing basis. Maladaptive sensemaking occurs when individuals reduce understanding of events to simplified and familiar categories that prescribe former modes of action as a means of affirming desired notions of the self and social group rather than being open to new methods for adapting and adjusting to circumstances (Bisel, 2017). This maladaptiveness can aid members in protecting old individual and organizational identities, perpetuated by ego defenses such as denial, rationalization, or idealization. Yet such ego-protection can mitigate organizational learning (Brown & Starkey, 2000). Organizational learning refers to the way organizations interpret, adapt to, and innovate in their environments (Argyris, 2008; Weick & Ashford, 2001). Learning organizations can be perceived as adaptive when organizational members utilize information to challenge existing practices and perceptions, and develop new perspectives, processes and routines through interaction (Brown & Starkey, 2000).

Individual and organizational identities are uniquely tied to organizational learning. In order for organizations to learn and engage in collective action and collective sensemaking, members must suppress defense of their identities that preserve self, or centrally held, organizational images in exchange for a collective curiosity, and willingness to learn in ways that challenge old assumptions (Argyris, 2008; Brown & Starkey, 2000). HROs are particularly masterful at suppressing maladaptive sensemaking. These organizations reinforce vigilance and humility by embracing lessons from their hard-earned experiences, which Weick (2001) notes is a necessary aspect for alertness when facing the unexpected. HRO members demonstrate humility by admitting mistakes and pointing out the failures of current and past events, usually during debriefing meetings (e.g., AARs). These mistakes can then be catalogued as lessons for future vigilant action.

However, learning from ego-threatening experiences will be difficult precisely because wisdom requires individuals and organizations to shed the desire to assuage the ego-related anxiety of learning and, instead, face events that may disconfirm desired notions of self. For example, Ploeger and Bisel (2013) found that members who are highly identified with their organizations employ increased intensity and frequency of defensive language in defending their organization's supposed wrongdoing. This communication-based ego-defense is a response to personal identity threat when individuals' values align with those of their organization, and when members perceive oneness with their organization (Cheney, 1983; Mael & Ashforth, 1992; Ploeger & Bisel, 2013). Maladaptive defense mechanisms can impede the kind of learning necessary for the development of a wise, or learning, organization (Brown & Starkey,

2000; Ploeger & Bisel, 2013). Wisdom is the willingness to explore ego-threatening realities (Brown & Starkey, 2000), and requires a certain vulnerability to understand that knowledge is not absolute and there is more to be *known* (Weick, 2003). In a wise, or healthy organization, “ego defenses operate to reduce doubt and uncertainty and to increase self-confidence in ways that permit complex and ambiguous phenomena to be interpreted and explained” (Brown & Starkey, 2000, p. 105).

Consequently, it may be that, at times, leadership communication can play a crucial role in directing organizational sensemaking in a way more akin to animal husbandry than unguided evolution and serve to work against forces that may elicit maladaptiveness. Left to their own devices, individuals in organizations will tend not to be mindful because of forces that abound in the sensemaking process that encourage the psychic comfort enjoyed by routine and sameness. Presumably, striving for sameness can be shaped or suppressed by strategic leadership messaging that encourages the kind of mindfulness that leads to the exploration of safe difference more often with suppression of error, which, in turn, produces heightened awareness of discriminatory detail through mindfulness.

Mindfulness

“Mindfulness, with its rich awareness of discriminatory detail, enables people to manage [make sense of] juxtapositions of events they have never seen before” (Weick et al., 2008, p. 61). Mindfulness refers to a way of thinking about learning (Langer, 1997), noticing differences, being aware, staying alert, and considering all possibilities and contingencies (Langer, 1989). Mindfulness has many positive outcomes for individuals and organizations, including psychological and physical benefits.

Mindfulness can enhance memory in aging individuals (Langer, 1989), increase positive affect and perceived control, and contribute to improved general health and longevity, to name a few (Burgoon & Langer, 1995; Langer, 1989). Mindfulness training has been used as a clinical intervention for cognitive therapy, stress reduction, chronic pain, and coping skills (Baer, 2003). For example, practicing mindfulness may lead to a change in an individual's thought patterns and attitudes about one's own thoughts, such as negative self-assumptions that lead to low self-efficacy (Baer, 2003). Also, focusing attention on one's own pain sensations rather than trying to escape pain by shifting positions is thought to reduce emotional distress associated with pain (Baer, 2003).

Scholars also demonstrated that mindfulness training can improve working memory and reading comprehension (e.g., Mzazek, Frankin, Tarchin Phillips, Baird, & Schooler, 2013). Mindfulness training improved performance and working memory in individuals prone to distraction by honing their ability to suppress distracting thoughts, or mind wandering (Mzazek et al., 2013). Mind wandering refers to the shifting of attention from an activity or task to unrelated concerns (Mzazek et al., 2013). These findings suggest the absence of mind wandering leads to enhanced mindfulness. In organizations, mindfulness can increase creativity and innovation by encouraging rule and procedure refinement in workplaces (Langer, 1989). Mindfulness can also decrease the risk of burnout and costly mistakes in companies (Langer, 1989), as well as the vulnerabilities associated with distracted, divided, and unstable attention (Weick & Sutcliffe, 2015).

Mindfulness is the core of adaptive sensemaking because mindfulness is the noticing of difference, or distinction-making (Langer, 1989). For Weick and Sutcliffe

(2015), “mindfulness is the rich awareness of discriminatory detail” (p. 32). HRO members’ practices embrace this distinction-making as valued, in that it allows them to imagine what *could* happen. Awareness of distinctions facilitates the creation of new categories and new labels (Langer, 1989; Ritchie-Dunham, 2014) upon which novel solutions can be drawn. More specifically, Langer (2014) explains, mindfulness is “an active state of mind characterized by novel distinction drawing that results in being (1) situated in the present; (2) sensitive to context and perspective; and (3) guided (not governed) by rules and routine” (p. 11). Conversely, *mindlessness* is a rigid adherence to old categories and perspectives (Langer, 1989, 2014), and the incomplete, thoughtless consideration of alternatives (Burgoon & Langer, 1995). This insensitivity to contexts, as well as thought processes that are strictly governed by rules and routines that impede awareness of possibilities, guide mindless behavior (Langer, 2014). HRO theorists concerned with the mindful nature of sensemaking in highly reliable organizing point out that reliability is as much a function of vigilant cognitive processes as it is a function of vigilant processes of production (Weick et al., 2008). Weick et al. (2008) note that mindfulness in routinized activity is interpretation and inquiry that is grounded in an HRO’s capabilities for action (Weick et al., 2008). Mindfulness requires the combination of maintaining attention, quality of attention, noticing of difference, and effective response to what is noticed, particularly in high-reliability organizing (Weick et al., 2008). Lack of those mindful contributions to safe operations can have negative consequences. In fact, Weick et al. (2008) write: “it is mindlessness coupled with thoughtless action that makes it difficult to cope with a continuous open-ended stream of surprises and non-routine events” (p. 34).

Instead, HROs embody types of organized behavior enacted as dynamic activity in which actors draw on new cognitive categories that can be applied to unexpected situations (Weick & Sutcliffe, 2015). A notable example occurred during the wildfire disaster at Mann Gulch in 1949. Foreman, Wagner Dodge, and a crew of firefighters (*termed*, smokejumpers) parachuted into the wildland area to fight the blaze (Weick, 1993). As the team advanced toward the fire, Dodge saw the fire cross the gorge and move toward the crew. In that chilling moment, Dodge lit a fire in front of the team and told everyone to lie down in the burned area, but none of them did. “Dodge lived by lying down in the ashes of his escape fire” (Weick, 1993, p. 629). Two others ran and made it through a crevice, while another firefighter died from severe burns. A total of 18 firefighters died in the Mann Gulch wildfire. In this case, an innovative, new category led to action that saved one firefighter’s life during an unexpected event. Notably, HROs do not solely rely on typological sets of applications for circumstances that can only be utilized in what might be considered typical conditions. These organizations’ members develop cognitive categories through well-practiced, constantly updated, collective processes that yield highly reliable performance in unexpected situations because unexpected events are viewed as expected (Weick & Sutcliffe, 2015). Weick and Sutcliffe (2015) describe mindfulness aptly:

[Mindfulness] involves the combination of ongoing scrutiny of existing expectations, continued refinement and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, a more nuanced appreciation of context

and ways to deal with it, and identification of new dimensions of context that improve foresight and current functioning. (p. 32)

Concurrently, HROs demonstrate the “ability to transcend [change] contexts,” a characteristic of mindfulness and important for inspiring creative solutions to problems (Langer, 1989, p. 131). Changing contexts refers to the mind’s capacity to consider how events are the same, as well as how they differ, which assists in the creation of new categories. These organizations function dependably in continuously changing contexts by staying abreast of operations, being mindful of all incoming stimuli that could disrupt a stable system, and updating procedures and practices regularly (Weick & Sutcliffe, 2015). Creativity in changing contexts results from developing analogies that compare processes and events in different contexts for better understanding of the situation (Langer, 1989). HROs strive to resist the temptation to normalize the situations they face by maintaining a vigilant approach (Langer, 1997) to their organizing through this noticing and updating (Weick, 2001) that assists in the suppression of maladaptive sensemaking, especially hubris and complacency (Weick & Sutcliffe, 2015). Hubris is problematic for learning because pride assumes one’s or a group’s necessary knowledge and capability has peaked and “there are no surprises left,” which dulls awareness of the context at hand (Weick, 2001, p. 357-358), but mindfulness combats that tendency in the sense that awareness is focused, attentive, and continually renewed in order to acquire a comprehensive perspective of emerging threats (Weick & Sutcliffe, 2015). Likewise, complacency is problematic for learning because drawing on past and biased interpretations can lead to assigning similar meaning to an event and ignoring nuance

(Weick, 2001), but mindfulness combats that tendency by stimulating hyper-vigilance about alternative possibilities, threats, and solutions (Weick & Sutcliffe, 2015).

What makes HROs, where death is on the line, operate different from other organizations is the fact that in an HRO, organizational members are constantly paying attention to the details of the system and its processes in an attempt to suppress errors that could link and amplify along the way. Mindful, adaptive sensemaking means paying attention to decisions in an ongoing fashion. HROs are distinct organizations not only because of ongoing, heightened awareness, but also because they are focused on how the process can fail (Weick & Sutcliffe, 2015; Weick et al., 2008). In this way, HROs employ preemptive solutions to prevent failure or create new solutions when the unexpected happens. HRO leaders recognize these mindful solutions can originate from any member of the organization (Ritchie-Dunham, 2014). This awareness and adaptiveness marks HROs as mindful learning organizations with unique ability to improve, innovate, and change in either stable or changing environments (Argyris, 2008; Brown & Starkey, 2000; Weick & Ashford, 2001; Weick & Sutcliffe, 2015). Highly reliable organizations value the organizational learning accomplished through collective organizing and sensemaking that fosters attending to the details of near misses. This collective, mindful action is enabled by shared behavioral patterns and mental models threaded into highly reliable organizational cultures (Bierly & Spender, 1995; Jordan & Johannessen, 2014). A deep understanding of this type of collective sensemaking can provide insight into the effective leading of organizational learning. Leading organizational learning refers to the creation and maintenance of a culture that encourages environmental fitness (Weick & Ashforth, 2001). Another component of a

learning culture, particularly important for HROs, is the cultivation of a climate that fosters a willingness to speak up with dissent.

Willingness to Speak Up with Dissent

High-reliability cultures depend on the interrelated contributions of organizational members to maintain safe operations; therefore, an important technique associated with risk reduction and risk management is cultivating a climate that encourages everyone to speak up when problems or potential problems arise. This reporting of errors encourages the capturing and processing of upward negative feedback that is essential for maintaining system fitness (Weick & Sutcliffe, 2015), adaptation (Morrison & Milliken, 2000), and organizational learning (Bisel, Messersmith, & Kelley, 2012). Upward negative feedback, termed *dissent* in organizational communication literature, is a form of feedback to supervisors that attempts to address and seek change for unsatisfactory conditions (Kassing, 2002; Kassing & Armstrong, 2002); yet, this feedback is often muted when employees perceive significant differences in the hierarchical structures between themselves and supervisors (Bisel et al., 2012) and when they fear the possibility of retribution (Bisel & Arterburn, 2012; Edmondson, 1996; Kassing, 2011). The organizational narratives repeated throughout a social system about supervisors' response to face-threatening critique may perpetuate these perceived status differences and contribute to employee silence (Tourish & Robson, 2006). For any organization, feedback in the form of articulated dissent is crucial to the accurate evaluation and improvement of organizational function (Kassing, 2011), but many may perceive the communication of dissent as risky in an organization that does not promote the practice. Importantly, not

all dissent is created equal. “Unhelpful dissent detracts from meaningful and purposeful dissent” (Kassing, 2001, p. 177). Yet, Kassing (2011) describes the clear rewards of operational and principled dissent this way: “Dissent, then, is powerful stuff, signaling when communication falters, performance suffers, crises loom, cultural change flounders, ethical behavior slips, and employee morale waxes and wanes” (p. 177).

The notion of capturing operational and principled dissent for system fitness points to HROs’ need to detect trouble while it is still small and tractable. HRO practices are rooted in the notion that small problems can be linked and amplified throughout a social system and result in major issues (Weick & Sutcliffe, 2015). High-reliability theory implies mindful sensemaking is done through vigilant and humble action that suppresses the tendency to devolve into proud and complacent—albeit highly comforting—sensemaking. For example, imagine a situation in which a single errant bolt lying on the deck of an aircraft carrier gets sucked up into a jet engine. This mishap could start a chain reaction of problems, leading to a cataclysmic event. The vigilance of a service member to notice this small occurrence, and speak up about it or remove the bolt is exemplary of mindful preoccupation with what could go wrong that contributes to the functioning of reliable systems.

