

1	CHAPTER
2	50

3 Mindful Organizing

4 *Establishing and Extending the Foundations of Highly*

5 *Reliable Performance*

6 Timothy J. Vogus

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Abstract

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Consistent with the positive organizational scholarship (POS) focus on positively deviant performance, mindful organizing represents a set of social processes that underlie the near-flawless performance of high-reliability organizations (HROs). This chapter details the foundations of mindful organizing, reviews recent empirical developments, and proposes five potential directions for further theoretical and empirical development, each of which deepens its contribution and connection to POS. The first proposed direction is to conceptually and empirically link both Eastern and Western conceptions of individual mindfulness and mindful organizing. The second is to establish the affective foundations of mindful organizing, namely how emotion affects the relationships between mindful organizing and error-free performance, the discrete emotions that constitute mindful organizing, and how emotional narratives sustain mindful organizing. Third is to examine a broader range of outcomes of mindful organizing, including its effects on employees. Fourth is to better link mindful organizing to leader attributes and leadership processes. Last, the impact of mindful organizing also requires further construct validation, including differentiating it from related constructs and establishing its responsiveness to interventions.

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Keywords: Mindful organizing, mindfulness, high reliability, error, safety, safety culture

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Positive organizational scholarship (POS) seeks to rethink organization studies through an affirmative bias (i.e., understanding excellence), a focus on endogenous resourcefulness (i.e., emergent organizational capabilities), and a careful rendering of the subjective experience of work (Cameron, Dutton, & Quinn, 2003). Over the past several years, it has made significant contributions to understanding positive deviance (Cameron & Lavine, 2006; Spreitzer & Sonenshein, 2003) and the organizational capabilities that make such outcomes possible (e.g., compassion organizing, Dutton, Worline, Frost, & Lilius, 2006). In that spirit, I look to the literature on high-reliability organizations (HROs), organizations that are positively deviant in their nearly error-free performance despite operating in complex, dynamic, interdependent, and time pressured settings in which errors should be plentiful

(

Roberts, 1990; Schulman, 1993; Weick, Sutcliffe, & Obstfeld, 1999). In that literature, we find the capability that underlies the exceptional performance of HROs is mindful organizing—the collective capability to detect and correct errors and unexpected events (Weick, Sutcliffe, & Obstfeld, 1999; Weick & Sutcliffe, 2001; Weick & Sutcliffe, 2007; see also Sutcliffe & Christianson (2011), Chapter 64, this volume, for a broader discussion of managing the unexpected). More recently, mindful organizing has become a burgeoning, if still nascent, literature in its own right.

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At first blush, the collective capability to detect and correct errors and unexpected events might seem to be a poor fit for POS. Error-free performance seems like it should be a jumping-off point for a POS approach rather than the destination. However, if we consider that organizational systems

1 in dynamic environments tend toward disorder and
 2 entropy, then preserving order, reversing chaos, and
 3 containing errors and near misses becomes excep-
 4 tional (Weick, 2003). In other words, an organiza-
 5 tion performing in a nearly flawless manner is an
 6 extraordinary organization. I review the founda-
 7 tions of such flawless organizing in this chapter and
 8 offer five areas for future development.

9 **Mindful Organizing: Definition** 10 **and Dimensions**

11 Reliability is essential for survival, but difficult
 12 to achieve. Reliability is so challenging because
 13 many organizations operate in trying conditions
 14 rife with complexity, dynamism, interdependence,
 15 and time pressure. *Complexity* refers to the nature of
 16 the technical knowledge required. *Dynamism*
 17 refers to the fact that the knowledge base is ever-
 18 changing and growing, and that novel problems are
 19 regularly emerging. *Interdependence* means that reli-
 20 ability is a collective achievement rather than a sum
 21 of individual achievements. *Time pressure* means
 22 that action cannot be postponed. High-reliability
 23 organizations are those (e.g., aircraft carrier flight
 24 decks, air traffic control, nuclear power plants)
 25 that demonstrate an exceptional ability to navigate
 26 these conditions in a nearly error-free manner
 27 (Roberts, 1990; Schulman, 1993; Weick et al.,
 28 1999; Weick & Sutcliffe, 2007). They do so by solv-
 29 ing the challenges of complexity, dynamism, inter-
 30 dependence, and time pressure through mindful
 31 organizing.

32 Mindful organizing is the collective capability
 33 for detecting and correcting errors and unexpected
 34 events (Weick et al., 1999). As a collective capabil-
 35 ity, it is a social process grounded in the actions and
 36 interactions of a workgroup. It becomes a shared
 37 property of a collective because the members of a
 38 given collective (e.g., a workgroup) encounter the
 39 same situational cues and, due to the interdepend-
 40 ent nature of their work, often consult one another
 41 in the interpretation of those cues (Hofmann, Lei,
 42 & Grant, 2009; Klein, 2003), which results in inter-
 43 pretations and actions that converge (Salancik &
 44 Pfeffer, 1978; Weick & Roberts, 1993).

45 The capability of mindful organizing is a func-
 46 tion of a collective's (e.g., workgroup) attention to
 47 context and capacity to act (Levinthal & Rerup,
 48 2006). Attention to context is the sustained atten-
 49 tion to operational challenges in the form of efforts
 50 to develop, deepen, and update a shared under-
 51 standing of local context. Capacity to act is the col-
 52 lective's ability to marshal the necessary resources to

act on that understanding in a flexible manner that 53
 is tailored to the unexpected event. 54

