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Developing Mindful Organizing in Teams: A Participation Climate is not Enough, Teams Need to Feel Safe to Challenge their Leaders

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A B S T R A C T

Mindful organizing (also known as collective mindfulness) is a collective capability that allows teams to anticipate and swiftly recover from unexpected events. This collective capability is especially relevant in high-risk environments where reliability in performance is of utmost importance. In this paper, we build on current mindful organizing theory by showing how two front-line communication and participatory conditions (perceived safety for upward dissent and climate for employee engagement) interact to predict mindful organizing. We shed light on the controversy around mindful organizing's effect on team's subjective experience at work by showing that it leads to greater team job satisfaction and thus lowers individual turnover intentions. These relationships were tested using a time-lagged design with two data-collection points using a sample of 47 teams within the nuclear power industry.

El desarrollo de la organización consciente en equipos: un clima de participación no basta, los equipos necesitan sentir seguridad para realizar propuestas críticas a sus líderes

Palabras clave:
Organización consciente
Atención plena colectiva
Seguridad para elevar críticas
Clima de participación
Satisfacción laboral
Propensión al abandono

R E S U M E N

La organización consciente en equipos es una capacidad colectiva que permite a los equipos anticipar y recuperarse rápidamente de eventos inesperados. Esta capacidad colectiva es especialmente relevante en entornos de alto riesgo donde la fiabilidad en el desempeño es de máxima importancia. En este artículo contribuimos al desarrollo de la teoría de la organización consciente mostrando cómo interactúan dos condiciones de participación y comunicación en la primera línea (seguridad percibida para elevar propuestas críticas y clima de participación) para predecir la organización consciente. Además, arrojamos luz sobre la controversia acerca de los efectos de la organización consciente en la experiencia subjetiva de los equipos en el trabajo, mostrando que lleva a mayor satisfacción laboral del equipo y en consecuencia disminuye la propensión de abandonar la organización a nivel individual. Estas relaciones se pusieron a prueba con un diseño de intervalo temporal con dos momentos de recogida de datos usando una muestra de 47 equipos del sector de la energía nuclear.

Modern organizations are operating in increasingly volatile, uncertain, complex, and ambiguous environments and their success in these environments becomes contingent on their ability to effectively adapt to, and recover from, unexpected events and demands (Bartscht, 2015; Weick & Sutcliffe, 2015). Researchers have identified a set of organizations called high- reliability organizations (HROs) that manage to operate almost error-free under trying conditions rife with unexpected events (Rochlin, 1993; Rochlin et al., 1987; Weick et al., 1999). Scholars and practitioners have thus turned to HROs (such as air traffic control centers and nuclear power plants) to extrapolate lessons about how these organizations manage to hardly ever have unwanted, unanticipated, and unexplainable variance in their performance (Hollnagel, 1993). Through observational research and numerous case studies on how HROs operate, researchers found that at the heart of this highly reliable performance is a form of collective mindfulness (or mindful organizing). Mindful organizing is defined as the collective capability to detect discriminatory details about emerging issues and act swiftly in response to these details (Weick et al., 1999). It allows teams to anticipate, and recover from, any errors or unexpected events that arise (Weick & Roberts, 1993; Weick et al., 1999).

Since its discovery, research into mindful organizing has thrived as this collective capability has been found to result in many positive organizational outcomes such as higher reliability and better performance (e.g., Knight, 2004; Rerup, 2009; Vogus & Sutcliffe, 2007; Weick & Roberts, 1993). Still, research into mindful organizing is in its

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infancy as there is a notable lack of quantitative empirical evidence to support the validity and usefulness of this construct (Ray et al., 2011). The current theory on mindful organizing is mostly informed by qualitative studies (Sutcliffe et al., 2016), which has provided rich detail about the behaviours associated with mindful organizing and the conditions under which it thrives. However, there is a need for greater quantitative investigations into mindful organizing to further advance our understanding of mindful organizing's nomological network so that it can have more impact in organizational scholarship and practice.

Of the few documented antecedents of mindful organizing, the focus has been largely on leadership approaches and organizational practices (such as training and socialization) (Sutcliffe, et al., 2016). The specific communication practices and participatory conditions needed to foster mindful organizing has largely been unexplored (Ford, 2018). However, the importance of corrective feedback (or voice) on the front line as a mechanism through which mindful organizing is formed and sustained is stressed in most of the mindful organizing theory (Sutcliffe et al., 2016; Vogus & Rerup, 2017; Weick & Sutcliffe, 2015). Similarly, active engagement and participation from all team members is referenced to in observational research and theoretical arguments about mindful organizing (Weick & Roberts, 1993; Weick et al., 1999; Weick & Sutcliffe, 2015). However, there are barely any quantitative studies testing which communication and participatory mechanisms are important for mindful organizing (Ford, 2018). Examining the impact of these conditions on mindful organizing could add to our limited empirical understanding about team-level communication conditions that are important for mindful organizing. These conditions have the potential to be greatly impactful as mindful organizing is said to be a fragile construct, needing constant reinforcement by those on the front line (Vogus & Sutcliffe, 2012).

In terms of outcomes of mindful organizing, there is a growing body of evidence in various organizations showing the positive impact mindful organizing has on performance and safety-related behaviours such as decreased occupational safety failures (Dierynck et al., 2017), more effective responses to disasters and traumas (Bigley & Roberts., 2001; Klein et al., 2006) and fewer errors in hospitals (Ausserhofer et al. 2013; Vogus & Sutcliffe, 2007). Not much is known about the effects of mindful organizing on team's affective and attitudinal responses at work, such as team job satisfaction or turnover intention. This is interesting because on the one hand, the process of engaging in mindful organizing gives teams collective and personal resources to cope in a demanding work environment (Vogus et al., 2014; Weick & Sutcliffe, 2007; Sutcliffe et al., 2016), which should positively impact team's affective and attitudinal responses at work. However, mindful organizing can also be taxing and costly as it requires continuous, emotionally demanding effort from those on the front line (Levinthal & Rerup, 2006; Vogus et al., 2014; Vogus & Welbourne, 2003; Weick & Sutcliffe, 2001). Some authors have pointed out the need to more closely study the attitudinal and affective outcomes (such as job satisfaction and turnover intentions) of mindful organizing to shed light on these competing notions (Vogus & Sutcliffe, 2012). This has consequences for the performance and safety benefits of mindful organizing as it will not be sustainable if the demands mindful organizing places on teams outweighs the resources it gives them in a high-risk environment.

In our paper, we build on and extend the current mindful organizing theory which focuses mainly on top-down predictors and performance outcomes of mindful organizing. We draw on current theory about engagement, voice, and psychological safety in the literature and propose two specific participatory communication predictors of mindful organizing: participation climate and perceived safety for upward dissent. We also draw on the current mindful organizing theory to examine the impact mindful organizing has on workers' important attitudinal responses to their work: team's job satisfaction and individual's turnover intention. We will investigate the above research questions through testing a time-lagged multilevel structural equation model using data from 47 teams working in a nuclear power plant. By testing our proposed model, we contribute in two specific ways to the mindful organizing literature. First, we gain insight into specific participatory communication conditions that may be important in fostering mindful organizing. This adds to the current limited understanding of the communication conditions that predict mindful organizing within its nomological network. This knowledge could help decision makers in HROs and in the growing number of modern organizations operating in increasingly uncertain and fast-changing environments to create more meaningful changes, interventions, and management approaches to foster mindful organizing in their teams, which is at the heart of reliable performance. Second, we will shed light on whether mindful organizing positively impacts team's subjective experience at work and thus lowers an individual's propensity to leave their organization. This advances our theoretical knowledge of mindful organizing by offering some insight into the current controversy around whether the taxing nature of mindful organizing outweighs the benefits employees gain from an enhanced ability to perform their job.