A willingness to speak up about issues that may impede success and performance is necessary. Edmondson (2003) pointed to the central importance of speaking up in teams to facilitate effective coordinated action, particularly teams facing intense or unpredictable settings. Encouraging organizational members to speak up by inviting disagreement (Kassing, 2011) and exploring negative consequences (Hirokawa & Rost, 1992) fosters organizational health and suppresses decline, increases

adaptiveness, and improves fitness. Leader communication is important to increasing the likelihood that individuals will be willing to speak up and report issues. Inviting disagreement requires communication from supervisors in direct messages and in articulated self-reflection that models the exploration of negative consequences (Edmondson, 2003) works to suppress human error. This kind of leader messaging is critical in helping organizational members overcome their fear that dissent will result in harm to the supervisor-subordinate relationships (Milliken, Morrison, & Hewlin, 2003). Organizational members operate often with the expectation that they will suffer retribution (Bisel & Arterburn, 2012; Edmondson, 1996) and, therefore, do not offer the critical upward feedback necessary for process improvement and organizational fitness (Kassing, 2011). Subordinates grapple with identity assumptions that their own expertise is inadequate or supervisors are really the responsible parties (Bisel & Arterburn, 2012), and consequently, choose not to offer upward feedback.

Importantly, leaders have an opportunity to shape these assumptions for more adaptive sensemaking processes that facilitate upward dissent. In fact, the tendency for leadership to ignore critical upward feedback (Tourish & Robson, 2006), and the tendency for followers to withhold upward feedback when they perceive supervisors will not listen (Bisel & Arterburn, 2012), underscores the importance of leadership messaging that encourages a culture of dissent, critical to the suppression of human error. If suppression of human error can be routinized through patterned communication in the form of leadership messaging, those messages must be crafted carefully to produce desired results. The following section explores the ways in which messages can be framed strategically.

Strategic Framing of Leader Messages

Frames are implicit mental models about how the world works (Fairhurst, 2011). These frames, or mental models, are expectations, assumptions, and worldviews that shape lived experience and decisions. *Framing* refers to shaping others' understanding and perception of events (Fairhurst, 2011). Organizational communication scholars have noted that leaders who can shape others' mental models of how the world works tend to be especially skillful leaders (Fairhurst & Sarr, 1996). In fact, Weick (1995) suggests that "frames guide conduct by facilitating the interpretation of cues turned up by . . . conduct" (p. 127). What Weick's suggestion implies is that the shaping of others' sensemaking could lie, in part, in the hands (*literally*, voice) of leaders. Leaders can continually frame for others the ways in which they should organize (Fairhurst, 2011). Influencing any type of organizing requires some leading of others' communication, and for HROs specifically, it means guiding individuals toward more adaptive sensemaking (e.g., mindfulness, humility). Discourses embodied in leader messages can be important cues individuals attend to during sensemaking. Not unlike the notion of sensegiving in which leaders influence employees' mental models and ways of thinking about how an organization should, can, and will function during organizational change, such as layoffs (Maitlis & Lawrence, 2007), the claim of this dissertation is that HRO leaders can cultivate the continual commitment to and enactment of HRO values by using messages crafted with key framing devices that facilitate common understandings about HRO principles. These messages can function to shape or "frame" for others a vision of reliable performance.

Framing occurs most potently through rhetorical language choices, such as stories, metaphors, contrast, spin, and jargon (Fairhurst & Sarr, 1996; Weick, 1995). Metaphors, in particular, can provide a common language that forms a foundation for communication about abstract concepts in an organization (Hill & Levenhagen, 1995). Leaders can develop a set of metaphors about the organization, its goals and process, which can then be passed on in sensegiving fashion to direct how organizational members experience circumstances (Hill & Levenhagen, 1995). Leaders can encourage communicative behaviors, such as upward negative feedback from a subordinate through the use of a specific framing strategy. For example, stories can be used effectively to show that leaders themselves make mistakes, and those mistakes can be learning opportunities for growth and improvement. If a leader tells a story about himself/herself to subordinates regarding how finding errors and sharing them improved organizational function in the past, a culture of negative upward expression and psychological safety can be fostered (Edmondson, 2003).

For purposes of achieving high-reliability, leaders can build response repertoires filled with language necessary for promoting mindfulness and other adaptive behaviors. As mentioned earlier, HRO theorists have thus far articulated a supposed connection between language use and mindful culture, but have not yet tested that possible association. Weick and Sutcliffe (2015), in particular, recommend specific language use, designed to exercise reliability that might be practiced in the form of probes. For example, organizations focused on a reluctance to simplify might ask “To what extent do people take things for granted?” or “Do we challenge the status quo?” A check for commitment to resilience might include questions such as “Are people able to rely on

others?” or “Do people learn from their own mistakes?” The question is whether those reliability probes can be embedded in leader language in ways that promote mindful organizing.

Samples of overheard comments focused on reliability hint to the possibility that particular language already exists in HRO talk (Weick & Sutcliffe, 2015). For example, “Blaming the Ladbroke Grove train collision on operator error is an oversimplification that increases vulnerability because system screw-ups are left untouched” inculcates a reluctance to simplify by warning about the danger of general labels (Weick & Sutcliffe, 2015, p. 63). Another example reflects that “signals were ignored” and “anomalies were treated as normal” when an HRO member stated, “It was a routine refinery fire” (Weick & Sutcliffe, 2015, p. 46). Weick and Sutcliffe (2015), themselves, advocate that the mindset necessary for resilient, reliable performance is embedded and reinforced in the ways experiences are communicated before, during, and after occurrence. The authors’ language samples from in depth exploration of HROs in action suggest the importance of messages framed to evoke mindfulness. The implications for messages lacking language that calls attention to possibilities for failure can be catastrophic. The ways in which organizational members derive meaning from events will drive choice, decision, and action; and that meaning is co-created in communication. Consequently, the significance of carefully structured messages complete with language emphasizing HRO value commitments is paramount in generating the kind of mindfulness necessary for reliable performance.

The notion that mindfulness can be enhanced by strategic language choices was theorized by a partnership of famed scholars, Ellen Langer and Judee Burgoon. In their

chapter, the scholars theorized that certain language choices can either generate mindfulness or create *mindlessness*. Language can elicit a schematic way of thinking that adheres to rigid categories and encourages mindlessness, such as the use of labels (Burgoon & Langer, 1995). For example, the scholars write: “By emphasizing constancy rather than change, language may encourage fixed responses and frozen evaluations,” as in the mindless of acceptance the meaning of a “disabled” person or the frozen evaluation of someone labeled “a liar” (Burgoon & Langer, 1995, p. 116). Conversely, language can evoke novel and creative thought and action. For example, in an interesting comparison of fixed (absolute) and alternative (conditional) language use, Langer and Piper (1987) highlight the ability to stifle or enable mindfulness. In their study, items were described in either absolute or conditional terms. For example, in the absolute group, participants were told “This is a dog’s chew toy.” In the conditional group, participants were told “This *might be* a dog’s chew toy” (Langer & Piper, 1987). Participants in the absolute group produced fewer possible uses for the object than participants in the conditional group (Langer & Piper, 1987). The differences in language choice and subsequent participant behavioral responses demonstrated in the study exemplify the connection between language and action. In fact, Burgoon and Langer (1995) write that “rigidly adhering to preexisting categories rather than modifying them in light of new information or creating new categories leads to routinization of behavior” (p. 17). Further, Langer and Piper’s (1987) findings suggest the quality of others’ sensemaking can, in fact, be led with subtle language changes. Framing is the management of meaning (Fairhurst, 2011). Again, however, those

insights have not yet been translated and tested within the domain of high-reliability organizing.

The author argues messages dense with framing strategies, mindful language, and language that evokes adherence to HRO value commitments will be more likely to influence and direct adaptive sensemaking processes of organizational members than messages devoid of these aspects. Conversely, messages rife with too much optimistic confidence may have the potential to evoke hubris and complacency. Weick (2001) suggests a temptation to normalize and act on biased interpretations of how processes function in the past can lead to “aggressive confidence” that “dulls alertness” and encourages “imposing the same sense on a changing world” (pp. 357-358). This observation suggests that highly optimistic, motivational leader messaging, lacking the design aspects of framed messages will be more likely to suppress mindfulness and encourage maladaptive sensemaking.

Chapter 3: Study 1

Mindful Leader Messaging in a High-Reliability Organization

To explore whether leadership messages designed specifically to reinforce HRO value commitments will increase adaptive sensemaking, mindfulness, and willingness to speak up about an operational concern, an experiment using a typical high-reliability organization with a strong safety culture (e.g., firefighters, military; HRO culture) was conducted. Collecting this sample type holds the potential to add valuable insight about how mindfulness-based messaging functions for audiences and bolsters the ecological validity of findings. Collecting responses from adults who work currently in the context of a single HRO affords the opportunity to make inferences about leader messaging in similar HROs. Additionally, an HRO sample is a more stringent test of the possibility that leader messages crafted with mindful language will influence followers' adaptive sensemaking because it is expected adults working in the HRO context have already been exposed to HRO practices inculcated in their daily interactions and organizational culture. Therefore, the following hypotheses for Study 1 were advanced (see also Table 5 for a list of hypotheses and research questions):

H1a: The high-framing mindfulness-based leader message increases the perceptions of (1) *mindfulness* as well as the (2) *number* and (3) *quality of contingencies* generated by working adults employed in a high-reliability organization and engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.

H1b: Low-framing leader messages increase these outcomes as compared with control.

H1c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing mindfulness-based leader messages, low-framing mindfulness-based leader messages, and control.

H2a: The high-framing mindfulness-based leader message increases the perceptions of *willingness to speak up with dissent* reported by working adults employed in a high-reliability organization and engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.

H2b: Low-framing leader messages increase this outcome as compared with control.

H2c: Furthermore, optimistic-motivation leader message decreases this outcome as compared with high-framing mindfulness-based leader messages, low-framing mindfulness-based leader messages, and control.

Presumably, scenario planning is a common and frequent, if not ongoing, activity in HROs. HRO theorizing specifically (Weick & Sutcliffe, 2015), and organizational learning (Brown & Starkey, 2000; Wright, van der Heijden, Bradfield, Burt, & Cairns, 2004) and strategic management literature generally (Schoemaker, 1993), advocate the use of scenario planning in maximizing system functioning across time and space. Planning stages are expected to occur in HROs prior to executing any process and, presumably, are the site of discourse rich with HRO value commitments (Weick & Sutcliffe, 2015). Yet, to date, no basic organizational research has established how often HRO employees participate in this activity. Asking adult workers in an HRO to report how much they actually engage in scenario planning will inform assessments

of experimental outcomes for this sample. Therefore, the following research question was advanced:

RQ1: How often do working adults in a high-reliability organization report engaging in scenario planning conversations in fulfilling their work responsibilities?

Study 1 Method

Power Analysis

An a priori power analysis using G*Power was conducted to determine sample size requirements. Three power calculations were computed to create a range of needed sample size as dependent on potential effect sizes. Each computation was conducted for a one-way ANOVA, using an error probability of .05 and desired statistical power of .80. Different effect sizes were used for each calculation: The first power calculation with effect size set at .10 yielded a sample size requirement of 1,096 participants. The second power calculation with effect size set at .15 yielded a sample size requirement of 492 participants. The third power calculation with effect size set at .20 yielded a sample size requirement of 280 participants. The HRO sample size was set at a maximum of 300, given the actual size constraints of the participating HRO.

Participants

This study required participants who work in a strong HRO culture and had specialized high-reliability training. Thus, a sample of working adults ($N = 197$) from a large United States Army air defense battalion was chosen to participate in the experimental study due to its close alignment with HRO cultures. Because newcomer training and socialization of Soldiers is so systemic and intensive (e.g., basic training,

Advanced Individual Training (AIT) school), eligible respondents needed only 30 days or more of employment in the selected organization to participate in the study.

Respondents' understanding of the HRO culture and practices would likely have been inculcated during initial socialization into the Army and subsequent training schools. As a result, respondents will have likely transitioned psychologically from newcomer to an established member role (Kramer, 2010), even within the first month of organizational membership.

The sample was representative of a typical U.S. Army combat unit comprised of active duty Soldiers in non-leadership positions and leaders from all levels of the hierarchical structure. Consistent with the stratified, hierarchical characteristics of the U.S. Army, the majority of participants held non-leadership positions ($n = 45\%$); others were leaders ranking E5-E6 ($n = 31\%$); still fewer held senior, non-commissioned officer leadership positions ($n = 12\%$). Additionally, a small portion of participants were lieutenant to captain leadership ranks ($n = 6\%$), while a few held rank above captain (1%). Participants' average paid work experience was 10 years, ranging from 1 month to 30 years ($M = 117.35$ months, $SD = 80.45$). Participants' average supervisory experience ranged from none to 26 years ($M = 59.19$ months, $SD = 61.32$). Participants' education varied to include high school diplomas or equivalent ($n = 21\%$), some college ($n = 46\%$), 2-year degrees ($n = 9\%$), 4-year degrees ($n = 17\%$), masters ($n = 3\%$), and professional degrees ($n = 0.5\%$). Eight participants declined to indicate their level of education. The sample included 167 males, 25 females, and five participants who did not report their sex. Participants' ages ranged from 18 to 49, with an average age of 28.38 years ($SD = 6.87$). Ninety-two participants reported being White/Caucasian or

European-American, 37 were Black or African American, two reported Native American Indian or Alaskan Native, 10 indicated Asian-American, five were Native Hawaiian or Pacific Islander, 21 Hispanic or Latino/Latina; six reported some other ethnicity, 16 reported a combination of ethnicities, and eight declined to indicate their racial or ethnic background. Respondents were not compensated for participating.