Attention to context and capacity to act is 55
 produced on the front line through a set of interre- 56
 lated organizational processes—preoccupation 57
 with failure, reluctance to simplify interpretations, 58
 sensitivity to operations, commitment to resilience, 59
 and deference to expertise (Weick et al., 1999; 60
 Weick & Sutcliffe, 2001; Weick & Sutcliffe, 2007). 61
 Preoccupation with failure directs attention and 62
 effort to complex threats to the system, through 63
 proactive and preemptive analysis of potential novel 64
 sources of error or conditions that can produce the 65
 unexpected (LaPorte & Consolini, 1991; Weick & 66
 Sutcliffe, 2007). Reluctance to simplify interpreta- 67
 tions means that a collective does not take the past 68
 as an infallible guide to the future. Instead, its mem- 69
 bers actively question received wisdom and ensure 70
 that key variables are not overlooked by frequently 71
 discussing alternatives as to how to go about their 72
 everyday work (Fiol & O'Connor, 2003; Schulman, 73
 1993; Weick & Sutcliffe, 2007). Sensitivity to oper- 74
 ations means creating and maintaining an up-to-date 75
 understanding of the distribution expertise, so that 76
 it is appropriately utilized in the face of unexpected 77
 events (Weick et al., 1999; Weick & Sutcliffe, 2001, 78
 2007). Together, these three processes richly repre- 79
 sent the complexity of potential threats, dynami- 80
 cally deepen this understanding with new data, and 81
 manage interdependence through collective knowl- 82
 edge of relevant expertise. Commitment to resil- 83
 ience is discussing errors and deriving lessons 84
 learned, such that a collective is able to extract the 85
 most value from the error data they have (vanDyck, 86
 Frese, Baer, & Sonnentag, 2005; Weick et al., 1999; 87
 Weick & Sutcliffe, 2001, 2007; see also Barker Caza 88
 (2011), Chapter 68, this volume; Sutcliffe & 89
 Christianson (2011), Chapter 64, this volume). 90
 Last, deference to expertise occurs when, in the face 91
 of an unexpected event, a collective pools the neces- 92
 sary expertise and utilizes it by allowing the person 93
 or people with the greatest expertise in handling the 94
 problem at hand to make decisions, regardless of 95
 formal rank (Roberts, Stout, & Halpern, 1994). 96
 Commitment to resilience and deference to exper- 97
 tise jointly comprise the pool of expertise and the 98
 capacity to use it in a flexible manner tailored to the 99
 unexpected event. Taken as a whole, these processes 100
 constitute mindful organizing. That is, no one pro- 101
 cess or subset of processes is sufficient for mindful 102
 organizing. 103

The discussion of mindful organizing that fol- 104
 lows refers to the construct as conceptualized and 105

Table 50.1 Correspondence theory and measurement of the processes of mindful organizing

Concept	Definition	Survey Item(s)
Preoccupation with failure	Operating with a chronic wariness of the possibility of unexpected events that may jeopardize safety by engaging in proactive and preemptive analysis and discussion.	When handing off an activity to another employee, we usually discuss what to look out for. We spend time identifying activities we do not want to go wrong.
Reluctance to simplify interpretations	Taking deliberate steps to question assumptions and received wisdom to create a more complete and nuanced picture of ongoing operations.	We discuss alternatives as to how to go about our normal work activities.
Sensitivity to operations	Creating and maintaining an up-to-date understanding of the distributed of tasks and expertise, so that these are appropriately utilized in the face of unexpected events.	We have a good “map” of each other’s talents and skills. We discuss our unique skills with each other so we know who on the unit has relevant specialized skills and knowledge.
Commitment to resilience	Discussing errors and deriving lessons learned, such that a collective is able to extract the most value from the error data they have to prevent more serious harm.	We talk about mistakes and ways to learn from them. When errors happen, we discuss how we could have prevented them.
Deference to expertise	During high-tempo times (i.e., when attempting to resolve a problem or crisis), decision making authority migrates to the person or people with the most expertise with the problem at hand, regardless of their formal authority.	When attempting to resolve a problem, we take advantage of the unique skills of our colleagues. When a crisis occurs, we rapidly pool our collective expertise to attempt to resolve it.

Adapted from Vogus, T. J., & Sutcliffe, K. M. (2007a). The safety organizing scale: Development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical Care*, 45(1), 46–54, with permission of Wolters Kluwer Health.

1 measured by Vogus and Sutcliffe (2007a).¹
 2 Table 50.1 illustrates how each conceptual compo-
 3 nent of mindful organizing relates to specific survey
 4 items in Vogus and Sutcliffe’s (2007a) measure. The
 5 table contains all nine survey items measured using
 6 a seven-point Likert scale (from “not at all” to “to a
 7 very great extent”). Mindful organizing is then con-
 8 structed for a collective by averaging all nine items
 9 across all respondents. It is important to note that
 10 all items are behavioral (to capture the fact that
 11 mindful organizing is a social process) and that the
 12 referent of each item is “we” (to capture the fact that
 13 mindful organizing is a collective capability).

14 **Relationship with Other Safety Constructs**

15 Mindful organizing also differs from existing con-
 16 structs that characterize a workgroup’s orientation
 17 toward error (error management climate), safety
 18 (safety climate), and speaking up (psychological
 19 safety). Error management culture (van Dyck et al.,
 20 2005)—communicating about errors, analyzing
 21 and correcting errors quickly, sharing error knowl-
 22 edge, and helping in error situations—is most
 23 closely linked to mindful organizing in that it

24 captures processes that are highly similar to com-
 25 mitment to resilience and deference to expertise. In
 26 other words, error management culture is much like
 27 the components of mindful organizing that encap-
 28 sulate a capacity to act. However, error management
 29 culture differs in that it does not simultaneously
 30 encompass the proactive elements of mindful orga-
 31 nizing, including preoccupation with failure, reluc-
 32 tance to simplify interpretations, and sensitivity to
 33 operations (Weick & Sutcliffe, 2007). Safety climate
 34 is the shared perceptions regarding the safety poli-
 35 cies, practices, and procedures that an organization
 36 expects, rewards, and supports (Zohar, 1980). Safety
 37 climate focuses on managerial commitment to safety
 38 (e.g., through investments in safety), priority placed
 39 on safety (i.e., the extent to which safety is subordi-
 40 nated to other goals), and the extent to which safety
 41 information is disseminated (Katz-Navon, Naveh,
 42 & Stern, 2005). As such, safety climate focuses
 43 on the initiating and enabling role of managers
 44 in promoting safety and compliance with safety
 45 procedures. In contrast, mindful organizing focuses
 46 on the interactions of workgroup members directed
 47 at anticipating and responding to the unexpected.

1 Similarly, psychological safety—a shared belief that
 2 it is safe to take interpersonal risks—is also a func-
 3 tion of leader behaviors and discursive practice
 4 (Edmondson, 1999, 2004) that facilitate, but are
 5 distinct from, front-line action (Edmondson, 1996).
 6 As such, safety climate and psychological safety are
 7 potential antecedents of mindful organizing rather
 8 than analogues of it.