Conceptual Background of Mindful Organizing

Weick and Roberts (1993) wanted to uncover what made HROs operate almost error-free when the potential for catastrophe is so high. Through extensive field research in an aircraft carrier, these authors found that teams exhibited a pattern of highly attentive interrelations of actions. Building on previous theories of organizations as entities capable of thought (e.g., Sandelands & Stablein, 1987), Weick and Roberts (1993) called these patterns of attentive interrelations of actions a kind of "collective mind". This is because they represented aggregated mental processes, which appeared to be more developed in these HROs than in organizations primarily focused on efficiency. Later, Weick et al. (1999) did case study analyses of various high reliability organizations and showed that in these contexts there exists a joint capability to bring about both a rich awareness of discriminatory detail and a capacity for action in teams. They called this capability "mindful organizing" (also referred to as collective mindfulness). Mindful organizing is characterised by noticing weak signals, then critically analysing and reframing such signals, leading to an enlarged understanding of what is noticed (Weick et al., 1999). This enlarged understanding of what is noticed is closely linked to a larger repertoire of action capabilities which is a defining feature of what makes HROs effective (Westrum, 1988). As Weick and Sutcliffe (2007) explain, mindful organizing is a consistent way of organizing a team's behaviour that leads to a greater range of responses at a team's disposal to better deal with unexpected events. This allows teams to respond to, and contain, unexpected events in a dynamic environment effectively. Mindful organizing is not a static characteristic that teams have, rather, it is something that teams do.

The term "mindful" in mindful organizing follows Langer's (1989) conceptualisation of mindfulness on an individual level. Langer (1989) posits that a mindful state comes from actively differentiating and clarifying existing categories and distinctions which creates new disconnected categories out of the connected series of events that happen in one's work or life. From this, a more nuanced appreciation of context and alternative ways of dealing with one's context arises. This conceptualization of mindfulness argues that mindfulness is just as much about what we do with what we notice in our "state of concentration" as it is about the act of noticing itself. Mindful organizing found in HROs is characterised by noticing weak signals then critically analysing and reframing such signals leading to an

enlarged understanding of what is noticed (Weick et al., 1999). This enlarged understanding of what is noticed is closely linked to a repertoire of action capabilities which is a defining feature of what makes HROs effective (Westrum, 1988). The key difference between mindful organizing and individual mindfulness is that mindful organizing is not an intra-psychic process that occurs in the minds of individuals (Morgeson & Hofmann, 1999); rather, it is an emergent, collective process that is seen in the actions and interactions of team members (Vogus & Sutcliffe, 2007).

Through investigations of accidents and accounts of effective practice in HROs, Weick et al. (1999) found that mindful organizing appeared to be created by five interrelated processes. These five processes, which were later refined, are: a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and deference to expertise (Weick et al., 1999; Weick & Sutcliffe, 2001; Weick & Sutcliffe, 2007). "Preoccupation with failure" involves constantly worrying about and paying attention to, any error or failure that may occur or has occurred as well as treating any small mistake as a possible indicator of bigger problems (LaPorte & Consolini, 1991). "Reluctance to simplify interpretations" involves trying to uncover potential weak points by constantly questioning received wisdom and looking for alternative explanations (Schulman, 1993). "Sensitivity to operations" means teams are involved in the creation and maintenance of an integrated and up-to-date understanding of their work operations within the moment, paying special attention to events happening in the front line (Weick et al., 1999). "Commitment to resilience" involves attempts to always grow employee and organization-wide capabilities to best adapt, learn, and improvise in order to recover from unexpected events (Van Dyck et al., 2005). Finally, "deference to expertise" means that decision making power goes to those with the best expertise to solve the problem at hand, rather than those with the highest rank, especially in situations where unexpected events take place (Roberts et al., 1994). It is through the first three processes that the collective capability to anticipate unexpected events is created, and it is through the last two processes that the collective capability to contain and overcome these unexpected events is formed (Weick & Sutcliffe, 2007).

The five processes of mindful organizing are said to underpin the success of high- reliability organizations (Weick et al., 1999). This is because these organizations operate in complex, dynamic, and interdependent environments under time pressure (Vogus, 2011), which requires teams to consistently be anticipating and recovering from any unexpected events that arise. Mindlessness can be seen in teams tending to operate on "automatic pilot" as they rely on past categories and exhibit a lack of awareness of alternative explanations to rationalize a given situation and only consider a single perspective (Weick et al., 1999). Mindlessness leads to a limited range of cognitive processes which results in a more outdated and limited repertoire of action capabilities (Osborn & Jackson, 1988; Weick et al., 1999). As a consequence, mindlessness results in a decreased ability to manage unexpected events, which are rife in these contexts, effectively leading to a potential catastrophe. On the other hand, if HROs are able to cultivate mindful organizing, it is argued that through this collective capability they are able to solve problems that arise from these trying conditions (Weick & Sutcliffe, 2007; Vogus, 2011). In today's business environment, change has become exponential with the start of the fourth industrial revolution and many organizations are operating in increasingly complex, dynamic, and interdependent environments under time pressure. Therefore, HROs that are able to suppress mindlessness in these conditions are an important source of insight for many modern organizations to learn how to avoid their own tendency to drift toward mindlessness. Although research in the field is moving to modern organizations (e.g., Carlo et al., 2012), most of the empirical research on mindful organizing has been conducted in hospitals. We chose to conduct our study in a nuclear power plant, as these kinds of organizations get to the heart of reliable performance.

Nuclear power plants have some of the lowest accident rates in the world. This is largely due to the fact that failures in these operations have such catastrophic potential so accidents cannot be tolerated. The success of the nuclear industry in maintaining such remarkable reliability in the face of consistent risk is said to come from (1) highly mapped out and sophisticated safety processes and procedures (Schulman, 2004) as well as (2) the social and relational infrastructure for resilience within teams and workers (Weick & Roberts, 1993). It is argued that mindful organizing allows HROs like nuclear power plants to have this social infrastructure for resilience (Weick & Sutcliffe, 2007). The nuclear power industry differs from other high-risk sectors that also operate in environments with high levels of risk and potential for catastrophe, yet do not manage to achieve the safety standards and low accident rates of industries such as the nuclear power industry. Most notoriously, the medical sector is said to have some of the highest levels of preventable errors causing unnecessary harm, despite highly mapped out procedures and processes (Makary & Daniel, 2016). It is for this reason, that mindful organizing research has proliferated in the medical sector (e.g., Ausserhofer et al., 2013; Hoy et al., 2006; Madsen et al., 2006) as it is said that this team level capability may offer teams the much needed capability to better detect when potential errors may happen and contain them before they cause harm (Weick & Sutcliffe, 2007).

Participation Climate and Safety for Upward Dissent

In high risk environments full of unexpected events, like HROs, the collective sense making needed for anticipating potential threats and quickly containing such threats (mindful organizing) requires participatory communication from everyone, especially those on the front- line (Ford, 2018; Novak & Sellnow, 2009; Vogus & Rerup, 2017). This is because the complexity of the ever-evolving environment and interdependence within the organizational system necessitates that organizational hierarchies flatten so that each person operating in the system is sharing what they notice, and groups are digesting and comprehending new insights together. If sense making and decision making is reserved for only a few senior people or managers within the organizational system, the nuances of the evolving complex environment organizational members face are likely to be lost (Novak & Sellnow, 2006). This would leave teams vulnerable to missing important details that could lead to catastrophic events.