Procedure and Design

Respondents who chose to participate in the experimental study answered a recruitment email sent via mass distribution from a unit administrator on behalf of the researcher. The email contained a participation request and link to an online questionnaire (see Appendix E). After reading informed consent and agreeing to participate, in accordance with Institutional Review Board oversight, those who agree to participate were directed through the experimental study design. For the experimental treatment, all participants received the same scenario describing a convoy mission assigned to their work unit to transport sensitive equipment, followed by a prompt to read a message from their leader addressing all organizational members prior to mission scenario planning (see Appendix C). Convoy scenario planning is a common practice in Army units with members of any Military Occupational Specialty (MOS).

After reading the convoy mission scenario, participants were randomly assigned to one of four leader message conditions: (1) high-framing mindfulness-based leader message, (2) low-framing mindfulness-based leader message, (3) control, or (4) optimistic-motivational leader message (described below). After reading the message assigned, participants were asked to generate a list of issues and potential issues that should be checked prior to conducting convoy operations (see explanation below). This

list was designed to capture the frequency and quality of issues (contingencies) generated. Generating contingencies is a communication outcome of mindful processing during scenario planning. Mindfulness involves being aware, staying alert, and considering multiple perspectives and possibilities (Langer, 1989). Generating contingencies is a creative, language-production exercise, comparable to enacting HRO value commitments in which members work to determine potential mistakes that could be made and pay attention to small discrepancies that may lead to system failure.

Participants then received post-treatment measures to assess perceptions of mindfulness and willingness to speak up about operational concerns. Subsequently, participants responded to questions regarding percentage of time spent scenario planning in their current jobs about any organizational event in any given week, the participant's convoy experience, and how often the participant drives in a convoy. Convoy and planning experience questions were presented after the treatment and post-treatment measures to ensure there was no priming effect. Participants then completed a manipulation check questionnaire (Appendix F). Finally, participants completed demographic questions regarding age, sex, ethnicity, education, occupational industry, length of paid employment, and supervisory experience. The following sections detail the leader message treatments, post-treatment instruments, and manipulation check.

Leader Message Treatments

Research suggests that strategically mindful leadership messaging has the potential to shape followers' sensemaking in adaptive ways, but that association has yet to be verified experimentally. Specifically, messages crafted with framing devices (e.g., jargon, metaphors; Fairhurst & Sarr, 1996) designed to emphasize mindful value

commitments of HROs should foster heightened cognitive processing and mindful language production during scenario planning. To test the idea that strategically-crafted messages can guide followers' sensemaking and yield better outcomes, four leader message treatments were designed for this experimental study (see Appendix D).

The first leader message, dubbed High-Framing Mindfulness-Based Leader Message, contained four metaphors—one of the five framing devices described by Fairhurst and Sarr (1996; i.e., jargon, story, metaphor, contrast, spin). Furthermore, metaphors within the message were designed to reinforce HRO anticipatory value commitments, (i.e., preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, deference to expertise; Weick & Sutcliffe, 2007, 2015) in memorable ways with creative language. Particular emphasis was placed on the preoccupation with failure value commitment. Language throughout the message was structured in novel ways to enhance mindfulness, as recommended by Burgoon and Langer (1995; e.g., “*this* convoy” vs. “the convoy,” “think outside the *rectangle*” vs. “think outside the box”). Leader messaging dense with framing tools that reinforce anticipatory HRO value commitments is expected to yield desirable outcomes, defined in this dissertation as frequency and quality of contingencies generated, feelings of mindfulness, and willingness to speak up with dissent (see Appendix D).

A second message, Low-Framing Mindfulness-Based Leader Message, utilized the same mindful language (Burgoon & Langer, 1995) included in the high-framing message to reinforce HRO value commitments (Weick & Sutcliffe, 2007, 2015). Metaphorical language was not incorporated. Thus, this message treatment was expected to yield fewer and less desirable outcomes (frequency and quality of

contingencies generated, feelings of mindfulness, and willingness to speak up with dissent) than the high-framing message (see Appendix D).

The Control Leader Message contained only language that mimicked information provided in the scenario (e.g., “This is a 3-day mission.”). The control message served as a point of comparison with other manipulated conditions (see Appendix D).

The fourth message, labeled Optimistic-Motivational Leader Message, contained optimistic language designed to motivate organizational members to complete the transport well, emphasizing the organization and members’ already established success record. No framing devices or reinforcement of HRO values were utilized. In comparison to the mindfulness-based condition, the optimistic message condition was crafted to evoke mindlessness by creating optimism and confidence (e.g., “I am optimistic...” and “I am confident...”; see Appendix D). According to Weick and Sutcliffe (2015), optimistic leader messages can generate mindlessness by creating expectations of the future that suppress vigilance. According to current HRO theory, optimistic leader messages may garner positive follower affect for the leader, but have the unfortunate tendency to reduce follower mindfulness because the messages may generate hubris, limit awareness, and encourage complacency in followers (Weick & Sutcliffe, 2015). The anticipatory HRO value commitment of preoccupation with failure, which was highlighted in the first two conditions, was contrasted in the optimistic leader message in the sense that the leader appears to predict success instead of focusing followers’ attention on the potential for future failure. That argument, however, has not been established experimentally. This message treatment was

expected to produce complacency and hubris that leads to reductions in desirable outcomes, which are the dependent variables: frequency and quality of contingencies generated, self-reported feelings of mindfulness, and willingness to speak up with operational concerns to supervisors (see Appendix D).

To address potential confounds in message structure and length, all four leader messages share the same number of base words (14) contained in identical first and last sentences (“We have orders for a convoy mission to transport sensitive equipment” and “Let’s get planning,” respectively). Each leader message then varies in word length according to intervention type, with the exception of control (54, 36, 14, and 36 words, respectively; see Footnote 1 for an explanation of the test that controlled for message length and its effect on the dependent variable).

Content Analysis of Planning Performance

Frequency of contingencies generated. Coders counted the raw total of issues or potential issues participants generated after reading one of the four leader message conditions. Coders were blind to message conditions as a means of enhancing validity. Because frequency counts are a relatively manifest type of code, extensive coder training was unnecessary. Interrater reliability was assessed on 10% of randomly selected data, Krippendorff’s $\alpha = .97$. Krippendorff’s alpha has the benefit of being able to compute reliability of ratio-level data with any number of coders (Krippendorff, 2004). Coders divided the remaining data and coded independently.

Contingency quality evaluation. An expert panel of three active duty United States Army service personnel was recruited to develop a coding scheme for evaluating the *quality* of contingencies participants generated as they considered issues and

potential issues that may arise during convoy operations. Panelists were seasoned leaders with considerable convoy and leadership experience from Army HROs, similar to participants in the Study 1 sample, and were asked to provide contextually accurate assessments of what constituted a quality contingency for the task at hand. Panelists were not told the purpose of the study or provided with information about HRO principles and framing devices. One officer and two non-commissioned officers read the convoy mission scenario and contingency prompt—but not the leader message prompts—to eliminate the potential for the coding scheme to be tautological with treatment manipulations (Hak & Bernts, 1996). Then, panelists discussed the characteristics of contingences that constituted high and low quality relative to a convoy mission of the scope described in the scenario. Next, panelists categorized a random selection of contingencies from the responses of five percent of the sample on a four-point scale they devised (Neuendorf, 2002).

Scale points measured quality as *weak* (0), *marginal* (1), *satisfactory* (3), and *strong* (4). Prototypical contingencies were captured and associated with scale points as a means of creating a codebook (Neuendorf, 2002). Panelists also consulted on written descriptions of quality level for each scale point, developed by the researcher based on panelists' guidance. The researcher provided only two parameters for the scale: (1) the scale must include an indicator for lowest quality and an indicator for highest quality; and (2) each point on the scale must contain descriptive labels for assessing the quality of a contingency (e.g., very poor, adequate, excellent). Panel participants were thanked for their efforts with \$50 gift cards. Similar methods have been used in other scholarly studies for codebook development (compare with Bagdasarov et al., 2016).

Coders evaluated the quality of contingencies participants generated, using the codebook created by the expert panel. Coders were trained based on a sample of 10% of randomly selected data. Interrater reliability was established on an additional sample of 10% of randomly selected data, Krippendorff's $\alpha = .85$. Coders divided the remaining data and coded independently. To enhance validity, coders were blind to the message condition. To further enhance validity, coders were instructed not to code items containing words or phrases written in leader message treatments (e.g., *Murphy's Law*, *what you got away with last time*). Eliminating these words from coding addressed potential demand characteristics. Demand characteristics refer to cues interpreted by the respondent that make the him or her aware of a researcher's hypothesis and suggest a respondent should behave in expected ways (McCambridge, de Bruin, & Witton, 2012; Nichols & Manor, 2008). In other words, respondents may perceive they should parrot back language contained in leader message treatments. Hence, eliminating these words and phrases ensured parroted responses were not included in analysis. Furthermore, those responses that seemed to indicate participant confusion about the planning task (e.g., "need more information to answer") were also excluded from the dataset.

Contingency quality coding scheme. Contingencies were evaluated on a four-point a priori scheme (i.e., 0-3), described above. Coders assigned values zero through three to responses by moving through a series of decision tasks. First, coders assessed holistically whether responses had general indicators of mindfulness. *General indicators of mindfulness* included an eagerness to adapt (e.g., backup plan), an eagerness to learn (e.g., questions about past experience), complexity, comprehensiveness, synthesis, novelty, unusual categories, creativity, focus on detail,

evidence of team sensemaking, or pooling of human resources. Some responses had no or very few general indicators of mindfulness, which then prompted coders to discern whether the response should be assigned a zero or one. If many general indicators of mindfulness were present, coders then had to decide whether to assign a code of two or three. Second, coders differentiated zero from one codes, as well as two from three codes, by evaluating whether responses included *typical operations concerns*, *unusual or unique concerns*, and *specific focus areas*. Responses demonstrated *typical operational concerns* if they referenced aspects such as securing equipment, vehicle maintenance, budget, personnel (e.g., hiring), or a recommendation to check the route. Responses that contained references to HAZMAT or similar comments about hazards, communications, medical/emergency, backup plan (e.g., alternate route), secrecy strategies, insurance, or safety were considered *unique or unusual concerns*. Responses could also include the following *specific focus areas*: equipment, vehicles, personnel, route, hazard/safety/danger/medical, or secrecy. Responses reflecting little or no *general indicators of mindfulness* with primary emphasis on *typical operational concerns* were coded as lower quality rankings (0 = *weak* or 1 = *marginal*). Responses containing numerous *general indicators of mindfulness* with primary emphasis on *unique or unusual concerns* that spanned varied *specific focus areas* were coded with higher quality rankings (2 = *satisfactory* or 3 = *strong*). Specifically, contingencies were assigned a code of (0) *weak* if they reflected minimal or no *general indicators of mindfulness* and included as few as three *typical operational concerns*. Contingencies were assigned a code of (1) *marginal* if they reflected some *general indicators of mindfulness*, included no or one *unique and unusual concern*, and contained more than

three *typical operational concerns* or contained three *typical concerns* with one *unique or unusual concern*. Contingencies were assigned a code of (2) *satisfactory* if they reflected heightened *general indicators of mindfulness*, included at least two *unique and unusual concerns*, and contained at least two *specific focus areas*. Contingencies were assigned a code of (3) *strong* if they reflected heightened *general indicators of mindfulness*, included at least three *unique and unusual concerns*, and contained at least three *focus areas*. Contingencies assigned a code of (2) *satisfactory* or (3) *strong* tended also to reflect considerations for shared information, discussion among members of the team, and a focus on the well-being of personnel.

As illustration of the coding scheme, the following participant responses received codes of (1) *weak* and (3) *strong*, respectively. The first participant response received a code of (1) *weak* because it reflected no *general indicators of mindfulness* and contained two *typical operational concerns*: “the equipment conditions; the experience of personnel on the mission.” The second participant response received a code of (3) *strong* because it reflected heightened *general indicators of mindfulness* (i.e., eagerness to adapt, pooling of human resources, comprehensiveness, synthesis, complexity, unusual categories), contained four *unique and unusual concerns* (i.e., backup plans, communications, emergency, safety) and included five *specific focus areas* (i.e., equipment, personnel, safety, route, emergency). The response also reflected a focus on the well-being of personnel:

“primary and alternate routes which includes traffic consideration; security and accessibility; and external support necessary; be cognizant of construction; restrictions; and limitation; also monitor height, width, and weight restrictions;

vehicles: evaluate services mechanical issues with BII equipment; ensure equipment was secured; appropriately marked; with correct documentation of emergency actions; ensure every vehicle has communication set up and redundant plan of action; fueled plus extra; personnel: adequate qualifications and training and experience operation to use vehicles; sufficient rest; knowledge of emergency procedures; rendezvous points; and order of march; sufficient rest for driver and TC; if weapons, qualifications as well; must be aware of the rules of engagement; security clearance and sensitive items training; support: maintenance support team with appropriate equipment; security assets; emergency medical personnel; QRF procedures; logistics: 5Ws; intel: local populace; threats; normal activity of people in area”

While higher ranked contingencies tended to be longer, coders evaluated contingencies based on the identified aspects they contained rather than total quantity of contingencies. Quality and frequency were expected to be correlated, but were assessed as distinct outcomes representing mindful performance. The correlation of .64 further indicates a differentiation between the meanings of the variables (see Table 1). Similar methods for coding scheme development were used in other scholarly communication studies (compare with Cionea, Hoelscher, & Iles, 2016; Cionea, Hopârtean, Hoelscher, Iles, & Straub, 2015).

Instruments

Mindfulness. Participants completed a modified version of Haigh, Moore Hashdan and Fresco’s (2011) one-factor, revised nine-item Langer Mindfulness/Mindlessness Scale (MMS), derived from Langer’s (1989) four-factor

MMS measure (see Appendix G). The measure was modified to specify the participants' experiences related to the current task or mission. The scale was used to capture participants' feelings of awareness and alertness when considering all possibilities and contingencies during the planning task. Each item was measured on a seven-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Sample items include: "I enjoyed investigating things" and "I was very creative." Scale reliability was excellent, Cronbach's, $a = .94$.