9 **The Performance Effects of Mindful** 10 **Organizing**

11 Empirical examinations of the effect of mindful
 12 organizing on organizational reliability and other
 13 performance outcomes remains in its infancy.
 14 Despite this small number of studies, some clear
 15 findings have emerged. There is consistent qualita-
 16 tive and, more recently, quantitative evidence that
 17 higher levels mindful organizing improve safety and
 18 quality outcomes in health care contexts. In a mul-
 19 tiyear qualitative study of a pediatric intensive care
 20 unit (PICU), Roberts and colleagues (2005;
 21 Madsen, Desai, Roberts, & Wong, 2006) found
 22 that diligent leaders trained in the principles of
 23 HROs enabled mindful organizing that corre-
 24 sponded with higher levels of performance. Front-
 25 line staff were constantly alert to the possibility that
 26 they had missed something (preoccupation with
 27 failure), regularly interpreted and questioned data
 28 that appeared relevant to their working hypotheses
 29 (reluctance to simplify interpretations), collabora-
 30 tively constructed an up-to-date picture of potential
 31 threats to safety for each patient (sensitivity to oper-
 32 ations), discussed errors and incidents to enlarge the
 33 repertoire of possible actions that caregivers could
 34 take to manage the unexpected (commitment to
 35 resilience), and migrated decisions to bedside care-
 36 givers who had more experience with a specific
 37 patient (deference to expertise). Together, these
 38 enactments of mindful organizing were associated
 39 with infrequent patient deterioration on the unit, a
 40 significant improvement from prior to the HRO
 41 intervention (Madsen et al., 2006; Roberts et al.,
 42 2005). In a study of perinatal units, Knox, Simpson,
 43 and Garite (1999) found that units that systemati-
 44 cally enacted the processes of mindful organizing
 45 had better safety performance and fewer malprac-
 46 tice claims. In a first quantitative study of mindful
 47 organizing in 94 hospital nursing units, Vogus and
 48 Sutcliffe (2007a) found that higher levels of their
 49 measure of mindful organizing were associated with
 50 fewer medication errors and patient falls in the sub-
 51 sequent 6 months. In contrast, when the processes
 52 of mindful organizing are absent or underdeveloped,

different outcomes obtain. For example, the less
 mindful action characteristic of the cardiac unit of
 the Bristol Royal Infirmary was associated with
 shocking levels of excess deaths among infants,
 which forced a governmental inquiry (Weick &
 Sutcliffe, 2003).

There is more suggestive evidence that mindful
 organizing produces highly reliable performance in
 other contexts. Bigley and Roberts (2001) docu-
 ment a set of five “structural processes” analogous to
 mindful organizing that allows the fire-fighting
 Incident Command System (ICS) to function reli-
 ably in crisis conditions. For each structural process,
 the corresponding process or processes of mindful
 organizing are denoted. Role switching assigns and
 reassigns people based on situational demands. This
 builds a deeper attention to context and the likeli-
 hood that the system they create might fail to con-
 form to the situation’s needs (preoccupation with
 failure). Cognitive management and constrained
 improvisation further deepen the appreciation of
 context as they allow for refinement in the face of
 emerging data from the field that creates a more
 nuanced and holistic picture (reluctance to simplify
 interpretations). The ICS frequently refines its
 image of the big picture through “size ups” that con-
 struct and disseminate increasingly high-fidelity
 models of the evolving emergency. System resetting
 is the ability to disengage and reset the structure to
 confront a “nasty surprise” or an evolving problem
 (commitment to resilience). Last, authority migra-
 tion allows for the necessary resources and skills to
 flow to emerging problems (deference to expertise).
 Taken together, these five interrelated processes lead
 to highly reliable management of emergencies. In a
 rigorous longitudinal case study of Novo Nordisk,
 Rerup (2009) found three attentional processes
 focused on attending to weak signals led to recovery
 from crisis and subsequent highly reliable perfor-
 mance. Each of the three attentional processes is
 akin to an equivalent process of mindful organizing
 (denoted in parentheses). Attentional stability is the
 deep consideration of issues that led to a more
 nuanced understanding and an awareness of poten-
 tial pathways of failure (preoccupation with failure).
 Attentional vividness is the development of increas-
 ingly rich, detailed, and complex representation of
 issues (reluctance to simplify interpretations).
 Attentional coherence is the merging of vividness
 and stability into an integrated big picture (sensitiv-
 ity to operations). In an intriguing qualitative study
 of habitual entrepreneurs, Rerup (2005) found that
 the processes of mindful organizing contribute to

1 their success, but that the relationship may be cur-
 2 vilinear (i.e., mindful organizing is helpful only up
 3 to a point).

4 Emerging evidence also suggests that pairing
 5 mindful organizing with other supportive practices
 6 enhances the impact of mindful organizing on per-
 7 formance. Specifically, in a study of 73 hospital
 8 nursing units, Vogus and Sutcliffe (2007b) found
 9 that fewer medication errors occurred over the sub-
 10 sequent 6 months on units with high levels of mind-
 11 ful organizing and registered nurses reported high
 12 levels of trust in their nurse managers (i.e., these
 13 managers had created a sense of psychological
 14 safety). In addition, they found that mindful orga-
 15 nizing paired with extensive use of standardized care
 16 protocols also resulted in fewer medication errors
 17 over time (Vogus & Sutcliffe, 2007b).

18 **Antecedents of Mindful Organizing**

19 The earliest studies of high reliability tended to
 20 focus on the organizational practices of HROs (e.g.,
 21 Roberts, 1990). Studies of mindful organizing have
 22 built on this tradition and expanded it to include
 23 microprocesses (e.g., respectful interaction) and
 24 employee characteristics (e.g., professional tenure).
 25 I review this small, but growing body of work next.

26 Human resource (HR) and work design practices
 27 have been qualitatively and quantitatively examined
 28 as antecedents of mindful organizing. Vogus (2004)
 29 built on earlier descriptions of the importance of
 30 training and empowerment in HROs to examine
 31 the effect of a bundle of HR practices, including
 32 selective staffing, extensive training, developmental
 33 performance appraisal, and decentralized decision
 34 making on mindful organizing and reliability. He
 35 found that HR practices produced higher levels of
 36 mindful organizing through dyadic respectful inter-
 37 actions (i.e., interactions characterized by trust,
 38 honesty, and mutual respect; Vogus, 2004). In a
 39 sample of software firms, Vogus and Welbourne’s
 40 (2003) results suggested that HR practices unleashed
 41 similar practices of mindful organizing that led to
 42 reliable innovation over time. In their study of the
 43 PICU, Roberts and colleagues (Madsen et al., 2006;
 44 Roberts et al., 2005) found that implementing prac-
 45 tices derived from research on HROs, including
 46 regularly training (in-servicing) staff, team briefings
 47 (i.e., collaborative rounding), empowerment (dec-
 48 sion migration to bedside caregiver), and frequent
 49 and inclusive post-event debriefings, generated and
 50 sustained more mindful organizing. At Novo
 51 Nordisk, the Novo Way of Management—a com-
 52 mitment to openness, continuous learning, and

dialogue—was reinforced by organizational audits 53
 of the Novo Way and “facilitation” to coordinate 54
 weak signals across the organization to produce 55
 attentional processes analogous to mindful organiz- 56
 ing (Rerup, 2009). 57