Whether employees and teams engage in the participatory communication practices (such as expressing diverse opinions, suggestions, and corrective feedback) that are needed for mindful organizing or not is dependent on whether they perceive that the organization and leaders genuinely encourage and listen to employees' ideas, suggestions, criticisms, and general feedback. The concept of psychological safety is essential in understanding participatory communication (Detert & Burris, 2007). A team is said to have high psychological safety if all members believe that the team is safe to take interpersonal risks (Edmondson, 1999). A lack of psychological safety stops individuals and teams from engaging in what Edmondson (1999) calls 'learning behaviours'– sharing information, seeking feedback, talking about errors, asking for help, and experimenting. Team members are likely to withhold from sharing their unique knowledge, admitting errors, discussing problems, or asking for help if they believe that doing so may lead to potential threat or embarrassment (Edmondson, 1999). The learning behaviours investigated in this psychological safety research align with the needed behaviours for the five processes of mindful organizing. Therefore, we propose that in order for teams to enact and sustain mindful organizing, there needs to be perceived encouragement of participatory communication (workplace democracy) under psychologically safe conditions. To test this, we

propose that the interaction of two variables will predict mindful organizing in a high-risk environment: participation climate and perceived safety for upward dissent.

"Participation climate", measured at the team level, is defined as the extent to which team members perceive that the company is interested in their opinions, encourages them to share their ideas, and wants them to actively participate in the everyday functioning of the organization. Active communication and participation among teams on the front line are central to the creation and maintenance of mindful organizing (Ford, 2018; Vogus & Rerup, 2017; Weick & Sutcliffe, 2007). If team members believe that their company does not value or seek out their ideas, suggestions, and feedback, they are unlikely to continuously engage in the communication practices and active engagement needed for mindful organizing. "Perceived safety for upward dissent", measured at the team level, is defined as the perceived safety team members feel to express disagreement, concerns, or critical feedback to their superiors without fear of backlash. Mindful organizing requires teams to be empowered to address any errors or deviations in performance through freely reporting their concerns and criticisms to management (Burgeon et al., 2000; Vogus & Sutcliffe, 2012). Expressing critical or challenging views to managers entails considerable interpersonal risk and team members are unlikely to engage in such behaviour without perceived safety that voicing their disagreement will not lead to punishment or embarrassment (Edmondson, 1999).

Although both variables represent a perceived climate for participatory communication, they differ in two important aspects: their content and referent. The content of participation climate is more general than perceived safety for upward dissent. This is because the types of opinions, ideas, and suggestions encouraged could be either "affiliative" as they tend to solidify or preserve the relationship between team members and the organization, or they could be "challenging" because the team runs the risk of damaging their relationship with the organization (Van Dyne et al., 1995). The content of perceived safety for upward dissent focuses just on encouraging teams to express opinions, ideas, and suggestions that are "challenging". The referent is also wider in the case of participation climate than in the case of perceived safety for upward dissent. The referent for participation climate is the whole organization, whereas for perceived safety for upward dissent, taking into account our operationalization (see the measures section), is just the immediate supervisor. When an employee answers about the organization, they may think about their immediate supervisor, but also about other supervisors, top managers, as well as organizational policies, practices, and procedures.

Interaction of Participation Climate and Perceived Safety for Upward Dissent

We believe that the organization creates the context for mindful organizing by creating a climate for teams to participate in the everyday functioning of the company, but it is not enough to foster mindful organizing by itself. If a participation climate is not accompanied by the perception that team members can take interpersonal risks by being critical of operations to their supervisor without fear of threat or humiliation, this participation will be weaker or will take the form of only "affiliative" kinds of participation. "Challenging" forms of participation are needed in order to foster mindful organizing. The proposed interaction effect of these conditions can more clearly be seen by examining the five processes of mindful organizing.

Preoccupation with failure. Teams that are said to be collectively mindful pay close attention to, and discuss, any small errors as an indication of bigger system-wide vulnerabilities (Weick & Sutcliffe, 2007). They also remain suspicious and sceptical during quiet periods when an unexpected event has not happened in a while (Weick & Sutcliffe, 2015). The continuous attentiveness to any deviations in performance requires team members to believe that their involvement, observations, and opinions are valued by the organization. However, without the perception that they are safe to report errors and discuss potential vulnerabilities to their supervisors, this mindful organizing process is unlikely to develop. This is because the potential threat of discussing errors or emerging issues from defensive or punitive supervisors will cause team members to disengage in the analytical behaviours needed for preoccupation with failure.

Reluctance to simplify. Collectively mindful teams are reluctant to simplify their interpretations of current operations as it may mean omitting potentially vital information (Weick & Sutcliffe, 2007). They resist jumping to conclusions or relying on previous schemas to understand operations (Weick & Sutcliffe, 2015). They believe that it takes a complex system to serve a complex environment (Weick et al., 1999). It is evident that encouraging active participation from teams is vital for this element of mindful organizing as team members need to feel encouraged to voice their observations and opinions in order to capture and discuss the details of operations. In addition, safety for upward dissent is vital for this dimension, as team members need to feel safe to take risks by challenging possible simplifications of their current operations and by coming up with alternative interpretations to their manager. Teams would not be trying to uncover potential issues within the system by resisting simplifying interpretations if they felt their supervisors were unwilling to listen to critical feedback.

Sensitivity to operations. Collectively mindful teams stay focused on the "messy reality" of what is going on in the front line in the moment by constantly maintaining an up-to-date understanding of all events that occur (Weick & Sutcliffe, 2007). This is achieved by integrating the real-time status of all the various processes in the system into one picture that represents the overall situation and status of their operations (Weick & Sutcliffe, 2015). This element of mindful organizing requires constant interaction and collective story building among team members (Weick & Sutcliffe, 2007). If teams perceive that their opinions, suggestions, and ideas matter and that their organization values and encourages their active involvement, they are more likely to interact more regularly and share their observations and ideas about their area of work in the system. This engagement adds to the creation and maintenance of a better more accurate picture of the bigger system. This has to be accompanied by psychological safety for upward dissent because teams need to be able to focus on, and report on, negative events happening on the front line and not just positive events. If there is fear about discussing potential issues, then an inaccurate, positively skewed picture of current operations is likely to be projected by teams.

Commitment to resilience. Mindful organizing also requires teams to be committed to bouncing back from any setbacks through growing employee and organization-wide capabilities so that the organization can continue working under strain and bounce back from crises while learning from these adverse events (Weick & Sutcliffe, 2007). This commitment to bouncing back also means team members pay attention to which capabilities, knowledge, and resources are needed in their teams in order to best respond to unexpected events (Weick & Sutcliffe, 2015). It also requires analysing any error or small failure that happens for its lessons to grow team-wide capabilities (Weick et al., 1999). Team members are unlikely to actively look for the capabilities, knowledge, and resources needed to enhance their team's ability to bounce back if they do not feel as if their ideas are encouraged and valued by the organization. Without perceived safety to disagree with management, voice concerns and talk about mistakes and errors, the learning needed for commitment to resilience which entails looking for, and discussing, the team's shortcomings and possible improvement areas would be hindered. Lack of safety for upward dissent may even result in teams hiding or ignoring these possible areas of growth and or inadequacy.

Deference to expertise. Collectively mindful teams award decision making authority to those with the best expertise for the matter at hand, rather than those with the highest rank (Roberts et al., 1994). This involves having a good understanding of each member in the system's expertise and capabilities and knowing which channels to follow to reach these members during unexpected events (Weick & Sutcliffe, 2007). If team members do not feel encouraged to get involved with the everyday functioning of the organization and to express their opinions and suggestions, it will not be apparent who has the most expertise in any given situation and those with the most expertise would not step up and voice their opinions when they are needed most. Deference to expertise directly speaks to the breaking down of formal ranks in decision making, and without a safe space to disagree with a superior this vital function of mindful organizing would be stifled.

We believe that these participatory communication conditions need to be an ongoing norm within teams in order to facilitate mindful organizing over time. Therefore, based on the arguments aforementioned the following is hypothesized:

Hypothesis 1: Perceived safety for upward dissent moderates the relationship between participation climate and mindful organizing, so that the relationship will be positive and statistically significant when perceived safety for upward dissent is high, and non-statistically significant when perceived safety for upward dissent is low.