Willingness to speak up with dissent. An original six-item semantic differential scale was developed to capture participants' proclivity to speak up to supervisors when detecting problems during organizational tasks (see Appendix H). Participants were asked to consider their work unit *during the mission or task* and prompted with the statement "While working on this convoy mission, I would speak up about issues, problems, or concerns to supervisors." Participants then responded to the following semantic pairs: "never /always," "unwillingly/willingly," "uneagerly/eagerly," "not quickly/quickly," "unreliably/reliably," "not every time/every time." Higher scores indicated more willingness to speak upwardly to supervisors with operational concerns. Scale reliability was very good, Cronbach's $a = .84$

Exploratory factor analysis (EFA). An exploratory factor analysis was conducted on the *Willingness to Speak Up to with Dissent* scale to capture the latent factor structure of the measure (Tabachnick & Fidell, 2013). Based on Cattell's scree plot and Kaiser's rule, all factors greater than 1.0 were allowed to be extracted (Tabachnick & Fidell, 2013). The maximum likelihood extraction method was used to estimate the number of factors in the measure. The unrotated solution demonstrated

rotation was not needed (Abdi, 2003; Brown, 2015; Jennrich & Sampson, 1966; Tabachnick & Fidell, 2013). Factorability was acceptable with Kaiser-Meyer-Olkin Measure of Sampling Adequacy [MSA] = .82 and Bartlett's Test of Sphericity, χ^2 [df = 15] = 418.95, $p < .001$).

Initial analysis of the scree plot and eigenvalues above or equal to 1.0 indicated three factors should be extracted. Three items in the factor loadings matrix with values less than .30 (Cattell, 1965) were removed iteratively ("not reluctantly/reluctantly," "not publicly/publicly," and "with fear/without fear"), resulting in a one-factor structure with six items ("never /always," "unwillingly/willingly," "uneagerly/eagerly," "not quickly/quickly," "unreliably/reliably," "not every time/every time"). Thus, results of the EFA demonstrated the remaining six items were, indeed, reasonable indicators of a participant's willingness to speak up with dissent to supervisors with one latent dimension (Brown, 2015).

Manipulation Check

Framing. A manipulation check was conducted to ensure participants perceived their leader used framing language, in this case, metaphorical language. Participants responded to five Likert-type items (1 = *strongly disagree* to 7 = *strongly agree*) that assessed how much participants agreed their leader used figurative language. Following the prompt, "*When addressing organizational members about the convoy operations mission, my leader . . .*", participants indicated how much they agreed their leader "used interesting language," "used metaphors," "did NOT use colorful language (reverse-coded)," "used figures of speech," and "used surprising turns of phrases." Scale reliability was very good. Cronbach's $\alpha = .83$. A one-way ANOVA indicated significant

differences between groups, $F(3, 188) = 4.08, p < .01$. Post-hoc analysis, using Tukey HSD, revealed participants in the high-framing mindfulness leader message condition ($M = 4.47, SD = 1.11$) were significantly more likely to agree the leader used framing language than participants in the optimistic-motivational message ($M = 3.63, SD = 1.18$). Post-hoc analysis did not support the notion that participants perceived more framing language of the leader among the high-framing mindfulness-based leader message and either the low-framing mindfulness-based leader message ($M = 4.30, SD = 1.03$) or control ($M = 4.13, SD = 1.50$) conditions. Although all four conditions were not significantly different in terms of participants' perception of the leaders' use of metaphorical language, means were in the expected direction. The sample size may have contributed to inadequate statistical power.

Mindfulness. A manipulation check was conducted to ensure participants perceived their leader used language that encouraged mindfulness. Participants were prompted with the statement: "*When addressing organizational members about the convoy operations mission, my leader . . .*". Then, participants indicated on a Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) their agreement with the following phrases: "*encouraged alertness,*" "*impressed the need for attentiveness to the details of this task,*" and "*encouraged treating the task as unique.*" Scale reliability was excellent, Cronbach's $\alpha = .90$. A one-way ANOVA indicated no significant differences among message treatment groups, $F(3, 188) = 0.85, ns$. Despite nonsignificant results, the means for each condition were in the expected direction. For the high-framing mindfulness-based leader message treatment, $M = 5.48, SD = 1.20$. For the low-framing mindfulness-based leader message, $M = 5.36, SD = 1.14$. For the control leader

message, $M = 5.20$, $SD = 1.53$. Finally, for the optimistic-motivational leader message, $M = 5.04$, $SD = 1.64$. Again, a larger sample may have been needed to yield enough statistical power for detecting mean differences.

Optimism. A manipulation check was conducted to ensure participants perceived their leader used motivational and optimistic language. Participants were prompted with the statement: “*When addressing organizational members about the convoy operations mission, my leader . . .*” Then, participants indicated their agreement on a Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) with the following phrases: “*was optimistic,*” “*was confident in our success,*” and “*was confident nothing would go wrong.*” The scale demonstrated adequate reliability, Cronbach’s $\alpha = .74$. A one-way ANOVA indicated differences among message treatment groups approached significance, $F(3, 188) = 2.53$, $p = .06$. Despite nonsignificant results, the means for each condition were in the expected direction. For the optimistic-motivational leader message, $M = 5.17$, $SD = 1.18$. For the control leader message, $M = 5.06$, $SD = 1.07$. For the low-framing mindfulness-based leader message, $M = 4.80$, $SD = 1.21$. Finally, for the high-framing mindfulness-based leader message treatment, $M = 4.58$, $SD = 1.01$. Again, the sample size may have contributed to a lack of statistical power to detect mean differences.

Study 1 Results

Mindful Leader Message Effects on Followers' Self-Reported Feelings of Mindfulness, Frequency of Contingencies Generated, and Quality of Contingencies Generated

Descriptive statistics and correlations of Study 1 dependent variables are provided in Table 2. The first set of hypotheses predicted mindfulness-based messages with high framing would increase perceptions of mindfulness reported while scenario planning for a convoy mission, as well as number and quality of contingencies generated during planning more than low-framing, optimistic motivational and control messages; and Mindfulness-based messages with low framing would increase these outcomes compared with control. Furthermore, the reverse effect would be produced by an optimistic-motivational leader message. A one-way analysis of variance (ANOVA) was performed to examine differences in reported perceptions of mindfulness, as well as frequency and quality of contingencies generated with each of the four leader message treatments. Results indicated no significant differences in treatment effects for participants' self-reported feelings of mindfulness during scenario planning, $F(3, 190) = 1.91, p = .13, \eta^2 = 0.03$. Furthermore, analyses did not support the notion that participants produced more, $F(3, 196) = 0.37, p = .77, \eta^2 = 0.01$, or higher quality contingencies during the hypothetical convoy planning task, $F(3, 196) = 1.08, p = 0.36, \eta^2 = 0.02$. In sum, results revealed no measurable improvements' in participants' mindfulness during scenario planning across the mindfulness or optimistic leader messaging conditions. Thus, H1a, b, and c were not supported.

Leader Messages as Predictors of Willingness to Speak Up with Dissent

The second set of hypotheses predicted mindfulness-based leader messages with high framing would increase participants' willingness to speak up to supervisors with operational concerns during scenario planning for a convoy mission more than participants assigned to the low-framing, optimistic-motivational, and control message conditions. Additionally, H2b proposed mindfulness-based leader messages with low framing would increase this outcome compared with control. Conversely, the optimistic-motivational message was expected to decrease participants' reported willingness to speak up as compared with the other three conditions (H2c). Results of a one-way ANOVA indicated no significant differences in the degree to which participants were willing to speak up with dissent during hypothetical convoy planning, $F(3, 183) = .91, p = 0.44, \eta^2 = .01$. Thus, H2a, b or c were not supported.

Descriptive Research: Prevalence of Organizational Scenario Planning

Finally, descriptive statistics were used to determine how often working adults in a high-reliability organization reported engaging in scenario planning conversations to fulfill their work responsibilities (RQ1). Participants reported varying frequency of participation in planning in their organization. Participants reported engaging in planning rarely (14%), never (22%), sometimes (24%), often (19%) or all of the time (21%). Participants tended to report that planning for an event, task, or project in their organization was usually or always important [never (2%), rarely (6%), sometimes (18%), often (32%) or all of the time (42%)]. In other words, participants generally agreed that planning was an important aspect of their job, if not also a frequent task of their job. Thus, these basic findings support the notion espoused by HRO theorists (e.g.,

Weick & Sutcliffe, 2015) that scenario planning is a kind of task HRO members perform and deem valuable.

Chapter 4: Study 2

Mindful Leader Messages in a General Organizational Context with a General Working Adult Sample

Results from the first experimental study employed a sample of adults who currently work within the context of a single, high-reliability organization. Presumably, participants in the Study 1 sample were likely exposed to mindfulness-inducing messaging and cultural practices regularly. The author conjectured that participants socialized into an organization with a rich HRO and safety culture may not be as affected by a single, mindfulness message from a hypothetical leader as a sample of general working adults who are not necessarily socialized into HRO practices. It stands to reason that messaging designed to increase mindfulness would have especially observable effects with participants who are not necessarily accustomed to a culture that promotes heedful work practices for reliability. Thus, a second experimental study using a general working adult sample of varied occupations (e.g., food service, software development, retail) provided diverse ground for testing whether a mindfulness-based leader message has effects on participants' mindful processing and language production. A more general working adult sample allowed for the opportunity to explore whether mindfulness leader messaging is more influential on a general working adult sample as compared with participants drawn from a single HRO with a strong safety culture, as was observed in Study 1. Therefore, the following hypotheses for Study 2 were advanced (see also Table 5 for a list of hypotheses and research questions):

H3a: The high-framing mindfulness-based leader message increases the perceptions of (1) *mindfulness* as well as the (2) *number* and (3) *quality of contingencies generated* by working adults engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.

H3b: Low-framing mindfulness-based leader messages increase these outcomes as compared with control.

H3c: Furthermore, optimistic-motivational leader messages decrease these outcomes as compared with high-framing mindfulness-based leader messages, low-framing mindfulness-based leader messages, and control.

H4a: The high-framing mindfulness-based leader message increases the perceptions of *willingness to speak up with dissent* reported by working adults engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.

H4b: Low-framing mindfulness-based leader messages increase these outcomes as compared with control.

H4c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing mindfulness-based leader messages, low-framing mindfulness-based leader messages, and control.

Given that scenario planning is presumed to be a frequent occupational activity and the location of rich and organizationally-relevant dialogue, understanding how much adult workers actually engage in scenario planning will inform assessments of the ecological significance of experimental outcomes. Therefore, the following research question was advanced:

RQ2: How often do working adults report engaging in scenario planning conversations in fulfilling their work responsibilities?

Study 2 Method

Power Analysis

Based on the a priori power analysis conducted for Study 1, the general working adult sample size goal was set at 500 participants. Recall that G*Power software was used to determine sample size requirements. Computation was conducted for a one-way analysis of variance (ANOVA), using an error probability of .05 and desired statistical power of .80. The software indicated a sample size of about 500 participants would detect effect sizes of .15.

Participants

A sample of working adults ($N = 481$) was recruited from a “crowdsource” service called Amazon Mechanical Turk (MTurk) to participate in the second experimental study. MTurk sample respondents complete various tasks online in exchange for compensation, and are physically located across the globe. Studies reveal that MTurk samples are more representative of the U.S. population than conventional samples drawn from college students. MTurk samples have more economic and ethnic diversity than traditional college-student samples, and consist of a large, stable pool of participants that are not overused (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2011).

All participants were U.S. residents and reported living in 47 states, including the District of Columbia and Puerto Rico. Participants reported part or fulltime employment within various occupational industries, including engineering and other

technicians, sales, office and administrative support, business and financial operations, food preparation and service, production, management in professional and related occupations, management in business and financial occupations, and farming, fishing or forestry, among others. Participants' average paid work experience was 17 years with experience ranging from 12 months to 53 years ($M = 204.73$ months, $SD = 137.55$). Participants' average supervisory experience was about 5 years, ranging from none to 47 years ($M = 57.61$ months, $SD = 73.38$). Participants' education varied to include high school diplomas or equivalent ($n = 6\%$), some college ($n = 22\%$), 2-year degree ($n = 12\%$), 4-year degree ($n = 37\%$), master's degree ($n = 2\%$), and professional degree ($n = 2\%$). Seventeen participants declined to indicate their level of education. The sample included 222 males, 242 females, and 17 participants who did not report their sex. Participants' age ranged from 19 to 72 with an average age of 38.28 year ($SD = 11.75$ years). Three hundred seventy-five participants reported being White/Caucasian or European-American, 27 were Black or African American, one reported being Native American Indian or Alaskan Native, 29 indicated Asian-American, 13 were Hispanic or Latino/Latina, six reported some other ethnicity, 10 reported a combination of races, and 20 declined to indicate their racial or ethnic background.

Procedure and Design

MTurk workers were required to meet three qualification criterion to access the study—(1) be located in the United States, (2) have an approval rate of 95% for tasks, and (3) have obtained greater than 1000 completed tasks. Potential respondents, who met the initial qualification criterion, gained electronic access to a Qualtrics© hosted survey. Participants were vetted prior to completing this experiment by answering

questions about employment. In order to participate, respondents had to indicate they were currently a paid, part-time or fulltime, employee of an organization other than MTurk for at least six months—the minimum length of time assumed necessary to be able to report on their perception of organizational culture and practices. Qualified participants advanced in the survey to read an electronic informed consent letter in accordance with institutional review board oversight. After giving consent, respondents proceeded to the experimental portion of the study. Respondents were paid \$1.50 for their participation.