In focusing on structure (e.g., Roberts, 1990) 58
 and process (e.g., Weick et al., 1999), the character- 59
 istics of the personnel on the front line charged with 60
 organizing more or less mindfully have been mini- 61
 mized. This is a significant oversight because mind- 62
 ful organizing and reliable performance are a 63
 function of “reliability professionals” (Roe & 64
 Schulman, 2008). Reliability professionals 65

[are] plural and deliberately so. Professionals work 66
 together in their domain of competence. They may 67
 see themselves as individual operators but they are 68
 networked into crews, teams, and support staff . . . 69
 the knowledge base [is] interconnected across their 70
 individual domains of competence. Change the 71
 network of professionals, say by changing one 72
 professional and his or her knowledge, and you affect 73
 the interconnected knowledge base. (Roe & 74
 Schulman, 2008, p. 121) 75

In other words, mindful organizing and reliable 76
 performance are a function of the cumulative 77
 knowledge base of front-line employees and their 78
 ability and willingness to effectively access the expe- 79
 rience and expertise embedded in the knowledge 80
 base. In a sample of 122 hospital nursing units 81
 Vogus, Ramanujam, and Tangirala (2010) exam- 82
 ined the effects of workgroup-level professional 83
 experience, the workgroup’s variability in experi- 84
 ence, and workgroup professional commitment on 85
 mindful organizing. They found that professional 86
 experience had a positive nonlinear relationship 87
 with mindful organizing. That is, the benefits of 88
 experience are positive, but they increase at a 89
 decreasing rate over time. They also found that this 90
 relationship was moderated by workgroup variabil- 91
 ity in professional experience (makes the diminish- 92
 ing returns to experience set in sooner) and 93
 workgroup professional commitment (delays dim- 94
 inishing returns to experience). Taken together, these 95
 studies provide an impressive and systematic, if 96
 incomplete, basis for future research. 97

98 **Future Directions**

99 Mindful organizing presents organizational research-
 100 ers and practitioners with a largely untapped
 101 resource for understanding and unleashing posi-
 102 tively deviant performance in very difficult circum-
 103 stances. Furthermore, it is a construct that is

1 conceptually well grounded in a set of rich case
 2 studies on HROs conducted over the past two
 3 decades (see Weick et al., 1999 for a review). More
 4 recently, quantitative work has shown that mindful
 5 organizing is also measurable and significantly pre-
 6 dictive of safety outcomes in the workplace.
 7 However, at this early stage, there are numerous
 8 potential directions for future research on mindful
 9 organizing. I propose five necessary and promising
 10 directions for future research. In developing each
 11 future direction, I attempt to outline plausible study
 12 designs and potential hypotheses to test.

13 *Eastern and Western Conceptions of* 14 *Individual Mindfulness*

15 Mindful organizing has been defined as a collective
 16 capability. As such, it is a social process that becomes
 17 collective through actions and interactions among
 18 individuals, rather than in the minds of individuals
 19 (e.g., Langer, 1989). However, distinguishing mind-
 20 ful organizing in order to achieve construct clarity is
 21 different from saying individual and collective
 22 mindfulness are unrelated. Mindful organizing was
 23 developed with Langer's (1989) work on individual
 24 mindfulness as a foundation. More recent writings
 25 on mindful organizing have begun to link it to
 26 Eastern mindfulness, with foundations in Buddhist
 27 thought (Weick & Putnam, 2006; Weick &
 28 Sutcliffe, 2006). I briefly review each of these
 29 perspectives, their linkages to mindful organizing,
 30 and offer some suggestions for future empirical
 31 investigation.

32 The Western perspective on mindfulness largely
 33 derives from Langer's (1989) work. A Western per-
 34 spective means that this approach is a variant of an
 35 information processing approach (Weick &
 36 Sutcliffe, 2006). For Langer (1989), mindfulness
 37 is expressed through active differentiation and
 38 refinement of existing categories and distinctions
 39 (p. 138), creation of new discontinuous categories
 40 out of streams of events (p. 157), and a more
 41 nuanced appreciation of context and alternative
 42 ways to deal with it (p. 159). From this definition,
 43 it is evident how it deeply influences the processes
 44 of mindful organizing. Active differentiation and
 45 refinement, creating new categories to make sense
 46 experience, and more nuanced appreciation of con-
 47 text and ways to cope with it are all found in preoc-
 48 cupation with failure, reluctance to simplify
 49 interpretations, sensitivity to operations, and com-
 50 mitment to resilience. Deference to expertise is the
 51 way in which the work of mindfulness is put into
 52 practice to resolve a crisis.

In contrast, Eastern mindfulness is a state of con- 53
 54 sciousness in which attention is focused on present-
 55 moment phenomena occurring both externally and
 56 internally (Dane, forthcoming) or moment-to-
 57 moment, nonreactive, nonjudgmental awareness
 58 (Weick & Putnam, 2006). This also has workplace
 59 implications. For example, in a qualitative study of
 60 trial lawyers, Dane (2010) found that mindfulness
 61 permits lawyers to attend to a wide range of phe-
 62 nomena, such as reactions of the judge, jury mem-
 63 bers, and opposing counsel, and tailor their
 64 arguments to be most persuasive. Eastern mindful-
 65 ness also has some speculative connections with
 66 mindful organizing. The processes of mindful orga-
 67 nizing can be viewed in terms of their effects on
 68 concentration and strength of insight (Weick &
 69 Putnam, 2006). Weick and Putnam (2006, p. 282)
 70 provide interesting connections for each of the pro-
 71 cesses of mindful organizing. Preoccupation with
 72 failure, with its focus on emerging failures above all
 73 else, induces concentration and potentially vivid
 74 insights. Reluctance to simplify interpretations and
 75 sensitivity to operations increase the vividness of
 76 insight by replacing conceptual categories with
 77 awareness of current details, but possibly at the
 78 expense of concentration. Commitment to resil-
 79 ience is concentration complemented with vivid
 80 representation of errors as the means to achieve
 81 insights for future actions. Last, deference to exper-
 82 tise increases concentration by routing decisions to
 83 experts who are best able to focus on the present
 84 phenomenon without distraction.