The Emotional and Attitudinal Outcomes of Mindful Organizing

There is some controversy in the current literature about the relationship between mindful organizing and team members' positive experience at work. Mindful organizing requires continuous demanding commitment from teams on the front line so it can be taxing, effortful, and costly (Levinthal & Rerup, 2006; Vogus & Sutcliffe, 2012; Vogus & Welbourne, 2003; Weick & Sutcliffe, 2001). It is speculated that this, on top of the elevated physical, psychological, and emotional demands teams face in high risk environments (such as hospitals and nuclear power plants), may negatively impact affective responses at work (Vogus & Sutcliffe, 2012). However, despite the somewhat taxing nature of mindful organizing, Vogus et al. (2014) found that mindful organizing gives nurses resources to cope in trying conditions but was strenuous and had negative consequences in more "neutral" conditions. It is likely that aspects and outcomes of mindful organizing gives teams much needed resources to cope with the substantial demands these teams face in their environment (Vogus et al., 2014; Weick & Sutcliffe, 2007; Sutcliffe et al., 2016). Therefore, we speculate that in high-risk environments mindful organizing is likely to cultivate increased job control, team effectiveness, social support, learning, and empowerment. These resources will make it easier for teams in high-risk environments to cope in the complex, dynamic, and interdependent work environments they face. Therefore, we expect that high levels of mindful organizing will lead to higher levels of team job satisfaction in HROs.

The notion that a team can share similar levels of job satisfaction comes from the idea of "affective team climates", as researchers found that teams working together in the same organizational context can have homogenous emotional reactions (De Rivera, 1992; George, 1990). This is due to the fact that members of a group have shared cognitive perceptions of their work environment and this predicts shared affective responses over time (González Romá et al., 1996). Therefore, if a team collectively engages in mindful organizing (has homogenous mindful organizing scores), this should predict their shared affective response to their job (job satisfaction). We predict that this relationship will be positive given the resources mindful organizing gives team members in trying high-risk conditions and given that mindful organizing is likely to meet teams safety needs.

Turnover intention is defined as the extent to which an employee would leave the company if they could. Turnover intention has become an important indicator in organizations as it shows the level of commitment employees have toward the organization and the likelihood of retaining employees. The scale used in the present study (see Measures section) focuses on the desirability to leave the organization, "I would leave this organization", and controls for the ease of leaving the organization, "if I could". It is unsurprising that most management literature has found an inextricable link between job satisfaction and turnover intention as those with high levels of satisfaction in their job are likely to want to continue working in such a fulfilling environment (Coomber & Barriball, 2007; Kim & Kao, 2014; Tett & Meyer, 1993). Some research has been conducted on mindful organizing and turnover, such as in hospitals (Vogus et al, 2014) and in this context mindful organizing lead to lower turnover intention. In high-risk environments, we argue that the team satisfaction employees experience from engaging in mindful organizing will decrease their desirability to leave their organization. Therefore, we hypothesize the following:

Hypothesis 2: Job satisfaction mediates the relationship between mindful organizing and turnover intention.

Integrated Model

We expect that in a high risk, high safety orientated environment like a nuclear power plant, the importance of perceived safety for upward dissent in teams is critical for facilitating the relationships between our study variables. Without the perceived psychological safety to be candid about "challenging" feedback and ideas or feeling safe to admit fault, mindful organizing will be stifled. The positive impact of mindful organizing on team satisfaction which will reduce an individual's desirability to leave the organization will then be stifled too. Therefore, the relationships between the variables in our model will be largely dependent on perceived safety to express challenging views to leaders, such that if teams do not feel safe to express these challenging opinions to leaders, participation climate will not lead to higher mindful organizing and more satisfied teams which could lead to higher turnover intentions in individuals. On the other hand, a high participation climate in an environment where teams feel safe to express "challenging" opinions to leaders will lead to higher mindful organizing and an increase in team satisfaction, ultimately leading to lower turnover in individuals.

Therefore, the following is hypothesized:

Hypothesis 3: Perceived safety for upward dissent moderates the negative indirect effect of participation climate on turnover intention through mindful organizing and job satisfaction.

We predict that the indirect effect will be negative and statistically significant when perceived safety for upward dissent is high and non-statistically significant when perceived safety for upward dissent is low. The study model is represented in Figure 1. All variables were first measured on the individual level, as individual participants filled out the questionnaire. However, the hypothesized relationships and interactions are studied in a nuclear power setting that relies heavily on team work. Therefore, mindful organizing, perceived safety for upward dissent, participation climate, and job satisfaction were all analysed on the team level. This is because we were interested in assessing the shared perceptions of teams in terms of perceived safety for upward dissent and participation climate as antecedents for mindful organizing. We were also interested in testing the impact of team mindful organizing on group satisfaction at work. Turnover intention is analysed at an individual level, because an individual's intention to stay in an organization is more dependent on personal variables and we wanted to test how team satisfaction impacted on individuals' intentions to leave. The referent for each of the measures

(see Measures section) differs depending on the condition we were interested in. For instance, the referent of mindful organizing items is the team and the referent of the perceived safety for upward dissent is the team supervisor. For job satisfaction, the items ask about participants perceptions of their team and company. The referent for participation climate and turnover intention is the organization.

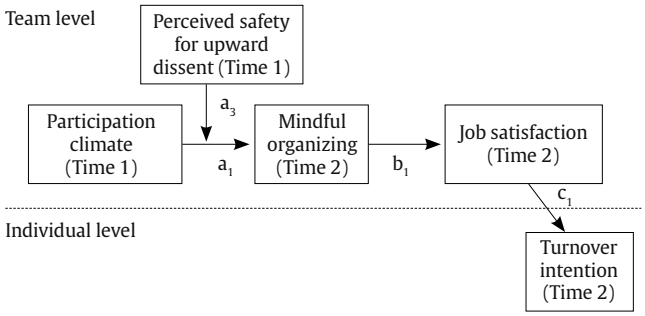

Figure 1. Hypothesized MSEM Model.

Method

Design

A time-lagged study was conducted in two nuclear power plants belonging to the same company, where participants answered the corresponding questionnaire in 2014 (Time 1) and in 2016 (Time 2).

Participants and Sampling

In 2014 (Time 1), 58 teams comprising of 615 employees participated in the study, yielding a response rate of 76.3%. In 2016 (Time 2), 54 teams comprising of 607 employees participated in the study, yielding a response rate of 72.5%. The final sample included 47 teams (comprising 425 employees), which were those that answered in 2014 (n = 427) and in 2016 (n = 425) and had at least 2 subjects each time (Kozlowski & Bell, 2003). The average group size was 9.6 (SD = 5.67). The largest team size included 28 members and the smallest team size included 3 members. In our sample of teams, all the areas and departments of the plant were represented (operations, maintenance, engineering, radiological protection, etc.). We expect that mindful organizing is important for all departments, as mindful organizing is critical for safe performance and safety is the main priority in nuclear power plants.

Regarding participants' age, at Time 1, 3.3% were under 30 years, 19.1% were between 30 and 45 years, and 77.6% were older than 45 years. At Time 2, 2% were under 30 years, 25.5% were between 30 and 45 years, and 72.5 % were older than 45 years. As our sample showed participant withdrawal from Time 1 to Time 2, we conducted a response-nonresponse analysis. First, we tested for mean differences on participation climate and perceived safety for upward dissent among the subjects collected in 2014 that were included in the sample of the study (individuals who responded in both Time 1 and Time 2) and the ones that were not included in the study (those who responded only at Time 1). Results of a t-test indicated that respondents did not differ from non-respondents in participation climate, $t(615) = -0.04$, $p > .05$, and perceived safety for upward dissent, $t(615) = -0.59$, $p > .05$. Further, we compared subjects collected in 2016 that were included in the sample of the study (individuals who responded at both Time 1 and Time 2) to those who were not included (individuals who only responded in Time 2) with respect to variables collected at Time 2 (mindful organizing, job satisfaction, and turnover intention). Results of the t-test indicated no differences on mindful organizing, $t(604) = 0.99$, $p > .05$, job satisfaction, $t(603) = 1.73$, $p > .05$, and turnover intention, $t(538) = 0.84$, $p > .05$.