Study 2 participants were directed through the identical study design outlined in Study 1, including random assignment to one of the four leader message conditions, post-treatment measures, as well as transport experience, planning frequency and demographic questions. Scenario planning for moving equipment of any type can be considered common practice in any organizational setting. Scenario and prompt wording were modified slightly from Study 1 to better reflect a general organizational setting in which equipment might be transported; for example, “project task” was used in lieu of “convoy mission.” Participants were not told specifically what kind of sensitive equipment would be moved. The type of sensitive equipment and what constitutes sensitive items was inferred by the participant. The same two coders from Study 1 were used to code number of contingencies generated and the same assembled expert panelists and coders evaluated contingency quality.

Content Analysis of Planning Performance

Frequency of contingencies generated. Similar to Study 1, coders, who were blind to message condition, counted the raw total of issues or potential issues

participants generated for each of the four leader message conditions. Also, as with Study 1, frequency counts are a manifest code, so extensive coder training was unnecessary. Interrater reliability was assessed on 10% of randomly selected data, Krippendorff's $a = .97$. Coders divided the remaining data and coded independently.

Contingency quality evaluation. Using the codebook developed by the expert panel in Study 1, coders evaluated the quality of contingencies participants generated. Coders were trained with a sample of 10% of randomly selected data. Interrater reliability was established on an additional randomly selected sample of 10%, Krippendorff's $a = .85$. Coders divided the remaining data and coded independently. As in Study 1, coders were blind to the message condition and instructed not to code items containing words or phrases contained in leader message treatments (e.g., *Murphy's Law, what you got away with last time*) to avoid potential demand characteristics (Nichols & Manor, 2008; McCambridge, de Bruin & Witton, 2012).

Contingency quality coding scheme. Contingencies were evaluated for quality using the same parameters identified in the coding process for Study 1. See Study 1 for details.

Instruments

Post-treatment instruments measured the remaining two dependent variables (self-reported feelings of mindfulness and willingness to speak up with Concerns to Supervisors).

Mindfulness. Similar to Study 1, participants completed the same modified version of Haigh, Moore, Hashdan and Fresco's (2011) one-factor, revised nine-item Langer Mindfulness/Mindlessness Scale (MMS), derived from Langer's (1989) four-

factor MMS measure (see Appendix G). For the second study, scale reliability was excellent, Cronbach's $\alpha = .91$.

Willingness to speak up with dissent. Participants completed the same original six-item semantic differential scale used in Study 1 to capture participants' proclivity to speak up to supervisors when detecting problems during organizational tasks (see Appendix H). For the second study, scale reliability was very good, Cronbach's $\alpha = .83$.

Confirmatory factor analysis (CFA). A confirmatory factor analysis was conducted on the *Willingness to Speak Up with Dissent* scale using LISREL 9.2 structural equation modeling software (Jöreskog & Sörbom, 2015) to confirm a single-factor structure of the measure (Brown, 2015). A priori conceptualization of a one-factor structure was derived from an EFA conducted on Study 1 data (Brown, 2015). The one-factor measure included six semantic differential items ("*never/always*," "*unwillingly/willingly*," "*uneagerly/eagerly*," "*not quickly/quickly*," "*unreliably/reliably*," "*not every time/every time*"). The series mean was imputed prior to conducting the CFA to replace data that appeared to be missing at random. Less than 0.01% of the data were imputed. The raw data was read as input data and the metric assumption was made. Maximum likelihood (ML) estimation was used for analysis. Based on measurement equations, the latent factor explained more than 40% of the variance in the items; thus all six items were retained. The standardized path coefficients were greater than 0.7 (Brown, 2015; see Table 3). A fit index was reported from each category (Hoyle & Panter, 1995), using parsimonious fit (the root mean square error of approximation, RMSEA), incremental fit (the comparative fit index, CFI), and absolute fit (the root mean squared residual, SRMR). The model fit relatively

well, $\chi^2(9, N = 481) = 29.92$ ($p < .001$), RMSEA = .07, [CI: .04, .10], CFI = .99, and SRMR = .02. The CFI and SRMR meet the recommended fit criteria proposed by Hu and Bentler (1999)—RMSEA \leq .06, CFI \geq .95, and SRMR \leq .08. The RMSEA is slightly higher than Hu and Bentler’s recommendation; however, McDonald and Ho (2002) note there is a generally agreed upon range for RMSEA—values less than .05 are analogous to “good” fit and values less than .08 can be viewed as “acceptable” fit. The relative chi-square value (chi-square divided by degrees of freedom) was acceptable at < 5.00 (Wheaton, Muthén, Alwin, & Summers, 1977). As anticipated, the CFA confirmed a single-factor structure of the *Willingness to Speak up with Dissent* measure. Other communication studies used a similar method to confirm the factor structure of psychometric measures (compare with Johnson, Averbek, Kelley, & Liu, 2011; Cionea et al., 2016; Johnson & Cionea, 2016).

Manipulation Check

Framing. Similar to Study 1, a manipulation check was conducted to ensure participants perceived their leader used metaphorical framing language more in the high-framing mindfulness-based leader message condition than the other three conditions. Participants responded to five Likert-type items (1 = *strongly disagree* to 7 = *strongly agree*), assessing how much they agreed their leader used figurative language. After reading the prompt, “*When addressing organizational members about the project task, my leader . . .*”, participants indicated how much they agreed their leader “*used interesting language,*” “*used metaphors,*” “*did NOT use colorful language* (reverse-coded)” “*used figures of speech,*” and “*used surprising turns of phrases.*” Scale reliability was very good, Cronbach’s $\alpha = .86$. A one-way ANOVA indicated

significant differences between groups, $F(3, 480) = 63.756, p < .001$. As expected, post-hoc analysis, using Tukey's HSD, revealed participants in the high-framing mindfulness-based leader message condition were significantly more likely to agree the leader used framing language ($M = 4.84, SD = 1.18$) than participants in the low-framing mindfulness leader message ($M = 3.68, SD = 1.29$), the optimistic-motivational message ($M = 3.37, SD = 1.17$), and the control conditions ($M = 2.75, SD = 1.18$).

Mindfulness. Similar to Study 1, a manipulation check was conducted to ensure participants perceived their leader used mindful language in the high *and* low-framing mindfulness leader message as compared to the optimistic leader message or control conditions. After reading the following prompt: "*When addressing organizational members about the convoy operations mission, my leader . . .*," participants indicated on a Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) how much they agreed their leader "*encouraged alertness*," "*impressed the need for attentiveness to the details of this task*," and "*encouraged treating the task as unique*". Scale reliability was excellent, Cronbach's $\alpha = .90$. A one-way ANOVA indicated significant differences between message treatment groups, $F(3, 480) = 36.01, p < .001$. Importantly, post-hoc analysis, using Tukey's HSD, revealed participants in the high-framing message condition were significantly more likely to agree the leader used mindful language ($M = 6.08, SD = .83$) more than participants in the low-framing message condition ($M = 5.19, SD = 1.37$), the optimistic-motivational message ($M = 4.87, SD = 1.50$), and the control condition ($M = 4.35, SD = 1.51$). Participants in the low-framing mindfulness-based leader message perceived use of mindful language by the leader to be greater than participants in the control leader message condition. However, post-hoc analyses did

not support the notion that participants in the low-framing condition perceived the leader used mindful language more than participants in the optimistic-motivational condition. In other words, *metaphors* used in the *high-framing mindfulness-based leader message* facilitated participant perception that the leader used mindful language. Thus, importantly, novel language structure facilitated participants' perceptions of a leader's mindful language use—an observation that contributes insight to the mindfulness and framing literatures (see Discussion).

Optimism. Similar to Study 1, a manipulation check was conducted to ensure participants perceived their leader used motivational and optimistic language more in the optimistic-motivational leader message than the other three message conditions. After reading the following prompt: “*When addressing organizational members about the convoy operations mission, my leader . . .*,” participants indicated on a Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) how much they agreed their leader “*was optimistic*,” “*was confident in our success*,” and “*was confident nothing would go wrong*.” Scale reliability was very good, Cronbach’s $\alpha = .87$. A one-way ANOVA indicated significant differences between message treatment groups, $F(3, 480) = 66.47$, $p < .001$. As expected, post-hoc analysis, using Tukey’s HSD, revealed participants in the optimistic-motivational message condition were significantly more likely to agree their leader used optimistic language ($M = 6.14$, $SD = 1.00$) than participants in the control condition ($M = 4.91$, $SD = 1.05$), the high-framing condition ($M = 4.27$, $SD = 1.46$), and the low-framing condition ($M = 4.04$, $SD = 1.38$). In other words, language designed to motivate by focusing on success and positive work history alone facilitated participants’ perceptions of optimism in the leader message.

Study 2 Results

Mindful Leader Message Effects on Followers' Self-Reported Feelings of Mindfulness, Frequency of Contingencies Generated, and Quality of Contingencies Generated

Descriptive statistics and correlations of Study 2 dependent variables are provided in Table 4. The first set of hypotheses predicted mindfulness-based leader messages with high framing would increase perceptions of mindfulness participants reported while scenario planning for a transport project task, as well as increase the frequency and quality of contingencies generated during planning as compared with a mindfulness leader message with low-framing, an optimistic-motivational leader message, and a control message (H1a). Furthermore, H3b proposed mindfulness leader messages with low framing would increase these outcomes as compared with a control message. Also, H3c proposed comparatively lower effects would be produced by an optimistic-motivational leader message.

Self-reported feelings of mindfulness. A one-way ANOVA was computed to determine whether participants reported feeling more or less mindful during the scenario planning task based on the leader message condition to which they were assigned. Results indicated no significant differences in treatment effects for mindfulness, $F(3, 473) = 2.20, p = .09, \eta^2 = .01$. Thus, H3a-1 was not supported.

Frequency of contingencies generated. Results of a one-way ANOVA indicated significant differences in leader message treatments for frequency of contingencies generated, $F(3, 480) = 3.18, p < .05, \eta^2 = .02$. The post-hoc Tukey HSD test revealed a statistically significant difference between the number of contingencies

generated by participants in the high-framing mindfulness-based leader message treatment group ($M = 8.50, SD = 5.32$) and the optimistic-motivational leader message treatment group ($M = 6.72, SD = 4.18$).¹ See Figure 1 for a means plot. These findings indicate organizational members generate significantly more contingencies when presented with a framing-dense message than an optimistic message. Thus, H3b and H3c were not supported, but means were in the expected direction for H3c. However, H3a-2 was supported.

Quality of contingencies generated. Results of a one-way ANOVA indicated significant differences in leader message treatments for quality of contingencies generated, $F(3, 480) = 14.05, p < .001, \eta^2 = .08$. A post-hoc test, using Tukey HSD, indicated participants in the high-framing mindfulness-based leader message treatment group ($M = 1.65, SD = 0.83$) produced significantly higher quality contingencies during the scenario planning task than participants in the low-framing mindfulness-based leader message treatment group ($M = 1.11, SD = 0.66$), the control group ($M = 1.20, SD = 0.67$), and the optimistic-motivational leader message treatment group ($M = 1.15, SD = 0.69$). See Figure 2 for a means plot. Results are supportive of the idea that a leader message dense with metaphors that reinforces the need for mindful vigilance encourages followers to create higher quality contingencies during scenario planning as compared with followers who received a leader message with few or no metaphors to reinforce the need for mindfulness. Furthermore, results also supported the notion that

¹ To test the possibility that message length accounted for differences in frequency and quality, and rule out any reciprocity influence, an ANCOVA was performed for significant findings. Interpretation of the findings did not change. The ANCOVA demonstrated that when controlling for message length, condition was still associated with frequency, $F(3, 480) = 4.87, p < .05, \eta^2 = .03$, and quality, $F(3, 480) = 12.35, p < .05, \eta^2 = .07$.

followers who received an optimistic leader message designed to motivate produced significantly lower quality contingencies during a scenario planning task as compared with followers who received a leader message dense with metaphors, which reinforce the need for mindfulness. Thus, H3b and H3c were not supported. However, H3a-3 was supported.

Leader Messages as Predictors of Willingness to Speak Up with Dissent

Hypothesis 4a predicted mindfulness-based leader messages with high framing would increase willingness to speak up to supervisors with concerns during scenario planning for a transport project task more than low-framing, optimistic-motivational and control messages. Furthermore, H4b proposed that leader messages with low framing would increase participants' willingness to speak up with concerns to supervisors as compared with control group participants. The optimistic-motivational message was expected to decrease willingness to speak up as compared with participants in the other three conditions (H4c). Results of a one-way ANOVA indicated no significant differences between message conditions in participants' willingness to speak up with concerns to supervisors, $F(3, 476) = 0.85, p = 0.46, \eta^2 = .01$. Thus, H4a, b, c were not supported.

Descriptive Research: Prevalence of Organizational Scenario Planning?

Finally, descriptive statistics were used to determine how often working adults report engaging in scenario planning conversations to fulfill their work responsibilities (RQ2). Participants reported varying frequency of participation in planning in their organization. Participants reported engaging in planning rarely (7%), never (16%), sometimes (31%), often (32%) or all of the time (13%). Participants tended to reported

planning for an event, task or project in their organization was usually or always important [never (5%), rarely (8%), sometimes (28%), often (35%) or all of the time (24%)]. Similar to U.S. Soldiers (Study 1), participants from the general working adult sample tended to agree that planning was an important aspect of their job, if not also a frequent task of their job. Thus, these basic findings support the notion that scenario planning is a type of task organizational members perform and deem valuable—indicating that scenario planning is indeed a task worthy of scholarly attention.

Post-Hoc Comparison of Study 1 and Study 2 Samples' Planning Performance

Based on the previous significant findings, it seemed prudent to compare frequency and quality planning performance in the two samples. The following sections outline comparison results.