85 The preceding discussion of individual mindful-
 86 ness suggests interesting directions for future con-
 87 ceptual and empirical work. First, what factors
 88 moderate the relationship between individual mind-
 89 fulness and mindful organizing? That is, does the
 90 value of individual mindfulness for mindful orga-
 91 nizing depend on other traits (e.g., extraversion),
 92 skills (e.g., task expertise, Dane, forthcoming), work
 93 characteristics (e.g., task interdependence), or prac-
 94 tices (e.g., protocols for interaction) that ensure that
 95 individual insights are socially shared? Second, if
 96 individual mindfulness is an antecedent of mindful
 97 organizing, how widespread must individual mind-
 98 fulness be for mindful organizing to emerge? For
 99 example, Fiol and O'Connor (2003) suggest that an
 100 organization is less likely to adopt a management
 101 fad if it has more mindful senior managers that scan
 102 more broadly and question interpretations. Does
 103 the individual mindfulness of top managers have
 104 cascading effects for employees on the front line?
 105 That is, does leader individual mindfulness lead to

1 mindful organizing on the front lines? Or, does it
 2 affect individual mindfulness on the front line?
 3 Similarly, what proportion of a workgroup needs to
 4 be mindful in order for mindful organizing to
 5 emerge? Which form of individual mindfulness
 6 (Western or Eastern) has greater impact on the
 7 emergence of mindful organizing? In addition to
 8 answering these questions, work that examines this
 9 question would also be beneficial for empirically
 10 differentiating Eastern mindfulness, Western mind-
 11 fulness, and mindful organizing.

12 Moreover, is the individual mindfulness of senior
 13 managers sufficient to secure the operational bene-
 14 fits of mindful organizing? If so, what proportion of
 15 senior managers needs to be mindful? Under what
 16 conditions might individual mindfulness capture all
 17 the performance benefits of mindful organizing
 18 (e.g., task interdependence; individual mindfulness
 19 may capture performance benefits for work with
 20 low levels of interdependence). Examining these
 21 questions would provide important insight into
 22 whether hiring mindful managers or selecting mind-
 23 ful employees are viable substitutes for mindful
 24 organizing. Blending these three perspectives on
 25 mindfulness in organizations offers many exciting
 26 opportunities for further empirical and theoretical
 27 development.

28 *Affective Foundations of Mindful* 29 *Organizing*

30 As is evident from the review of the emerging
 31 research on mindful organizing, prior work has
 32 emphasized its structural antecedents and cognitive
 33 processes. In doing so, this literature overlooks the
 34 degree to which effectively marshalling emotion
 35 may be necessary for mindful organizing to lead to
 36 nearly error-free performance, how emotion helps
 37 constitute the processes of mindful organizing, and
 38 how emotion, in the form of narratives, may sustain
 39 mindful organizing over time.

40 Mindful organizing, in part, is a capability to
 41 detect weak signals of danger and mobilize swifter
 42 interventions to avoid or curtail harm. Detecting
 43 weak signals and nearly error-free performance partly
 44 rely on effectively recognizing and interpreting one's
 45 own (Klein, 2003) or other's emotions (e.g., Benner,
 46 Tanner, & Chesla, 1996). Emotional information is
 47 especially important because it is often a leading indi-
 48 cator of deeper changes. Weak signals are often
 49 expressed emotionally through subtle changes in
 50 tone, facial expression, body language, or energy level;
 51 information might not be able to be expressed through
 52 another (nonemotional) channel (Madsen et al.,

2006). Klein offers numerous examples from high- 53
 reliability contexts (e.g., fire fighting, health care) of 54
 how individuals detect weak signals as a result of their 55
 own emotion in the form of gut instincts and intu- 56
 ition (Klein, 2003). Benner, Tanner, and Chesla 57
 (1996) describe how nurses work to construct an 58
 "intimate and particular understanding" of their 59
 patients and become "emotionally attuned" to them. 60
 Attuned nurses have the capacity to "read" the emo- 61
 tional tone of a patient situation to know when some- 62
 thing is "off" when it looks okay on the surface, or to 63
 sense that something is actually all right despite 64
 appearances to the contrary. Thus, emotional attune- 65
 ment can help mobilize appropriate action in the face 66
 of deteriorating conditions and militate against a 67
 strong response to every weak signal that might 68
 otherwise overwhelm a workgroup (Rudolph & 69
 Repenning, 2002). As such, a collective's emotional 70
 attunement to their work (e.g., their patients) should 71
 enhance the benefits of mindful organizing on per- 72
 formance (i.e., moderate the relationship between 73
 mindful organizing and performance). 74

75 The traditional conception of emotion in studies
 of mindful organizing and high reliability is ostensi- 76
 bly in tension with the conception of emotion in 77
 POS. Positive organizational scholarship has empha- 78
 sized the benefits of positive emotion for broaden- 79
 ing and building cognitive and behavioral capabilities 80
 (Fredrickson, 1998). The literatures on mindful 81
 organizing and high reliability have emphasized that 82
 positive emotions associated with success (Miller, 83
 1993) produce an unwarranted illusion of control 84
 and optimism that can create blind spots that leave 85
 important discrepancies unnoticed (Landau & 86
 Chisholm, 1995) or arrogance that creates a reluc- 87
 tance to adapt and change (Schulman, 1993). The 88
 two can be reconciled through a deeper consider- 89
 ation of how mindful organizing operates. The pro- 90
 cess of preoccupation with failure illustrates how 91
 emotion is potentially constitutive of mindful orga- 92
 nizing and how it relies upon the benefits of both 93
 positive and negative emotion. 94

95 Preoccupation with failure has emotional under-
 96 pinnings as a state of tension and alertness. As such,
 97 a preoccupation with failure runs the risk of deterio-
 98 rating into a debilitating state of fear and paranoia.
 99 To prevent this descent into negative emotions that
 100 can debilitate an organization (e.g., Weick, 1993),
 101 mindful organizing couples in the inherent fallibil-
 102 ity of a system with the efficacy of proactive and
 103 preemptive discussion. That is, although mindful
 104 organizing is not an optimistic process, it is not as
 105 pessimistic as it may seem to POS scholars, with its

1 focus on failure. Mindful organizing may be best
 2 characterized as *hopeful*. Hope is an emotion
 3 grounded in a realistic appraisal of the challenges in
 4 one's environment and one's capabilities for navigat-
 5 ing around them (Groopman, 2004). Hope combats
 6 the vagaries of unexpected events by making it
 7 more likely that threats will be labeled challenges,
 8 thus instilling a belief in an organization's ability to
 9 be resilient, and emphasizing the importance of
 10 updating and refining one's appraisal of the environ-
 11 ment (Lazarus, 1999). As such, hopefulness is akin
 12 to a simultaneous focus on both success and failure
 13 that begets scanning for confirming and disconfirming
 14 data (Fiol & O'Connor, 2003).