Procedure

Data was collected in the form of hardcopy questionnaires. Participation was voluntary and confidentiality was guaranteed. The questionnaires administered in the current study were part of a wider battery of questionnaires titled 'Questions about Safety' which also evaluated safety culture and other safety issues. The questionnaire was administered at Time 1 (2014) and at Time 2 (2016). The researchers were on site during both Time 1 and Time 2 of data collection. They explained the aims of research to participants and were available to answer any questions participants may have had.

Measures

Participation climate, perceived safety for upward dissent, turnover intention, and job satisfaction scales were created by the IDOCAL research team. The mindful organizing scale was adapted from Vogus and Sutcliffe's (2007). Participants were asked to rate their agreement with each item on a 5-point Likert scale, with 5 indicating the highest agreement and 1 indicating the lowest agreement. Since limited previous validation tests have been conducted for these scales, confirmatory factor analyses were conducted in the present study.

Participation climate. The items in the scale are "This company sincerely encourages the employees' participation in its daily functioning", "this company encourages its staff to express their ideas and suggestions", and "This company is interested in listening to its employees' opinions." Internal consistency reliability was .93.

Perceived safety for upward dissent. The items in the scale are "I can freely express any disagreements I have with my supervisor", "I can tell my supervisor when things are not going well", and "I feel free to talk to my supervisor about any problems and difficulties I have in my job without any fear at all". Internal consistency reliability was .94.

Mindful organizing. The scale used to measure mindful organizing is 9-items validated Spanish version of the Vogus and Sutcliffe's (2007) original scale (Renecle et al., 2020). Some sample items are: "When discussing emerging problems with co-workers, we usually discuss what to look out for", "we talk about mistakes and ways to learn from them", "when crisis occurs, we rapidly pool our collective expertise to attempt to resolve it." Internal consistency reliability of the scale was .95.

Job satisfaction. This scale consists of three items that assesses a participant's global levels of satisfaction with their job, team, and the company as a whole. The items in the scale asked participants to "Please indicate, in general, how satisfied you are…" "with your job", "with your work unit or team", and "with your company". This scale was found to have discriminant validity from related constructs in a recent study by López de Castro et al. (2017). Internal consistency reliability was .85.

Turnover intention. A one item scale which states "I would leave this organization if I could" was used to measure turnover intention. It focuses on the desirability to leave the company ("I would leave this organization") and controls for the ease of leaving the company ("if I could"). Internal consistency could not be calculated as this is a single item measure.

Analysis

Given that three of the measures were created by our research team

and were not validated elsewhere, confirmatory factor analyses (CFA) of the four scales (participation climate, perceived safety for upward dissent, mindful organizing, and job satisfaction) were carried out in order to gain evidence of the validity of these measures. This was done by testing the measurement model at the individual level using Mplus (Muthén & Muthén, 1998-2010). Two alternative CFA models (a one factor model with all the items loading onto one single factor and a two-factor model with all the items loading onto two separate factors) were conducted and compared for the 2014 data, namely the perceived safety for upward dissent scale and the participation climate scale. Likewise, two CFA models (a one factor model with all the items loading onto one single factor and a two-factor model with all the items loading onto two separate factors) were conducted and analysed for the 2016 data, namely the mindful organizing and job satisfaction scale. The turnover intention scale was omitted since it is a one item measure. All the variables were measured with Likert response scales, thus, considering the ordinal nature of the data (Field, 2013) the method of estimation used was ULSMV. Model fit was evaluated by considering the chi-square statistic as well as a few other goodness of fit indices, namely, the root mean square error of approximation (RMSEA; Steiger, 1990), the comparative fit index (CFI; Bentler, 1990), and the Tucker Lewis index (TLI; Tucker & Lewis, 1973). RMSEA values of .10 or more indicate poor fit, values between .08 and .05 indicate fair fit or a reasonable error of approximation, and values below .05 indicate good fit (Browne & Cudeck, 1993; Browne & Du Toit, 1992). CFI values close to 1 indicate good fit, with values above .95 considered acceptable fit (Hu & Bentler, 1999). TLI values near 1 indicate good fit and values approaching 0 indicate poor fit, with the conventional cut off used being .90 for acceptable fit (Tucker & Lewis, 1973). We used the following criteria for comparing the alternative models: (1) whether the differences between TLI and CFI values of the competing models were larger than .01 (Cheung & Rensvold, 2002; Widaman, 1985), and (2) whether the differences between RMSEA values were larger than .015 (Chen et al., 2008). These criteria indicate whether there is a notable disparity between the models and when these differences in practical fit indices are detected, the model showing better fit will be selected.

Mindful organizing is a social construct that operates within the actions and interactions of teams, therefore each individual's score was aggregated to form a team mindful organizing score as is common practice in measuring this variable (e.g., Ausserhofer et al. 2013; Vogus & Sutcliffe, 2007). Since the analysis was done on a team level (except for turnover intention), similarly, the antecedent variables (perceived safety for upward dissent and participation climate) and outcome variable (job satisfaction) were also aggregated to analyse team level responses. Beforehand, it was essential to demonstrate that each member's score was similar enough to those in their team, so as to justify aggregating these scores. In order to do so, we ran four kinds of analyses. Firstly, average deviation indexes (ADI; Burke et al., 1999) were computed and analysed for each of the five scales to ensure within-team agreement. Since all the scales used a 5-point Likert response scale, the cut-off value for the ADI was .83 (Burke & Dunlap, 2002), therefore, we concluded that there was within-team agreement when the ADI values were ≤ .83. Secondly, we examined the extent to which employees from the same team shared similar perceptions in the study variables by computing the intra-class correlation coefficient ICC(1) (Bliese, 2000). ICC(1) provide an estimate on the proportion of total variance attributable to within-team homogeneity, indicating how much the studied variables are shared within the teams. Recommended cut-off values for ICC(1) typically range between .05 and .20 (Bliese, 2000). Thirdly, we calculated $r_{WG(J)}$ scores for each of our measures. We assessed $r_{WG(J)}$ scores according to the following criteria: scores within the the .00 to .30 range indicate a "lack of agreement", scores within the .31 to .50 range indicate "weak agreement", scores within the .51 and .70 range indicate "moderate agreement", scores within the .71 to .90 range indicate "strong agreement", and scores within the .91 to 1.00 range indicate "very strong agreement" (Brown & Hauenstein, 2005; LeBreton & Senter, 2008). Finally, we carried out one-way analyses of variance (ANOVA) to ascertain whether there was statistically significant between-team discrimination in perceived safety for upward dissent, participation climate, mindful organizing, and job satisfaction among teams. Turnover intention was operationalized at the individual level.

Multilevel structural equation modelling (MSEM) with Mplus was conducted to test the proposed model in which the interaction of perceived safety for upward dissent and participation climate leads to mindful organizing, and job satisfaction mediates the relationship between mindful organizing and turnover intention. All variables were measured at the team level, except turnover intention, which was measured at the individual level. Thus, the proposed model in this study was a 2x(2->2)-2-1 model (Preacher et al., 2016; Zhang et al., 2009). The model was tested using robust maximum likelihood estimation (RML).

To test Hypothesis 1, the statistical significance of a_3 (the coefficient estimating the moderator effect of perceived safety for upward dissent in the relationship between participation climate and mindful organizing) was tested. To further probe the interaction effect we used the Process macro for SPSS (Hayes, 2018) to estimate the slopes of the relationship between participation climate and mindful organizing at high and low values (one standard deviation above and below the sample mean) of perceived safety for upward dissent, and to plot the corresponding regression lines.