Comparing frequency of contingencies generated by sample. The collection of these two samples created the opportunity to explore whether participants from a single high-reliability organization produced more numerous contingencies during scenario planning than participants sampled from a general working adult population, representing many different organizations and occupations. Results of a *t*-test indicated participants from the high-reliability organization ($M = 11.70$, $SD = 7.88$) did indeed produce significantly more contingencies on average than participants from the general working adult sample ($M = 7.53$, $SD = 4.89$), irrespective of leader message condition, $t(261.81) = -6.87$, $p < .001$, $\eta^2 = .07$. See Figure 3 for a means plot.

Comparing quality of contingencies generated by sample. The collection of these two samples created the opportunity to explore whether participants from a single high-reliability organization produced differing quality contingencies during scenario

planning than participants sampled from a general working adult sample population representing many different organizations and occupations. Results of a *t*-test indicated participants from the HRO ($M = 1.88, SD = 0.92$) did indeed produce significantly more contingencies on average than participants from the general working adult sample ($M = 1.28, SD = .74$), irrespective of leader message condition, $t(308.06) = -8.28, p < .001, \eta^2 = .09$ (see Figure 4 for a means plot).

Chapter 5: Discussion

The goals of this dissertation were three-fold: (a) To determine whether a single leader message could stimulate followers' mindful language production during a scenario planning task, (b) To determine if a single leader message could increase followers' feelings of mindfulness and their willingness to speak up, and (c) To explore whether members of a single high-reliability organization (HRO) are differentially effective at producing more and higher quality contingencies during a scenario planning task than a general working adult sample. Each goal was achieved. First, results indicated a single leader message dense with framing devices stimulated significantly more and higher quality contingencies from participants, which is supportive of the notion that a leader message can stimulate followers' mindful language production during a scenario planning task. These results were observed among the general working adult sample, but not the participants who work for a single HRO. Second, results did not necessarily support the conclusion that a single leader message could stimulate followers' feelings of mindfulness or willingness to speak up to supervisors with operational concerns during a scenario planning task. Third, post-hoc analysis comparing samples revealed that, irrespective of leader message content, members of a single HRO are indeed more effective at producing more numerous and higher quality contingencies during a scenario planning task as compared with a general working adult sample. In other words, the comparison of samples is consistent with HRO theorists' claim that high-reliability organizational members are socialized into mindful, yet routine, ways of thinking and speaking (Wieck & Sutcliffe, 2007, 2015; Weick et al., 2008). The following paragraphs explain how these results contribute to sensemaking

theory and HRO theory, as well as the organizational learning, mindfulness, and leadership communication literatures.

First, results contribute to sensemaking theory (Weick, 1995) the idea that strategic leadership communication can stimulate followers' adaptive sensemaking. HRO theorists suggest adaptive organizational sensemaking is central to the purposeful, mindful practices of HROs (Weick et al., 2005; Weick & Sutcliffe, 2015). Recall that HRO theory is the prescriptive extension of sensemaking theory. Notably, existing HRO theorizing implied that leader messaging can enhance the adaptiveness of followers' sensemaking, but the literature is largely based on qualitative investigations or theoretical treatise (Weick et al., 2005; Weick & Sutcliffe, 2015). Until now, that link had not been tested experimentally. Weick et al. (2005) note specifically that an adaptive form of sensemaking considers not only future possibilities, but also outcomes of past actions. During scenario planning, listing potential issues and concerns that could occur while executing a given task exemplifies this adaptive sensemaking process. Scholars theorized that use of mindful language in messaging (Burgoon & Langer, 1995) can yield more mindful performances. Management literature also suggests that leading others is about influencing actions that yield desired outcomes (Yukl, 2012). More specifically, scholars suggested leaders must frame expectations for others through language (Fairhurst, 2007, 20011) in ways that shape organizational members' sensemaking (Maitlis & Lawrence, 2007) that can influence how they experience circumstances (Hill & Levenhagen, 1995). Results of this experiment indicated that participants in the general working adult sample exposed to the high-framing mindfulness leader message condition produced more and higher quality

contingencies during scenario planning. These findings suggest that strategic leader communication, in particular, messages crafted with mindful language and framing devices can, in fact, yield an observable increase in mindfulness and adaptive sensemaking among followers. Future research should continue to explore how leaders can engage in leader message practices that can stimulate other forms of adaptive sensemaking such as, suppression of complacency and hubris (Weick & Sutcliffe, 2015), evaluation of error and self-critical messaging as methods for encouraging organizational learning (Allen et al., 2010; Brown & Starkey, 2000), and use of other framing devices (e.g., storytelling, spin; Fairhurst & Sarr, 1996) in leader messaging as a discursive sensegiving resource (Fiss & Zajac, 2006).

Second, post-hoc sample comparison results were also consistent with the idea that mindfulness can be routinized. Organizational and strategic management studies (Brown & Starkey, 2000; Schoemaker, 1993; Weick & Sutcliffe, 2015; Wright et al., 2004) suggest scenario planning is a form of routinizing mindful processes. In fact, HRO theorists argue cogently that, despite the apparent oxymoron, mindfulness can be routinized (Weick et al., 2008) through communication patterns that continually reinforce ways of thinking about planning for optimal, reliable outcomes (Weick & Sutcliffe, 2015). Early organizational sensemaking studies pointed to the routinized, *mindless* nature of sensemaking in organizations striving to streamline work processes (Frederickson, 1986; Michael, 1973; Mintzberg, 1979). While some organizations often simplify perceptions of problems as a means of achieving workable solutions (Hogarth & Makridakis, 1981; Schwenk, 1984), HROs consider the complexities of processes and approach organizing with vigilant, mindful attention *routinely* (Weick et al.,

2008)—effectively contradicting the common connotation of routine organizing. Notably, well-known mindfulness scholar Ellen Langer (2014) suggests mindfulness is shepherded by routine. This mindfulness is routinely inculcated during the daily scenario planning activities of HROs (Weick & Sutcliffe, 2015). A comparison of samples using post-hoc *t*-tests revealed participants from a single HRO produced higher quality contingencies than those in the general working adult sample, regardless of leader message content. These findings underscore the notion that HROs tend to demonstrate superior performance in scenario planning with respect to mindful, routinized preparation for successful task execution (Weick & Sutcliffe, 2015). Thus, results were supportive of the idea that organizational members who are enmeshed in a rich *culture* of high-reliability messaging, and who have more practice at this kind of tasking, will tend to be more mindful and better at planning than general organizational members (Weick & Sutcliffe, 2007). Future research should continue to explore leadership communication behaviors and processual activities during organizational scenario planning qualitatively to uncover patterns of communication that are inculcated in HRO cultures and which stimulate followers' mindfulness during planning tasks.

Third, some results were consistent with HRO theory's claim that optimism can decrease the quality of followers' mindful planning. While HRO theory has been criticized as pessimistic, HRO theorists suggest too much optimism can have the tendency to produce complacency and hubris (Weick & Sutcliffe, 2015), which can lead to catastrophic results due to mindless processes (Weick, 2001; Weick & Sutcliffe, 2015). Recall that Weick et al. (2008) explain members of HROs organize around failure rather than only success in order to achieve reliable performance. Though

seemingly pessimistic, HROs perform reliability, in part, by being preoccupied with failure (Weick & Sutcliffe, 2007, 2015), making them focus on preparedness for the potential for future troubles. Results of the second study indicated participants in the working adult sample produced significantly fewer and lower quality contingencies during scenario planning when presented with the optimistic-motivational leader message than those who received the high-framing mindfulness-based message. Thus, these findings are supportive of the idea that leader messages framed with a heightened focus on system discrepancies indeed encourage more reliable performance from followers as compared with purely optimistic leader message approaches (Weick & Sutcliffe, 2007, 2015). Future research should investigate whether optimistic messages decrease followers' mindful planning in relation to the other four HRO value commitments (i.e., reluctance to simplify, sensitivity to operations, deference to expertise, commitment to resilience).

Fourth, results are supportive of HRO theorists' claim that enactment of HRO value commitments can enhance mindfulness in non-HRO contexts. Recall that HRO theory argues HRO members tend to perform reliably in tenuous and unexpected circumstances because they practice and enact specific value commitments (i.e., preoccupation with failure, reluctance to simplify, sensitivity to operations, deference to expertise, commitment to resilience) that cause them to approach tasks more mindfully (Weick & Sutcliffe, 2007, 2015). In the second experiment, participants from a general working adult sample completed a scenario planning task that would be common in a general organizational setting. The task required participants to generate a list of contingencies while scenario planning for execution of the task. Results indicated that

participants who received the leader message dense with language and metaphors designed to reinforce the *preoccupation with failure* value commitment generated higher quality contingencies than participants who received a leader message with fewer or no metaphors for reinforcement. That observation is important for leadership communication scholars, who suggest leaders can use discursive resources in order to stimulate desired behaviors and decision-making from followers (Fairhurst, 2005, 2007, 2011; Fairhurst & Connaughton, 2014; Fairhurst & Sarr, 1996; Hill & Levenhagen, 1995; Maitlis & Lawrence, 2007). For example, Hill and Levenhagen's (1999) theoretical paper explains metaphors are powerful discursive tools leaders can wield to create interpretive schemes that shape organizational members' visions of their environments and provide guidance for subsequent action. *Mindful* action in HROs results, in part, from a focus on preparedness and the possibility of future failure (Weick et al., 2008), which is socialized frequently in organizational discourse (Weick & Sutcliffe, 2015). Consider, for instance, this snippet of language articulated by a leader in an HRO and overheard by researchers: "If something dumb, dangerous, or different comes up, interrupt me in the cockpit" (Weick & Sutcliffe, 2015, p. 46). The highly-framed mindfulness-based leader message reinforcing the *preoccupation with failure* value commitment with language similar to the above example served to boost general working adult participants' performance, signaling enhanced mindfulness. Thus, results are supportive of the idea that prescriptive recommendations offered by HRO theory can be effectively transferred in order to stimulate greater mindfulness, even among a general working adults sample of participants who do not necessarily work in HRO settings. Future research should investigate whether leader messaging designed to

reinforce the other HRO four value commitments (i.e., sensitivity to operations, reluctance to simplify, deference to expertise, commitment to resilience) also produce differential effects in non-HRO task contexts and with workers who do not belong to safety cultures.

Fifth, results from the experimental manipulation checks contribute to theories of mindfulness (Langer, 1989) the idea that individuals may be more likely to perceive a leader's mindful language when that language is dense with framing devices. Recall that Burgoon and Langer (1995) highlighted studies that demonstrate individuals produce more mindful and creative ideas when presented with statements phrased in ways that elicit mindfulness as compared with phrases that do not (e.g., "This is a dog's chew toy" vs. "This *might* be a dog's chew toy"). Furthermore, Langer (2014) pointed to decades of studies that demonstrate some cognitions and behaviors are measurably influenced by linguistic priming. Likewise, leadership communication literature points to the importance of crafting leader messages with phrasing that can guide followers' actions (Fairhurst, 2007, 2011; Fairhurst & Connaughton, 2014; Fairhurst & Sarr, 1996; Maitlis & Lawrence, 2007). Recall that participants in the general working adult sample assigned to the high-framing mindfulness-based leader message were significantly more likely to perceive the leader used mindful language than participants assigned to the other three conditions. These findings support the notion that mindful language is perceived when messages are novel and carefully crafted with figurative and surprising turns of phrase (Langer, 2014). Future research should continue to explore whether mindful language in leader phrasing is recognizable to followers in other specific types of general organizational contexts.

Sixth, these studies contribute a new measurement tool for assessing mindfulness in performance. Participants in both studies completed a language production exercise by generating their own contingencies during scenario planning after exposure to a leader message treatment. Organizational communication scholars demonstrated that language production experiments, combined with content analytic procedures, are capable of measuring the effects of language-based interventions (Bisel & Kramer, 2014; Ploeger & Bisel, 2013; Ploeger, Kelley, & Bisel, 2011). Results of this language production exercise indicated participants in the general working adult sample generated significantly more and higher quality contingencies after being exposed to high-framing mindfulness messaging. In other words, these respondents performed more creatively and provided more novel solutions, signaling they were more mindfully aware while they produced language. Notably, participants demonstrated observable mindfulness with language production as compared with their self-reported *feelings* of mindfulness when completing the Langer Mindfulness/Mindlessness Scale (MMS; Langer, 1989; Haigh et al., 2011). Psychological measurement studies demonstrate consistently that feelings of mindfulness are a notoriously difficult psychological state to measure psychometrically (Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2004, Haigh et al., 2011). The performance-based language production exercise offered here provides a supplemental communicative method for assessing mindfulness in performance. Future research should further explore language-production and content analytic strategies for measuring mindfulness as a means of supplementing psychometric strategies for assessing mindfulness.

Seventh, the basic research findings from both studies confirm planning tasks are an important and valued organizational activity worthy of additional investigation by organizational communication scholars. HRO (Weick & Sutcliffe, 2015), organizational learning (Brown & Starkey, 2000; Wright et al., 2004), and strategic management scholars (Schoemaker, 1993) all champion scenario planning as a method for optimizing system functioning. Study results indicated participants sampled from both a single HRO and a general working adult population tended to agree, overall, that planning was an important aspect of their jobs, if not also a frequent task of their jobs. Thus, these basic findings support the notion espoused by HRO theorists (Weick & Sutcliffe, 2015) that planning is not only a valued and recurrent task HRO members conduct, but also a valued and frequent task working adults in general organization types perform. Future research should explore the features of communication that facilitate mindfulness during planning activities for different types of tasks in other HROs, as well as additional general organization populations.

Limitations

These studies, like all studies, have limitations. First, experiments allow control in isolating the influence of one variable over another, but potential threats to internal validity remain, such as variations in word length between leader messages. Additionally, participants were asked to read a leader message and then respond as an organizational member in a hypothetical rather than actual situation. Outcomes may vary in actual organizational versus hypothetical settings. Second, the leader message treatments assessed outcomes based on only high, low and no mindful language and framing use. A leader message with moderate use of mindful language may have

offered additional insight into message effects on participants' adaptive sensemaking. Third, the leader message that contained mindfulness language without a metaphor framing device did not seem to be as effective at enhancing followers' adaptive sensemaking as the leader message with specific framing. These findings could be a product of the importance of framing or a result of the kind of language used in the particular messages crafted for this experiment. Finally, the ability to detect significant differences was constrained by the sample size for Study 1.