15 Emotion may also play a crucial role in sustain-
 16 ing the fragile processes of mindful organizing
 17 (Weick & Sutcliffe, 2007) over time. Specifically, to
 18 maintain focus on error-free operations, members
 19 of HROs produce and widely share evocative
 20 accounts that preserve and communicate emotions
 21 (Weick et al., 1999). Weick and Roberts (1993)
 22 describe how personnel on aircraft carrier flight
 23 decks recount "war stories" that emphasize how
 24 "most positions on this deck were bought in blood."
 25 When these accounts are shared, they serve to social-
 26 ize newcomers and resocialize insiders to the impor-
 27 tance of executing tasks with care and attention to
 28 their impact on the overall safety of the system.
 29 Emotion-laden accounts can help create and sustain
 30 performance over time because they are durable,
 31 discursive resources that transcend the specific indi-
 32 viduals participating and the circumstances sur-
 33 rounding a war story. That is, they possess an
 34 ongoing emotional resonance that shapes subse-
 35 quent action, such that prior learning is not lost and
 36 vigilance and alertness remain high.

37 *Employee Outcomes of Mindful Organizing*

38 At this early stage in its development, little is known
 39 about the subjective experience of engaging in
 40 mindful organizing and its effects over time.
 41 Although it is rarely acknowledged, mindful orga-
 42 nizing is effortful and costly (Levinthal & Rerup,
 43 2006; Vogus & Welbourne, 2003). Mindful orga-
 44 nizing is costly in the sustained commitment and
 45 effort it demands from employees on the front line
 46 (Roe & Schulman, 2008). High commitment and
 47 effort coupled with the potential hazards inherent
 48 in the work can result in employee exhaustion and
 49 turnover. However, it is possible that mindful orga-
 50 nizing may reduce the likelihood of turnover because
 51 it provides a great deal of social support and resources
 52 that improve the experience of work and enhance

performance. These competing hypotheses merit
 further exploration.

53
 54
 55 The effects of turnover on mindful organizing
 56 also merit investigation. There is suggestive evidence
 57 that employee turnover, to the extent that it creates
 58 greater variability in experience, may negatively
 59 impact mindful organizing (Vogus et al., 2010).
 60 However, research in HROs seems to suggest that
 61 mindful organizing is maintained and possibly even
 62 enhanced by turnover (e.g., Weick & Roberts,
 63 1993). There are two potential explanations for why
 64 HROs, like aircraft carrier flight operations, may
 65 seem to handle turnover well. First, the turnover
 66 facing these organizations may only be planned
 67 turnover and should therefore be less disruptive to
 68 ongoing organizational processes than more unex-
 69 pected turnover events. Second, and related, there is
 70 some evidence that HROs have strong socialization
 71 practices in place that minimize the disruption
 72 caused by turnover on processes of mindful organiz-
 73 ing (see Weick & Roberts, 1993). That said, explor-
 74 ing the effects of differing types of turnover (e.g.,
 75 planned/unplanned, voluntary/involuntary) on
 76 mindful organizing, as well as the practices that
 77 might mitigate the deleterious effects of turnover on
 78 mindful organizing (e.g., practices that ease access-
 79 ing experts, Hofmann, Lei, & Grant, 2009) deserve
 80 further empirical examination.

81 A similarly reciprocal process might also occur
 82 between affective commitment to one's profession
 83 and mindful organizing over time. For example,
 84 Vogus, Ramanujam, and Tangirala (2010) found
 85 that professional affective commitment has a direct
 86 and moderating effect on mindful organizing, but it
 87 is also plausible that, over time, mindful organizing
 88 can influence professional commitment. That is,
 89 engaging in mindful organizing and its intense focus
 90 on delivering error-free performance corresponds
 91 with the deeply held professional values that inspired
 92 professionals to enter their field (e.g., in nursing,
 93 Benner et al., 1996; Institute of Medicine, 2004).

94 It is equally possible that professional normative
 95 commitment (i.e., feeling one ought to remain in
 96 the profession, Meyer, Allen, & Smith, 1993) might
 97 also be an outgrowth of mindful organizing. As
 98 mindful organizing is consistent with ideals of pro-
 99 fessional practice, it is possible that it could generate
 100 normative commitment in the form of a moral duty
 101 rather than indebtedness (Meyer & Parfyonova, in
 102 press) and lead employees to fulfill their obligations
 103 to their profession (i.e., by using all of their skills,
 104 collaborating with coworkers, and staying up-
 105 to-date on new knowledge). Mindful organizing

1 may also generate a commitment profile—for
 2 example, by simultaneously possessing high levels of
 3 affective and normative commitment—that in turn
 4 drives subsequent discretionary behaviors like mind-
 5 ful organizing (Gellatly, Meyer, & Luchakm 2006;
 6 Wasti, 2005). Therefore, the effects of mindful orga-
 7 nizing on multiple forms of commitment to a pro-
 8 fession might also further reinforce and deepen the
 9 processes of mindful organizing over time.

10 *Relationship with Leader Attributes and* 11 *Leadership Processes*

12 Leaders can enable mindful organizing on the front
 13 line in at least two ways: first, by directing attention
 14 to safety, and second, by creating contexts in which
 15 practitioners feel safe to speak up and act in ways
 16 that improve safety. Directing attention to safety
 17 and ensuring that the front line speaks up enable
 18 greater attention to context and a richer capacity to
 19 act, and these constitute mindful organizing
 20 (Levinthal & Rerup, 2006). Both directing atten-
 21 tion to safety and ensuring employees speak up are
 22 a function of leadership style and leader process.
 23 Leader style (e.g., empowering transformational
 24 leadership, Yun, Faraj, & Sims, 2005) and leader
 25 process (e.g., safety climate, psychological safety,
 26 and leader–member exchange [LMX]) can affect
 27 what employees attend to and how they carry out
 28 their work.