To test the significance of the indirect effect stated in Hypothesis 2, we used bias-corrected (BC) bootstrap confidence interval (CI) method (MacKinnon et al., 2004) as implemented in Mplus. A bootstrap sample size of 5,000 was used. The b_1c_1 indirect effect was calculated, where b_1 is the coefficient estimating the relationship between mindful organizing and job satisfaction, and c_1 is the coefficient estimating the relationship between job satisfaction and turnover intention. Mediation is supported when the BC bootstrap confidence interval for the indirect effect does not include the zero value.

Finally, to test the conditional indirect effect stated in Hypothesis 3 we also used BC bootstrap confidence interval method as implemented in Mplus. A bootstrap sample size of 5,000 was used. The $(a_1 + a_3W)b_1c_1$ conditional indirect effect was calculated, where W is the moderator variable (perceived safety for upward dissent), a_1 is the coefficient estimating the relationship between participation climate and mindful organizing, and a_3, b_1, and c_1 are the coefficients estimating the relationships previously stated. The conditional indirect effect is supported when the BC bootstrap confidence interval for the difference in the indirect effect (diff IE) among different levels of the moderator do not contain zero (Preacher et al., 2007), which implies that the strength of the indirect effect (a_1b_1) depends on the level of the moderator variable (W).

Results

Confirmatory Factor Analysis

The hypothesized 2-factor model with the variables measured at Time 1 showed a satisfactory fit to data (χ^2 =12.49, df = 8, p > .05; RMSEA = .04; CFI = 1.00; TLI = 1.00), and all the items showed statistically significant factor loadings in their corresponding factors (p < .01). For the participation climate scale, factor loadings ranged from .92 to .95. For the perceived safety for upward dissent scale, factor loadings ranged from .94 to .96. The differences between the two models were non-negligible (ΔRMSEA = .25, ΔCFI = .07, ΔTLI = .12), indicating the two-factor model as the best fitting model, and thus,

providing support for the discriminant validity of the two constructs (participation climate and perceived safety for upward dissent). As expected, the 1-factor model with the variables measured at Time 1 (participation climate and perceived safety for upward dissent) showed unsatisfactory fit to data (χ^2 = 322.77, *df* = 9, *p* > .05; RMSEA = .29; CFI = .93; TLI = .88), and all the items showed statistically significant factor loadings onto the one factor ranging from .84 to .88 (*p* < .01).

The hypothesized 2-factor model with the variables measured at Time 2 showed an adequate fit to data (χ^2 = 216.50, *df* = 53, *p* > .05; RMSEA = .09; CFI = .98; TLI = .97), and all the items showed statistically significant factor loadings in their corresponding factors (*p* < .01). For the mindful organizing scale, factor loadings ranged from .79 to .91. For the job satisfaction scale, factor loadings ranged from .80 to .90. The differences between the two models were notable (ΔRMSEA = .08, ΔCFI = .06, ΔTLI = .07), showing that mindful organizing and job satisfaction were identified as two different constructs. The 1-factor model with the variables measured at Time 2 (mindful organizing and job satisfaction) also showed unsatisfactory fit to data (χ^2 = 696.85, *df* = 54, *p* > .05; RMSEA = .17; CFI = .92; TLI = .90), and all the items showed statistically significant factor loadings onto the one factor ranging from .65 to .91 (*p* < .01).

Justification of Data Aggregation

The results showed that the average ADI value was below the proposed cut off of .83 for the mindful organizing scale (*M* = .58, *SD* = .17), the perceived safety for upward dissent scale (*M* = .68, *SD* = .29), the participation climate scale (*M* = .66, *SD* = .23), and the job satisfaction scale (*M* = .58, *SD* = .26), indicating that there was strong consensus within teams. The ICC(1) values for the variables included in the model indicated that 9% of the variance of perceived safety for upward dissent, 18% of the variance of participation climate, 3% of the variance of mindful organizing, and 3% of the variance of job satisfaction, were respectively explained by the clustering structure (i.e., team) of the data. The rwg(J) scores showed either moderate or strong agreement for all our variables, with mindful organizing having strong agrement (*r*wg(J) = .90) and perceived safety for upward dissent (*r*wg(J) = .65), participation climate (*r*wg(J) = .70) and job satisfaction (*r*wg(J) = .69) having moderate agreement. The ANOVA values indicated significant differences among team's scores for perceived safety for upward dissent, *F*(46, 380) = 1.92, *p* < .01, and participation climate, *F*(46, 380) = 3.02, *p* < .01. However, the ANOVA values for mindful organizing, *F*(46º, 378) = 1.29, *p* > .05, and job satisfaction, *F*(46, 377) = 1.29, *p* > .05, were non-significant. These values show the degree to which group members' responses are influenced by group membership. The above indices all together provided a reasonable justification for data aggregation.

Hypothesized Model

Correlations between our study variables can be found in Table 1. Although both participatory communication variables (participation climate and perceived safety for upward dissent) were highly correlated with one another, a correlation of .68 is below the widely accepted cut-off of .85 for factor discrimination (Kline, 2005). All the study variables were measured and analysed on a team level (*n* = 47), except turnover intention, which was measured at an individual level (*n* = 425). Participation climate was positively and significantly related to perceived safety for upward dissent (*r* = .68, *p* < .001), mindful organizing (*r* = .40, *p* < .001), and job satisfaction (*r* = .29, *p* < .05). Perceived safety for upward dissent was positively and significantly related to mindful organizing (*r* = .36, *p* < .05) and job satisfaction (*r* = .29, *p* < .05). Job satisfaction was positively and significantly related to mindful organizing (*r* = .56, *p* < .01), and negatively and significantly related to turnover intention (*r* = .- 21, *p* < .001).

The multilevel structural equation model ran showed excellent fit (χ^2 = 8.02, *df* = 9, *p* > .05; RMSEA = .00; CFI = 1.00; TLI = 1.03; $SRMR_{within}$ = .00; $SRMR_{between}$ = .09). All hypothesized pathways were significant (see Figure 2). Even though there was not a direct relationship between participation climate and mindful organizing (a_1 = .11, *p* > .05), the pathway for the interaction effect of participation climate and perceived safety for upward dissent on mindful organizing was positive and statistically significant (a_3 = .30, *p* < .05), providing initial support for Hypothesis 1. The results of the analysis carried out to interpret this interaction effect showed that the slope of the relationship between participation climate and mindful organizing was positive and statistically significant (*B* = .26, *p* < .05; CI 95% [.03, .49]) when perceived safety for upward dissent was high (+1 *SD*), but this slope was non- significant (*B* = -.03, *p* > .05; CI 95% [-.31, .25]) for low values (-1 *SD*) of perceived safety for upward dissent (see Figure 3), providing further support for Hypothesis 1.

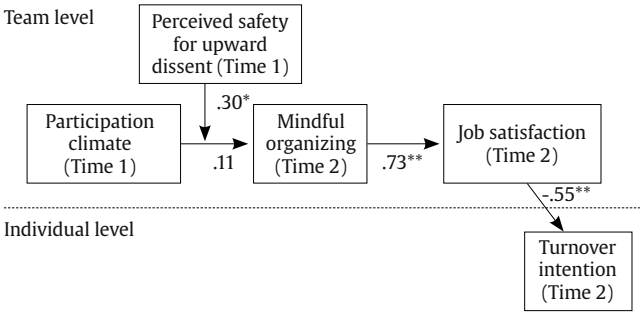

Figure 2. Unstandardized Parameter Estimates for the Hypothesized Model. *p < .05, **p <.001.