Practical Implications

Results from these studies have practical implications for leaders hoping to stimulate more mindful performance from followers as they engage in planning tasks. First, in Study 2, a single mindfulness-based leader message measurably improved participants' performance on a creative planning task. The takeaway for leaders is the potential of carefully crafted, mindful messaging to stimulate followers' performance and subsequent organizational success. Second, study findings cue leaders to the importance of incorporating dense framing (e.g., metaphors) in this messaging in addition to mindful language. Results demonstrated participants performed better when leader messaging contained both metaphors and mindful language than when messaging contained only mindful language. Third, results indicated participants performed poorly on the planning task when exposed to optimistic messaging as compared with participants exposed to messaging dense with framing and mindful language. These findings point to the dangers of using optimism in leader messaging. Leaders should strive to avoid overly optimistic approaches when addressing followers.

Chapter 6: Conclusion

This dissertation investigated, in two separate experimental studies, whether mindfulness-based leader messages would stimulate followers' adaptive sensemaking. These studies were the first to test the link between leader messaging and followers' sensemaking experimentally. Results of these studies speak to the capacity of carefully crafted leadership communication to encourage followers' adaptive sensemaking and therefore mindful performance. These studies demonstrated that (a) strategic leadership communication can, indeed, stimulate followers' adaptive sensemaking, that (b) mindfulness can be routinized, and can be enhanced by the enactment of high-reliability organization (HRO) value commitments, (c) overly optimistic leader messages have the dangerous consequence of decreasing followers' mindful performance significantly more than leader messages dense with framing and mindful language, and (d) adult workers best perceive mindful language in leader messaging that is dense with framing devices. Furthermore, these studies offer a performance-based method for assessing mindfulness, as well as contribute to management and organizational communication literature the confirmation that planning tasks are a valued and important organizational activity. Taken together, these studies constitute an initial, and important, experimental exploration of the associations between mindfulness-based leader messaging and followers' mindful performance during organizational planning tasks.

Implications of these findings suggest recommendations for leadership communication practices. Consider the important finding that strategic leader messaging framed with metaphorical language and HRO value commitments actually improved followers' mindful performance. Leaders who desire to stimulate not only

productivity, but also mindful performance that yields overall collective, reliable outcomes might wish to engage followers' with more carefully designed messages. Furthermore, because specific communication practices can routinize mindfulness, leaders may wish to model the adaptive collective sensemaking practices of HROs. A comparison of performance from participants in a single HRO with participants from a general working adult sample demonstrated that participants from a single HRO perform more mindfully than participants from a general working adult sample. HRO cultures rich with the enactment of value commitments designed to yield highly reliable performance tend to routinize mindfulness and foster the adaptive collective sensemaking of its organizational members (Weick & Sutcliffe, 2007, 2015). Value commitments are inculcated in the daily practices of HROs during planning tasks, which leaders can model in general organizational types to stimulate more mindful performance from followers. Finally, leaders should heed the warning illustrated by the findings in these studies that overly optimistic leader communication does not necessarily motivate followers' in ways that stimulate mindful performance. In fact, the reverse is true—followers' mindfulness is decreased detrimentally after exposure to leader optimism as compared with exposure to messaging dense with framing and mindful language.

This dissertation offers insight into theories of mindfulness that suggest language priming (Langer, 2014) and specific mindful language (Burgoon & Langer, 1995; Langer, 1989) can create states of vigilance (Langer, 1997; Weick & Sutcliffe, 2015; Weick et al., 2008) demonstrated regularly in the collective, routinized sensemaking practices (Weick et al., 2008) of HROs. General working adults in the

second study responded to mindful, framed, strategic leader communication with mindful performance. This dissertation extends mindfulness and HRO literature by not only demonstrating experimentally there is a link between strategic leadership communication and the adaptive sensemaking of followers, but also that leader messages must be structured mindfully in order to stimulate mindful performance from followers. This overarching finding generates two specific recommendations for leaders with regard to organizational planning and for scholars using psychometric methods to assess mindfulness. First, organizational scenario planning, as demonstrated in these studies, as well as organizational learning (Brown & Starkey, 2000; Wright, et al., 2004) and strategic management literature (Schoemaker, 1993) is a frequent and valued organizational activity. Scenario planning is the site of rich communication in which organizational members enact behaviors that generate some kind of product. Organizations can benefit from considering planning stages of organizational activity as important locations for incorporating carefully constructed leadership communication. These studies demonstrate that message crafting is an important step for stimulating followers' mindful performance—not just any message will work. Highly framed, mindfulness-based messages work best for activating followers' adaptive sensemaking. Second, these studies highlight the value of supplementing psychometric measures of mindfulness with performance-based language production exercises. Because feelings of mindfulness are notoriously difficult to measure psychometrically (Baer et al., 2004; Baer et al., 2006; Brown & Ryan, 2004, Haigh et al., 2011), incorporating a language production activity may provide an additional method of observing mindfulness. In sum, these experimental findings speak to the value of HRO practices as a model for

adaptive sensemaking and the ability of strategic leadership communication to stimulate followers' mindful performance.

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Appendix A

Tables

Table 1

Study 1: Means, Standard Deviations, and Correlations for Dependent Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3
1. FREQ	11.72	7.95			
2. QLTY	1.90	.93	.64**		
3. MIND	5.56	1.05	.17*	.02	
4. W2S	5.72	1.00	.21**	.13	.27**

Note. Listwise. $n = 178$. * $p < .05$, ** $p < .01$. FREQ (frequency of contingencies generated); QLTY (quality of contingencies generated); MIND (self-reported feelings of mindfulness); W2S (willingness to speak up with dissent)

Table 2*Unrotated Factor Matrix for Willingness to Speak Up with Dissent*

Items	Factor Loadings
Never / Always	.77
Unwillingly / Willingly	.74
Uneagerly / Eagerly	.63
Not Quickly / Quickly	.79
Unreliably / Reliably	.61
Not Every Time / Every Time	.64

Note. Each item follows the same prompt (i.e., “*While working on this convoy operations mission, I would speak up about issues, problems, or concerns to supervisors...*”)

Table 3*Completely Standardized Values for Willingness to Speak Up with Dissent*

Items	Factor Loadings
Never / Always	.92
Unwillingly / Willingly	.89
Uneagerly / Eagerly	.80
Not Quickly / Quickly	.84
Unreliably / Reliably	.87
Not Every Time / Every Time	.70

Note. Each item follows the same prompt (i.e., “*While working on this convoy operations mission, I would speak up about issues, problems, or concerns to supervisors...*”)

Table 4*Study 2: Means, Standard Deviations, and Correlations for Dependent Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3
1. FREQ	7.56	4.9			
2. QLTY	1.27	.73	.67**		
3. MIND	5.40	.96	.15**	.13**	
4. W2S	5.23	1.21	.02	.05	.34**

Note. Listwise. $n = 470$. ** $p < .01$. FREQ (frequency of contingencies generated); QLTY (quality of contingencies generated); MIND (self-reported feelings of mindfulness); W2S (willingness to speak up with dissent)

Table 5*Hypotheses and Research Questions*

RQ/Hypothesis	IVs	DVs	Analysis	Statistic	Post-Hoc
RQ1: How often do working adults in a high-reliability organization report engaging in scenario planning conversations in fulfilling their work responsibilities?				Descriptive Statistics	
H1a: The high-framing mindfulness-based leader message increases the perceptions of (a) mindfulness reported and (b) number and (c) quality of contingencies generated by working adults engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic- Motivational	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H1b: Low-framing leader messages increase these outcomes as compared with control.	Low-Framing Mindfulness-Based Control Leader Message	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H1c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing Mindfulness-based messages, low-framing mindfulness-based leader messages and control.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic- Motivational	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H2a: The high-framing mindfulness-based leader message increases the perceptions of willingness to speak up with dissent reported by working adults engaged in scenario planning more than low-framing mindfulness-based leader message, control, and optimistic-motivation leader message.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic- Motivational	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H2b: Low-framing leader messages increase these outcomes as compared with control.	Low-Framing Mindfulness-Based Control	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H2c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing mindfulness-based messages, low-	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni

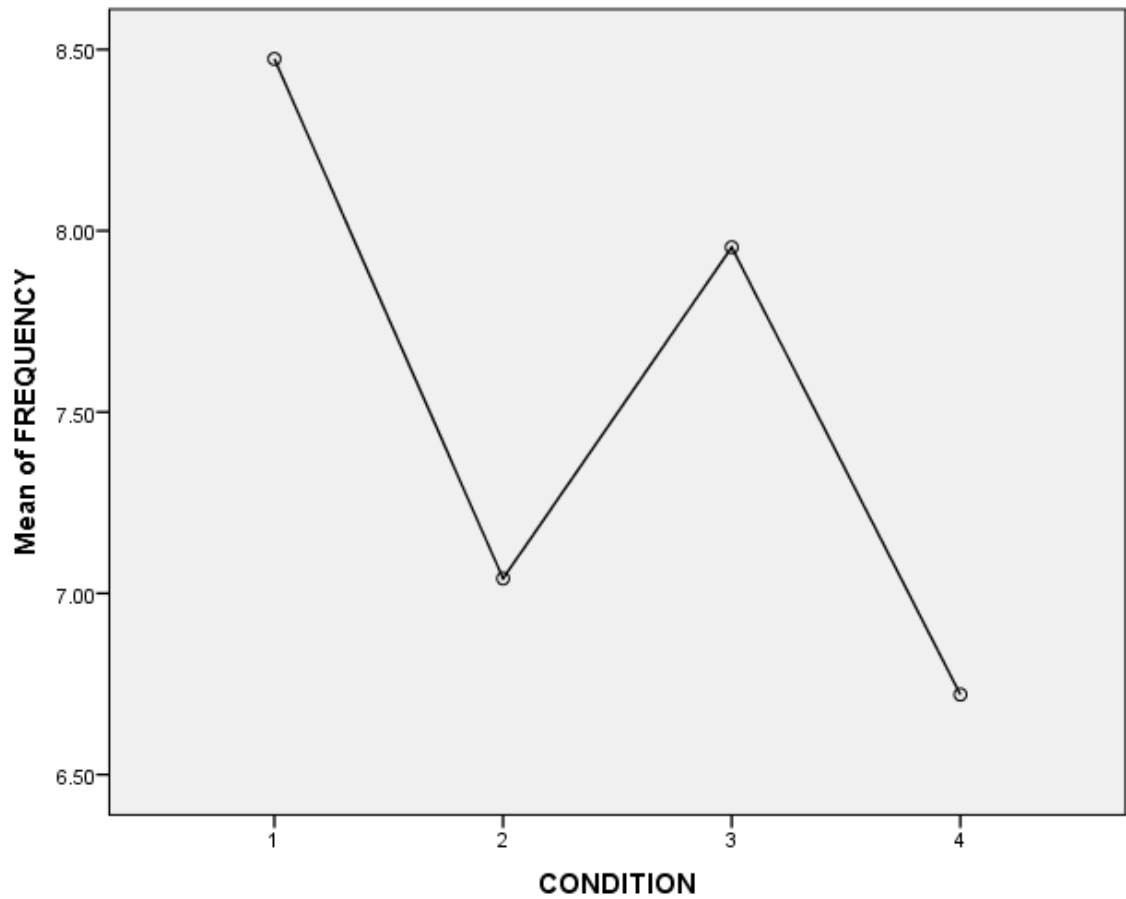
RQ/Hypothesis	IVs	DVs	Analysis	Statistic	Post-Hoc
framing mindfulness-based leader messages and control.	Optimistic-Motivational				
RQ2: How often do working adults in a general working adult sample report engaging in scenario planning conversations in fulfilling their work responsibilities?				Descriptive Statistics	
H3a: The high-framing mindfulness-based leader message increases the perceptions of (a) mindfulness reported and (b) number and (c) quality of contingencies generated by working adults engaged in scenario planning more than low-framing Mindfulness-based message, control, and optimistic-motivation leader message.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic-Motivational	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H3b: Low-framing leader messages increase these outcomes as compared with control.	Low-Framing Mindfulness-Based Control	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H3c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing mindfulness-based leader messages, low-framing mindfulness-based leader messages and control.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic-Motivational	Feelings of Mindfulness Number of contingencies Quality of contingencies	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H4a: The high-framing Mindfulness-based message increases the perceptions of willingness to speak up with dissent reported by working adults engaged in scenario planning more than low-framing Mindfulness-based message, control, and optimistic-motivation leader message.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic-Motivational	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H4b: Low-framing leader messages increase these outcomes as compared with control.	Low-Framing Mindfulness-based Control	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni
H4c: Furthermore, optimistic-motivation leader message decreases these outcomes as compared with high-framing Mindfulness-based messages, low-framing Mindfulness-based messages and control.	High-Framing Mindfulness-Based Low-Framing Mindfulness-Based Control Optimistic-Motivational	Willingness to speak up with dissent	One-way ANOVA	<i>F</i>	Tukey's HSD & Bonferroni