29 Transformational leadership is a leadership style
 30 that holds potential for influencing mindful organiz-
 31 ing. Prior research has found that the commitment
 32 to employee welfare and empowerment characteris-
 33 tic of a transformational style are strongly associated
 34 with employee (e.g., satisfaction and commitment)
 35 and organizational (unit performance) outcomes in
 36 high-hazard industries (Gilmartin & D’Aunno,
 37 2007). Such an empowering leadership style also
 38 allows employees to think, apply their knowledge
 39 (e.g., speak up), and learn by doing. For example, in
 40 a study of trauma units, Yun and colleagues found
 41 that applying an empowering approach during low-
 42 to moderate-severity trauma events resulted in
 43 greater learning by team members without compro-
 44 mising patient safety (Yun et al., 2005). As such,
 45 empowering transformational leadership may enable
 46 the processes of mindful organizing.

47 Leaders may be able to influence the processes of
 48 mindful organizing through employee perceptions
 49 of safety climate. As mentioned earlier, safety cli-
 50 mate is a function of perceptions of a leader’s com-
 51 mitment to safety, priority placed on safety, and
 52 dissemination of safety information (Katz-Navon

et al., 2005). For example, a supervisor who disre- 53
 54 gards safety procedures whenever production falls
 55 behind schedule or who punishes people for mis-
 56 takes, signals a low commitment to safety and that a
 57 low priority is placed on safety (Carroll & Quijada,
 58 2004; Zohar, 2000). Safety climate potentially
 59 influences mindful organizing by directing employ-
 60 ees’ attention to their context and the factors influ-
 61 encing its safety. Specifically, a strong safety climate
 62 means people more clearly understand threats to
 63 safer practice (Carroll & Quijada, 2004; Zohar,
 64 2000) and attend more closely to errors and other
 65 incidents (Naveh, Katz-Navon, & Stern, 2006;
 66 Weingart, Farbstein, Davis, & Phillips, 2004), con-
 67 sistent with a preoccupation with failure. A safety
 68 climate also heightens safety motivation (i.e., will-
 69 ingness to exert effort) and participation in volun-
 70 tary safety activities (e.g., helping coworkers with
 71 safety-related issues and attending safety meetings)
 72 (Neal & Griffin, 2006) necessary for reluctance to
 73 simplify interpretations and sensitivity to opera-
 74 tions. Last, a safety climate produces more open and
 75 constructive problem solving in the face of errors
 76 (Hofmann & Mark, 2006; Singer, Lin, Falwell,
 77 Gaba, & Baker, 2009), commitment to resilience,
 78 and deference to expertise. Examining safety climate
 79 could also help illuminate the microfoundations of
 80 mindful organizing as leaders who are personally
 81 committed to safety and give it a high priority have
 82 employees who are more likely to make internal
 83 attributions for safety incidents (i.e., incidents are
 84 seen as being more correctable; Hofmann & Stetzer,
 85 1998), which is consistent with a preoccupation
 86 with failure, a reluctance to simplify interpreta-
 87 tions, and a commitment to resilience. Further
 88 study of the attribution process for errors, near
 89 misses, and other threats to safety would deepen our
 90 understanding of the microfoundations of mindful
 91 organizing.

92 Mindful organizing may also be enabled when
 93 leaders create a context in which employees are
 94 empowered to speak up and act to resolve threats to
 95 patient safety. Speaking up is more likely to occur in
 96 an organization when psychological safety is present
 97 (Edmondson, 1999). Leaders create psychological
 98 safety through subtle acts, such as changing the
 99 language used in an organization from threatening
 100 terms like “errors” and “investigations” to more psy-
 101 chologically neutral terms such as “accidents” and
 102 “analysis” (Edmondson, 2004). Leaders also create
 103 psychological safety through being more inclusive,
 104 by means of words and deeds that appreciate others’
 105 contributions (Nembhard & Edmondson, 2006)

1 and by pardoning employees who disclose their
 2 unintentional mistakes (Edmondson, 1996). This
 3 leads to a greater disclosure of errors and close calls
 4 (Edmondson, 1996) that produces richer under-
 5 standing of context and allows for the more detailed
 6 processing of a wider range of safety data, as in pre-
 7 occupation with failure. Psychological safety also
 8 produces higher levels of engagement in patient
 9 safety improvement projects (Nembhard &
 10 Edmondson, 2006; Tucker, 2007) that create the
 11 capacity to act in response to errors and unexpected
 12 events required of commitment to resilience and
 13 deference to expertise.

14 In high-quality LMX relationships, the leader
 15 and subordinate engage in collaborative sense-mak-
 16 ing that produces a richer and more elaborate set of
 17 role behaviors to enact (Hofmann, Morgeson, &
 18 Gerras, 2003). High-quality LMX relationships
 19 make it more likely that employees expand role def-
 20 initions to include additional safety tasks (Hofmann
 21 et al., 2003) and foster open and constructive com-
 22 munication about safety and errors (Hofmann &
 23 Morgeson, 1999). However, prior work on LMX
 24 has tended to focus on individual processes and
 25 individual safety. It would be fruitful to see if high-
 26 quality LMX leads to improved higher levels of
 27 mindful organizing and organizational performance
 28 outcomes.

29 *Additional Construct Validation*

30 For mindful organizing to have maximum impact
 31 on research and practice, the construct needs fur-
 32 ther empirical validation and conceptual develop-
 33 ment. Prior work has established convergent validity
 34 (see Vogus & Sutcliffe, 2007a), criterion validity
 35 (mindful organizing has been shown to reduce med-
 36 ication errors and patient falls over time, Vogus &
 37 Sutcliffe, 2007a, b), and to a limited extent discrim-
 38 inant validity (i.e., empirical differentiation from
 39 related constructs, Vogus & Sutcliffe, 2007a). A
 40 starting point for further construct validation would
 41 be to move beyond the conceptual differentiation
 42 from related constructs presented in this chapter to
 43 empirical differentiation. Specifically, future research
 44 should use confirmatory factor analysis to test the
 45 discriminant validity of error management culture
 46 (van Dyck et al., 2005), psychological safety
 47 (Edmondson, 1999), safety climate (Zohar, 1980),
 48 and mindful organizing.