The pathway from mindful organizing to job satisfaction was positive and significant (b_1 = .74, *p* < .001). In addition, the pathway from job satisfaction to turnover intention was negative and statistically significant (c_1 = -.63, p <.001), and the BC bootstrap CI for the estimated indirect effect (b_1c_1 = -.47; CI 95% [-.77, -.16]) did not include the zero value. Therefore, job satisfaction mediated the relationship between mindful organizing and turnover intention, confirming Hypothesis 2.

Finally, we tested Hypothesis 3 by examining the conditional

Table 1. Descriptive Statistics and Correlations among Team Level Study Variables

Variable	*M*	*SD*	1	2	3	4	5
1. Perceived safety for upward dissent	3.98	0.49					
2. Participation climate	3.61	0.54	-.68***	-			
3. Mindful organizing	4.03	0.30	.36**	.40***	-		
4. Job satisfaction	4.26	0.39	.29**	.29**	.56**	-	
5. Turnover intention	2.17	0.58	-.16	-.13	-.27	-.52***	-

*p < .05, **p < .001.

indirect effect. When perceived safety for upward dissent was high (1 *SD* above the mean), the indirect effect of participation climate on turnover intention through mindful organizing and job satisfaction was more negative compared to when perceived safety for upward dissent was low (1 *SD* below the mean). The confidence interval for the difference between indirect effects at high and low values of the moderator did not include zero value. These results provided support for Hypotheses 3. The bias corrected bootstrap confidence intervals for the indirect and conditional indirect effects can be found in Table 2.

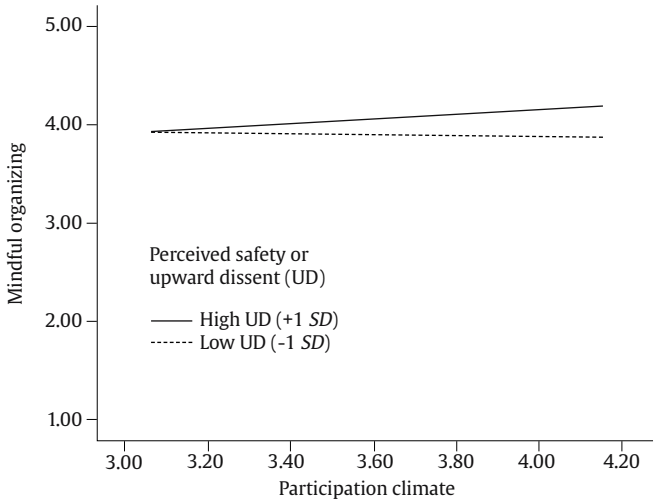

Figure 3. Interaction Effect of Perceived Safety for Upward Dissent and Employee Participation on Mindful Organizing.

Discussion

The present study set out to add to the current theoretical and empirical understanding of mindful organizing through two main aims. Firstly, to test whether having perceived safety for upward dissent and a participation climate together leads to higher mindful organizing over time. Secondly, to assess whether mindful organizing has a positive impact on team job satisfaction and whether this increased team satisfaction results in lower individual turnover intention. The results obtained were in line with what was expected.

Effect of Perceived Safety for Upward Dissent and Participation Climate on Mindful Organizing

Perceived safety for upward dissent significantly moderated the relationship between a participation climate and mindful organizing. The aforementioned relationship was stronger for high values of perceived safety for upward dissent than low values, thus supporting Hypothesis 1. When perceived safety for upward dissent is present, the relationship between employee participation and mindful organizing becomes positive and significant and as perceived safety for upward dissent becomes stronger so does the relationship between employee participation and mindful organizing. At low levels of perceived safety for upward dissent, however, the relationship between mindful organizing and participation climate becomes non-significant. This is in line with the argument that in order for mindful organizing to develop, teams need to not only be encouraged to actively participate but also need to feel as if they can voice their concerns and disagreements with their superiors without fear of backlash. If teams are only encouraged to participate and share their ideas, but do not feel safe to be critical or disagree with management, mindful organizing may not develop. The more teams feel safe and free to point out faults and concerns to their superiors the more likely mindful organizing will develop in an environment that encourages participation. These two mechanisms (perceived safety for upward dissent and climate for employee engagement) work together to predict mindful organizing and the presence of one does not lead to mindful organizing without the other. These results are promising since the data are longitudinal, showing that the interaction of perceived safety for upward dissent and participation climate at time one leads to mindful organizing at time two, giving some evidence of a possible dynamic relationship between these variables.

Mindful Organizing, Job Satisfaction, and Turnover Intention

The present study sought out to test empirically whether mindful organizing has a positive impact on job satisfaction given the controversy around this relationship. The results of the pathway between mindful organizing and team job satisfaction showed a strong positive and significant relationship, supporting Hypothesis 2. This suggests in a tough work environment like a nuclear power plant, mindful organizing offers teams much needed resources to cope with the strenuous demands of their working environment. Therefore, the fact that mindful organizing has such a strong positive effect on team job satisfaction shows that even though being collectively mindful can be taxing, it is far better for team's positive affective responses at work in HROs to engage in mindful organizing than to not engage in mindful organizing. Unsurprisingly, teams with high levels of mindful organizing were more satisfied with their job and therefore team members in these teams had less intention to leave the organization. This is in line with the social exchange theory argument (Huang et al., 2016) which posits that the satisfaction teams feel from having their basic safety needs met by their organization and from rewards they gain through mindful organizing will lead to them wanting to reciprocate the commitment they perceive those in the organization have towards them by committing to staying in the company. These results provide evidence of the sustainability of mindful organizing as it not only improves reliable and safe performance, but it also positively impacts emotional responses to the work environment.

Table 2. BC Bootstrap Confidence Intervals for the Indirect and Conditional Indirect Effects

	Estimate	95% CI
Indirect effect (b_1c_1)	-.47	[-0.77, -0.16]
Conditional indirect effect ($a_1 + a_3W)b_1$ c_1 W mean – 1 *SD* (3.51)	-.57	[-1.11, -0.03]
W mean + 1 *SD* (4.44)	-.69	[-1.36, -0.03]
Difference between indirect effects	.13	[0.01, 0.26]

Note. BC = bias-corrected; CI = confidence interval; a_1 = coefficient estimating the relationship between participation climate and mindful organizing; a_3 = coefficient estimating the moderator effect of perceived safety for upward dissent in the relationship between participation climate and mindful organizing; b_1 = coefficient estimating the relationship between mindful organizing and job satisfaction; c_1 = coefficient estimating the relationship between job satisfaction and turnover intention; W = moderator variable (perceived safety for upward dissent); *SD* = standard deviation.

Theoretical Contributions and Practical Implications

Theoretically, this research contributes to the current understanding of mindful organizing in HROs. It confirms that mindful organizing is a team level construct as the aggregation indexes of teams showed favourable consensus in the mindful organizing scores. We build on our current understanding of predictors of mindful organizing by showing that high-risk organizations that value employee input and engagement will only develop a mindful orientation toward safety if there is perceived psychological safety to voice challenging opinions to supervisors. Mindful organizing scholars have speculated about the importance of participatory communication in fostering mindful organizing (e.g., Ford, 2018; Sutcliffe et al., 2016; Vogus & Rerup, 2017; Weick & Sutcliffe, 2015), though there has been little empirical investigation into which specific communication conditions predict mindful organizing in an applied, "high risk" setting. Our study adds to the current understanding of how voice, psychological safety, and participatory communication are important for mindful organizing. The current speculation posits that both encouraging employee participation and safety to express challenging opinions are important for mindful organizing (Sutcliffe et al., 2016; Vogus & Rerup, 2017; Weick & Sutcliffe, 2015). We add to these speculations by showing that in a high-risk applied setting, encouraging teams to express opinions and be actively involved in the functioning of the organization is not enough to foster mindful organizing. Teams need to feel safe from threat or embarrassment to disagree with management and express challenging opinions in order for general participatory communication to lead to mindful organizing.