Appendix B

Figures

Figure 1

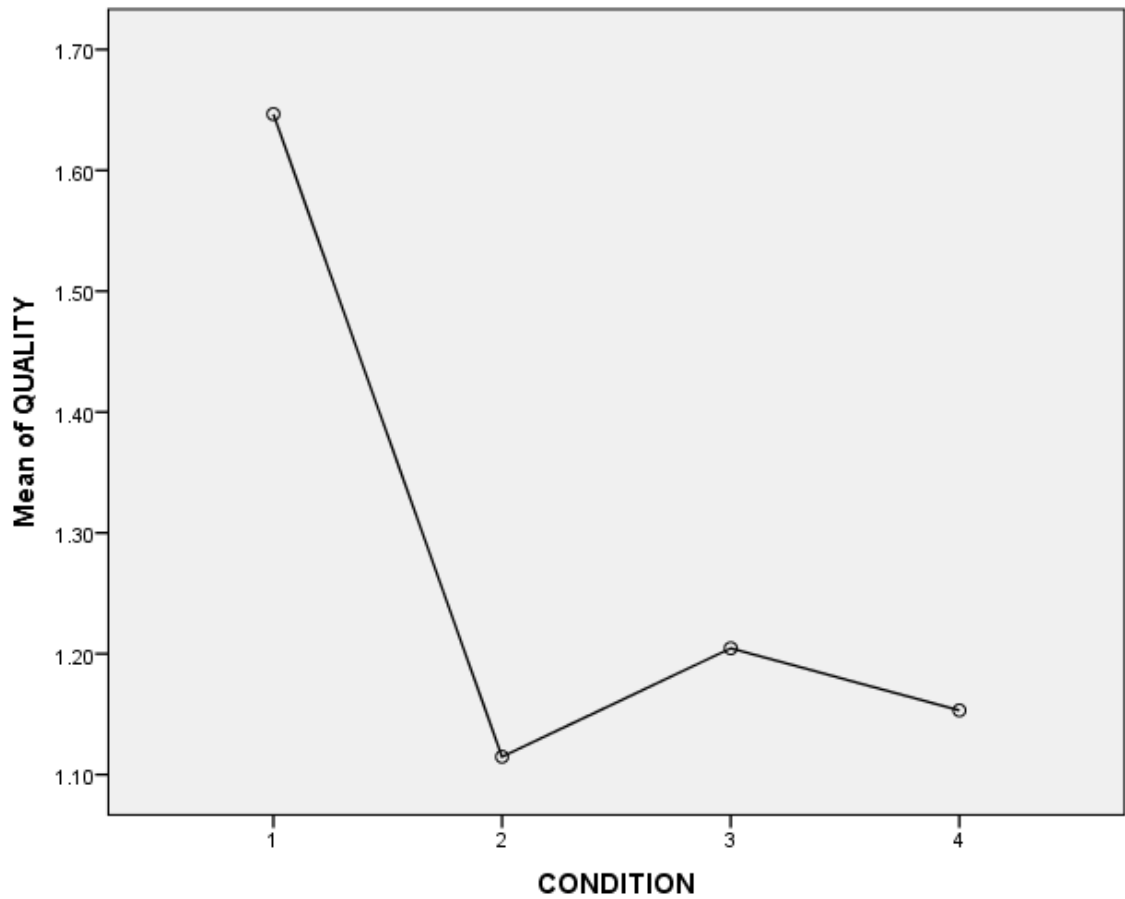
Study 2: Means Plot for Frequency of Contingencies Generated



Note. CONDITION: 1=high-framing mindfulness-based leader message; 2=low-framing mindfulness-based leader message; 3=control leader message; 4=optimistic-motivational leader message

Figure 2

Study 2: Means Plot for Quality of Contingencies Generated

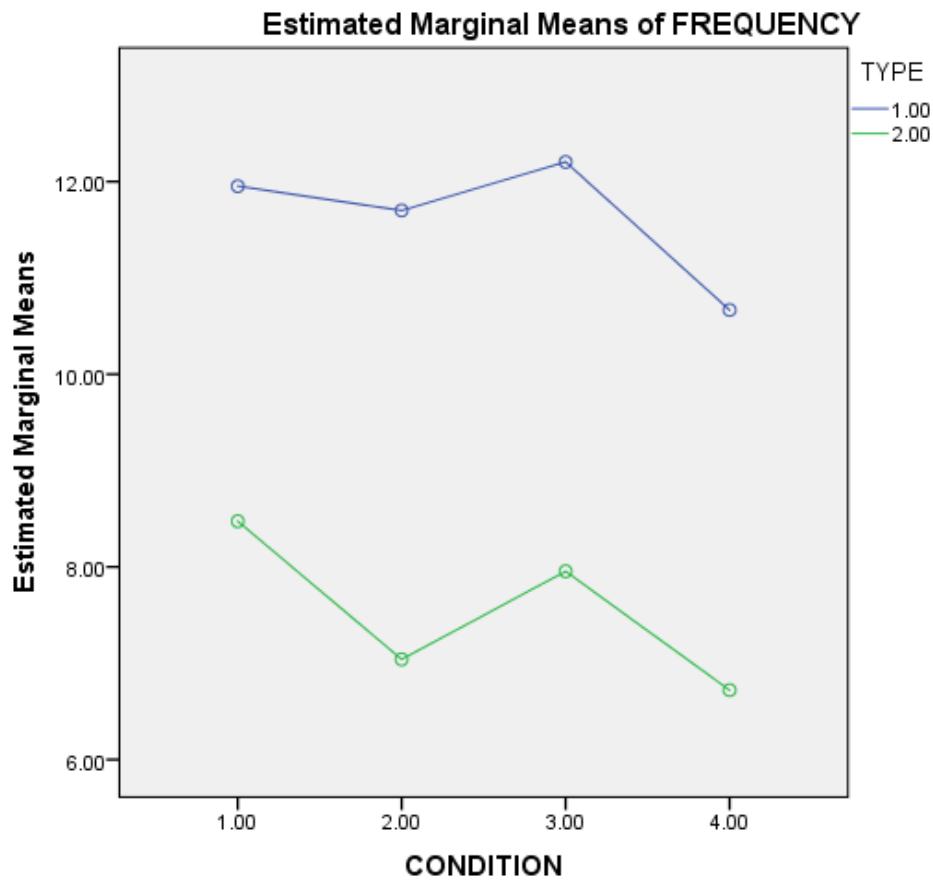


Note. CONDITION: 1=high-framing mindfulness-based leader message; 2=low-framing mindfulness-based leader message; 3=control leader message; 4=optimistic-motivational leader message

Figure 3

Means Plot for Post-Hoc Comparison of Study 1 and Study 2 Samples' Planning

Performance—Frequency of Contingencies Generated

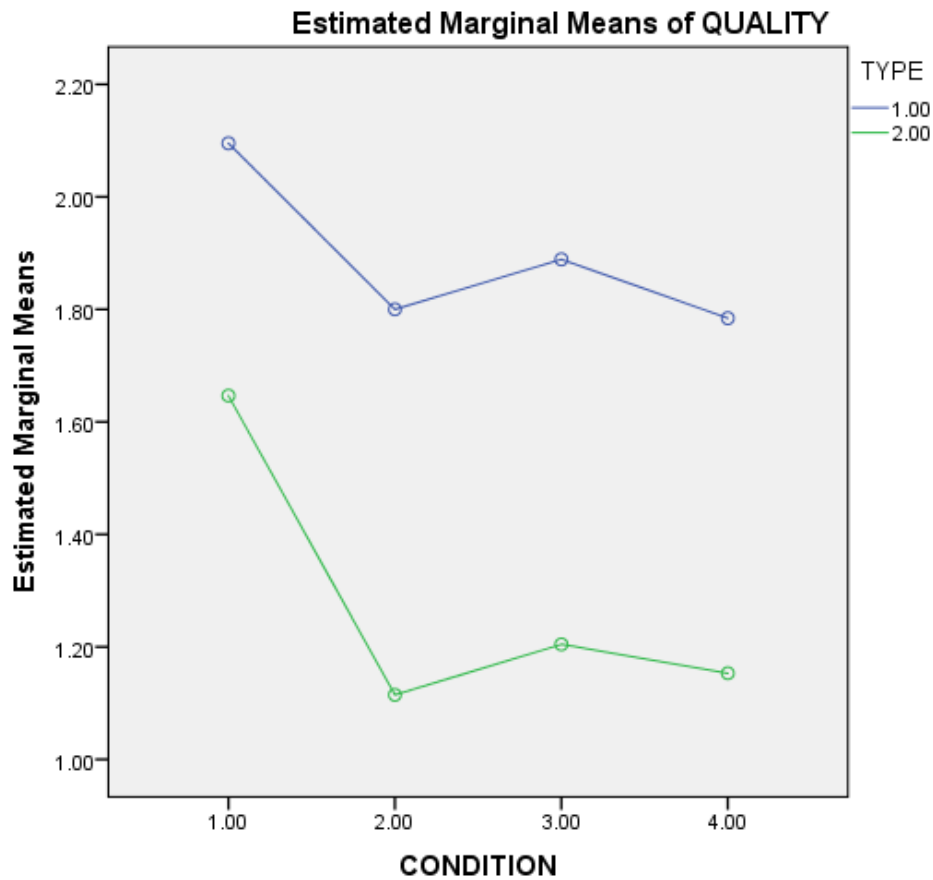


Note. CONDITION: 1=high-framing mindfulness-based leader message; 2=low-framing mindfulness-based leader message; 3=control leader message; 4=optimistic-motivational leader message; TYPE 1.00=working adults from a single high-reliability organization; TYPE 2.00=working adults from a general working adult sample

Figure 4

Means Plot for Post-Hoc Comparison of Study 1 and Study 2 Samples' Planning

Performance—Quality of Contingencies Generated



Note. CONDITION: 1=high-framing mindfulness-based leader message; 2=low-framing mindfulness-based leader message; 3=control leader message; 4=optimistic-motivational leader message; TYPE 1.00=working adults from a single high-reliability organization; TYPE 2.00=working adults from a general working adult sample

Appendix C

Scenario

Your organization was designated to conduct a convoy operations mission. The convoy will transport sensitive equipment 100 miles to its final destination. The transport will be conducted in 3 days. Your goal as a member of the organization is to participate in planning for the convoy mission.

Prior to beginning mission planning, your leader addressed members of the organization who will conduct the convoy operation.

Please proceed to the next section and read the message from your leader.

Note. For Study 2, phrasing, such as “convoy operations mission,” was substituted with phrasing, such as “project task,” in order to reduce jargon and make the language more appropriate for a general working adult sample.

Appendix D

Leader Message Treatments

High Framing Mindfulness-Based Leader Message

"We have orders for a convoy mission to transport sensitive equipment. None of us has been on *this* convoy before. *This* convoy does not care what you got away with the last time. We need *eyes wide open!* *This* convoy is a potential *crisis* waiting to happen. *Out-think* Murphy's Law. Think outside the *rectangle*. Let's get planning."

Low-Framing Mindfulness-Based Leader Message

"We have orders for a convoy mission to transport sensitive equipment. None of us has been on *this* convoy before. *This* convoy does not care what you got away with the last time. Let's get planning."

Control Leader Message

"We have orders for a convoy mission to transport sensitive equipment. Let's get planning."

Optimistic-Motivational Leader Message

"We have orders for a convoy mission to transport sensitive equipment. I am optimistic everything will go smoothly like it always does because I am confident in this team's abilities to execute flawlessly! Let's get planning."

Note. For Study 2, phrasing, such as "convoy operations mission," was substituted with phrasing, such as "project task," in order to reduce jargon and make the language more appropriate for a general working adult sample.

Appendix E

Recruitment Email

Subject: Request for Volunteer Participation: University of Oklahoma Research Survey

Body: Hello Battalion Member,

This email is sent on behalf of Stacie Wilson Mumpower, a doctoral candidate in the Department of Communication at the University of Oklahoma.

You are receiving this email because you are an active duty service member in your current battalion. Participation is simple and requires only 15-20 minutes of your time to complete a brief survey. In order to make this as convenient for you as possible, the survey is online and can be completed on a personal computer or a mobile device, such as your smart phone. All of your responses are anonymous, and your name or other identifying information will not be used in the final manuscript.

If you have been working in the current battalion for a minimum of 30 days and would like to complete this survey, please click on the following link or paste the link in your browser to begin the survey.

https://ousurvey.qualtrics.com/SE/?SID=SV_29a9P3BO3ome6vr

Your participation is greatly appreciated!

If you have any questions about this study, please feel free to contact Stacie Wilson Mumpower at stacie.wilsonmumpower@ou.edu.

Thank you, in advance, for your valuable time.

Stacie Wilson Mumpower
University of Oklahoma
Department of Communication

The University of Oklahoma is an Equal Opportunity Institution.

The OU IRB has approved the content of this advertisement, but the investigator is responsible for securing authorization to distribute this message by mass email.

Appendix F

Manipulation Check

Prompt

Please indicate how much you agree with the following questions.

When addressing organizational members about the convoy operations mission (or project task), my leader . . .

Scale (1 – strongly disagree, 7 – strongly agree)

1. uninteresting language.
2. used metaphor(s).
3. did NOT use colorful language.
4. used figures of speech.
5. used surprising turns of phrases.
6. encouraged alertness.
7. impressed the need for attentiveness to the details of the task.
8. encouraged treating the task as unique.
9. was optimistic.
10. was confident in our success.
11. was confident nothing would go wrong.

Appendix G

Langer Mindfulness/Mindlessness Scale (MMS; Langer, 1989; Haigh et al., 2011)

Prompt

Please indicate how much you agree with the following statements regarding your feelings while preparing for the current convoy mission (or project task). While listing issues and potential issues . . .

Scale (1 – strongly disagree, 7 – strongly agree)

1. I enjoyed investigating things.
2. I was open to new ways of doing things.
3. I "got involved."
4. I was very creative.
5. I attended to the "big picture."
6. I was very curious.
7. I liked the intellectual challenge.
8. I liked to figure out how things work.

Appendix H

Willingness to Speak Up with Dissent

Prompt

Considering your feelings toward your team and organization during the current convoy (or project task), respond to the following question. While working on this convoy mission (or project task), I would speak up about issues, problems, or concerns to supervisors...

Scale

Always	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Never
Unwillingly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Willingly
Eagerly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Uneagerly
Quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not Quickly
Not Reliably	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Reliably
Every Time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not Every Time