49 Another conceptual and empirical area ripe for
 50 development is the behavior of mindful organiz-
 51 ing over time. Prior work paradoxically suggests
 52 that mindful organizing is fragile and needs to be

continuously reaccomplished, but at the same time 53
 suggests that mindful organizing is a stable charac- 54
 teristic of HROs (Weick et al., 1999; Weick & 55
 Sutcliffe, 2001; Weick & Sutcliffe, 2007). Rerup's 56
 (2009) excellent longitudinal study of Novo Nordisk 57
 seems to support the fragility of mindful organizing 58
 (see also Roberts et al., 2005 for a different exam- 59
 ple). He finds that mindful organization gradually 60
 erodes into more mindless organizing in the face of 61
 other (financial) pressures. At Novo, mindful orga- 62
 nizing was only restored after instituting a bundle of 63
 practices designed to sustain vigilance to weak sig- 64
 nals of threats to quality and safety—the Novo Way 65
 of Management (Rerup, 2009). This work offers a 66
 strong qualitative foundation for further examina- 67
 tion of the processes of mindful organizing over 68
 time. 69

The generalizability of mindful organizing 70
 remains poorly understood because prior work has 71
 either been qualitative examinations of HROs in 72
 which mindful organizing was deeply ingrained 73
 (e.g., Schulman, 1993) or, more recently, how varia- 74
 tion in mindful organizing relates to safety out- 75
 comes (e.g., Vogus & Sutcliffe, 2007a). We are 76
 lacking in intervention studies in which an organi- 77
 zation moves from less mindful organizing to more 78
 mindful organizing and, in turn, from reliable per- 79
 formance to highly reliable performance. There are 80
 promising leads in the existing literature in the form 81
 of two longitudinal case studies. Roberts and col- 82
 leagues' (Madsen et al., 2006; Roberts et al., 2005) 83
 study of a PICU suggests that a change in leader- 84
 ship—specifically leaders trained in high-reliability 85
 principles—can improve mindful organizing and 86
 move an organization from low reliability to high 87
 reliability. Similarly, Rerup's (2009) research at 88
 Novo Nordisk suggests that comprehensively imple- 89
 menting a new set of management practices (the 90
 Novo Way of Management) can restore mindful 91
 organizing after its collapse. Future research can 92
 build on these retrospective qualitative accounts to 93
 a more traditional assessment of change effective- 94
 ness. For example, one might assess baseline levels 95
 of mindful organizing and then implement leader 96
 training on high-reliability principles, front-line 97
 employee training in high-reliability principles, or a 98
 systematic implementation of a new set of manage- 99
 ment practices, and track the effects on mindful 100
 organizing and reliability over time. Another option 101
 might be assessing levels of mindful organizing prior 102
 to a new leader taking over an organization or orga- 103
 nizational unit and tracking those effects over time. 104
 Yet another possibility would be to implement a 105

1 more focused intervention shown to be effective in
2 improving safety (e.g., Executive WalkRounds;
3 Frankel, Grillo, Pittman, Thomas, Horowitz, Page,
4 & Sexton, 2008) and see if it operated through
5 enhancing processes of mindful organizing.

6 In sum, these future directions indicate that,
7 even though mindful organizing is a promising con-
8 struct for understanding positively deviant safety
9 performance, there is a great need for further con-
10 ceptual and empirical work.

11 Conclusion

12 This chapter has outlined the mindful organizing
13 construct, detailed its contributions, and proposed
14 five new directions for further theoretical develop-
15 ment and empirical testing: exploring the relation-
16 ship between individual mindfulness and mindful
17 organizing, building affective foundations of mind-
18 ful organizing, expanding outcomes of mindful
19 organizing examined to include employee out-
20 comes, investigating the roles leaders and leadership
21 processes play in fostering mindful organizing, and
22 finally, conducting further construct validation.
23 This agenda also holds the potential to deepen
24 mindful organizing's connection and contribution
25 to POS.

26 Part of the strength of POS is its focus on richly
27 capturing the subjective experience of organizational
28 life. Mindful organizing offers a compelling lens for
29 understanding the cognitive and social processes
30 through which those on the front lines successfully
31 navigate high-risk, high-hazard work. Further
32 research on the affective foundations of mindful
33 organizing will only enrich our understanding of the
34 subjective experience of exceptional performance in
35 trying circumstances. The research on high reliabil-
36 ity and mindful organizing also provocatively prods
37 POS to rethink positive emotions. Specifically, in
38 high-hazard organizations, positive emotions like
39 happiness may lead to deleterious outcomes (e.g.,
40 Landau & Chisholm, 1995). Therefore, in these
41 organizations, positivity might need to strike the
42 more balanced tone of hope or even emotional
43 ambivalence (e.g., simultaneously holding positive
44 and negative conceptions of a situation).

45 In POS, positivity is socially embedded. Mindful
46 organizing embodies this embeddedness as a collec-
47 tive capability. Existing research on mindful orga-
48 nizing further shows how social practices enable it,
49 and some of the suggested future directions will fur-
50 ther reveal how it emerges. For example, studying
51 the relationship between individual mindfulness
52 and mindful organizing will demonstrate if and

when a group of mindful individuals mindfully
organize. This has implications for other emergent
capabilities that are hallmarks of POS (e.g., compas-
sion, resilience).

In addition to being a powerful lens for under-
standing organizational life, POS is also a science
(Cameron et al., 2003). Mindful organizing offers
substantial contributions to the science of POS as a
construct that has been rigorously developed, well
validated, and strongly related to important out-
comes across a number of organizations. As such, it
provides one possible template for developing mea-
sures of positive organizational capabilities and
building a systematic research program through
which they are tested and refined. For all these rea-
sons, POS and mindful organizing enrich each
other in important ways. I hope this chapter plays
a role in deepening and sustaining this fruitful
relationship.

Note

1. In this chapter, I view Vogus and Sutcliffe's (2007a) measure of mindful organizing as "the" measure of mindful organizing because it is the best validated—its items emerge directly from theory and field observation (Vogus, 2004), it demonstrates strong psychometric properties (i.e., reliability and validity), it is a collective measure (i.e., the referent of the items is the collective, and it meets statistical criteria for aggregation to the group level), is linked to theoretically justified antecedents (professional experience, human resources practices), and is significantly related to performance over time (e.g., medication errors and patient falls). I know of two alternative measures of collective mindfulness. Knight's (2004) master's thesis measures collective mindfulness of life-guards working at community swimming pools, but this measure demonstrated poor psychometric properties and failed to impact performance outcomes. Ray, Baker, and Plowman (forthcoming) developed a measure of "organizational mindfulness" and validated it using a sample of business schools. Their measure had strong psychometric properties and was well grounded in theory (Weick et al., 1999), but also has significant limitations. First, it treats each process of mindful organizing as independent. Prior theorizing views these processes as observable indicators of the underlying process of mindful organizing (e.g., Weick et al., 1999). Second, it did not link its measure to any performance indicators (i.e., no evidence of criterion validity) or antecedents. Third, they did not demonstrate that their measure was collective in a statistical sense. That is, they offered no evidence for aggregating perceptions of organizational mindfulness to a collective level.

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