The present study also offers some insight into how mindful organizing impacts teams' subjective experience at work and therefore individuals' intentions to leave the organization. This adds to the current empirical evidence about the benefits of mindful organizing in HROs, by extending quantitative research beyond performance-related outcomes. So far, mindful organizing has been shown to lead to greater safety and more reliable performance in HROs (e.g., Barton et al., 2015). We have obtained evidence of the role of mindful organizing, at least in HROs, to reduce turnover intentions through the increasing team job satisfaction. This can be very important in industries such as nuclear power plants where replacing employees with a highly specialized knowledge can be a difficult feat. More holistically, without the specific communication mechanism of a high participation climate and perceived safety for upward dissent, mindful organizing may not develop and the benefits that come with mindful organizing such as increased job satisfaction and lower turnover intentions may not be seen. Although much work still needs to be done to further understand this novel construct, the present research offers an important piece of the mindful organizing puzzle.

Practically, these results could be used by decision makers in high-risk organizations looking to create more meaningful changes, interventions, and management practices to foster mindful organizing. In stimulating mindful organizing, this research shows that possible interventions or trainings should not only focus on teaching the principles of mindful organizing, but also the importance of genuine encouragement of employee participation in sharing ideas and creating safe space for teams to voice opinions and concerns that are critical about everyday operations. Strong emphasis should be placed on psychological safety for upward dissent as this condition is vital in fostering mindful organizing, the collective capability that underpins high reliability and safety (Weick et al., 1999; Weick & Sutcliffe, 2007). Supervisors need to ensure that they do not respond defensively or punitively to challenging ideas, questions or help seeking behaviour in order to encourage talking about errors, challenging assumptions, and admission of fault (Edmondson, 1999). This finding is especially relevant in organizational cultures that have high power distance between people and there is a large reliance on hierarchical order, such as the medical sector. Our research shows organizational decision makers that it is in interest to foster mindful organizing, beyond the positive impact on performance, as it contributes to a more positive working experience and in turn less desire to leave the company. Given the present emphasis on retaining current employees in the nuclear power sector, we give evidence of an integrated model of conditions needed to lower turnover intention that could help decision makers in creating meaningful retention strategies in nuclear power plants.

Limitations and Directions for Further Research

Although much can be learned from the results of the present study, there are some limitations to this research. The fact that the data is a self-report measure may have an impact on how truthful the answers were to the questionnaire. This is especially relevant given that all the employees were from a nuclear power plant, where safety is highlighted as important, so participants may have given into social desirability bias and rated their levels of mindful organizing as higher than they actually were. Furthermore, given that participation was voluntary and convenience sampling was used, this may have attracted atypical respondents with special interests in safety which could affect the generalizability of the data. That being said, most behavioural science research relies on self-report measures and these kinds of measures form the basis of much well-known theory (Field, 2013). Some authors argue that people's perception of a given reality is often more powerful than the objective truth about such a reality (Hendriks et al., 2015). The literature on mindful organizing and previous studies using the mindful organizing scale (e.g., Vogus & Sutcliffe, 2007) also use self-report measures and convenience sampling. In addition, confidentiality and anonymity were guaranteed and participants were not asked to give demographic details that could be traced back to them, which would have enhanced the truthfulness of responses. Another limitation to our study is the fact that we used the same method and response scales to measure all of our constructs – this makes our results vulnerable to common method variance, which can cause inflated correlations among variables (Spector & Brannick, 2009). However, a well- known way of counteracting common method bias is by collecting data at separate time points (Podsakoff et al., 2012) and the time-lagged nature of our study design would have made it less vulnerable than most other psychological research to common method variance. In addition, the results of our confirmatory factor analysis showed that our hypothesized model had far better fit than the single factor model, providing validity for the scales used in this study (their use as individual scales in the model was supported), providing further evidence that common method variance is unlikely to be a major concern.

Given that the two mediator variables (mindful organizing, job satisfaction) and the outcome variable (turnover intentions) were all measured at the same time (Time 2), we miss out on any potential for the dynamic development of these relationships. However, we used a time-lagged design with two-data collection points, allowing us to overcome the limitations associated with cross-sectional research. The use of a time-lagged design made it possible to test the hypothesized relationships of participation climate and perceived safety for upward dissent on mindful organizing more rigorously. Another limitation of the present study is that the turnover intention measure only consists of one item. Although short scales for measuring performance have been used before in the literature (e.g., Baer & Frese, 2003), shorter scales raise concerns about content validity, so it is recommended that future studies replicate these findings with a larger turnover scale. Finally, the sample size was small with only 47 teams taking part

in both Time 1 (2014) and Time 2 (2016) collection – this decreases the statistical power of the SEM and may have had an effect on the results (Rosnow & Rosenthal, 2013). However, the sample size is close to the recommended team level analysis sample size cut off of 50 teams (Hox et al., 2005).

The current research sheds light on an important mechanism of how participation and perceived safety to share critical opinions interact to foster mindful organizing over time. However, more quantitative research is still needed to clarify some conceptual ambiguities around mindful organizing and to better understand its nomological network. In particular, better assessment tools of the five constructs of mindful organizing could help researchers and practitioners to better understand how each of the five-process impact on important outcomes, the current widely used tool is unidimensional, and the validated multidimensional tools are limited in scope and applicability across sectors. A comprehensive multidimensional measure would help organizational decision makers to have a better diagnosis of their current levels of mindful organizing. It would also be useful for future research to examine how mindful organizing emerges in teams over time by looking at various predictors at various time points. The current theory around mindful organizing argues that it is not a stable construct and that it needs to be constantly re-enacted by teams (Vogus & Sutcliffe, 2012). However, there are no studies to our knowledge that measure mindful organizing over time at multiple time points with shorter intervals. This kind of research could give us a more accurate understanding of whether mindful organizing is a stable or unstable phenomenon, whether it grows or declines over time, and whether it is something that is recurrent or ongoing (Roe, 2008). Importantly, these kinds of studies could give us a more accurate picture of which conditions aid in the stabilizing, growth or recurrence of mindful organizing over time. This kind of research could also inform the appropriate time frames needed to include between mindful organizing and related behaviours in longitudinal and time-lagged research.

In terms of potential predictors, it could be particularly interesting to explore further team climate conditions needed for sustaining mindful organizing as current research appears to not "socially embed" mindful organizing enough (Martínez-Córcoles & Vogus, 2020). Further expanding research on mindful organizing to various industries, other than the medical sector and more traditional HROs, is also needed, so that we can ascertain its relevance in other kinds of organizations. In this paper we have also suggested that the relationship between mindful organizing and satisfaction is especially important in difficult environments; however, this relationship could be different depending on the importance of safety in different industries. Future research could further explore this by collecting data on mindful organizing and job satisfaction in different teams in different industries. It would also be interesting to explore whether safety culture or the priority that different teams in different industries give to safety, moderates the relationship between mindful organizing and job satisfaction. Finally, future research about mindful organizing should extend to other important outcomes in industries outside of the medical sector, such as safety performance or safety outcomes, that remains underdeveloped with quantitative research (Sutcliffe et al., 2016).

Conclusion

The hype around mindful organizing will no doubt continue, though much work still needs to be done before this construct can be fully understood and utilized in organizations. The current research gave greater insight into mechanisms that may work together to foster mindful organizing, namely, perceived safety for upward dissent and a participation climate. Furthermore, the impact of mindful organizing on job satisfaction was found to be positive, which led to less intention to leave the organization. Through adding further predictor variables to the study model and increasing the sample size, further exploration could be done on the factors that predict mindful organizing, adding to international mindful organizing theory in a meaningful way. Building onto mindful organizing research is important as it could create insight that can furnish leaders with vital information on how to foster mindful organizing leading to the error-free, reliable performance that many HROs enjoy today.

Conflict of Interest

The authors of this article declare no conflict of interest.

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