6-19-2018

Group and Organizational Safety Norms Set the Stage for Good Post-Fall Huddles

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Acknowledgements: This project is supported by grant numbers R18HS021429 and R03HS024630 from the Agency for Healthcare Research and Quality and 20871-Y3 from the Nebraska Department of Health and Human Services. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality or the Nebraska Department of Health and Human Services.

Abstract

We explored group and organizational safety norms as antecedents to meeting leader behaviors and achievement of desired outcomes in a special after-action review case—a post-fall huddle. A longitudinal survey design was used to investigate the relationship between organizational/group safety norms, huddle leader behavior, and huddle meeting effectiveness. The sample included healthcare workers in critical access hospitals (N = 206) who completed a baseline safety norm assessment and an assessment of post-fall huddle experiences ree to six months later. Findings indicate that organizational and group safety norms relate to perceived huddle meeting effectiveness through appropriate huddle leader behavior in a partial mediated framework. In contrast to previous research showing after-action reviews predicting group and organizational safety norms, the longitudinal study presented here suggests that group and organizational safety norms set the stage for the enactment of post-fall huddles in an effective manner.

Keywords: Post-Fall Huddles, After Action Reviews, Safety Norms, Leadership

Group and Organizational Safety Norms Set the Stage for Good Post-Fall Huddles

Efforts to improve organizational safety and quality are of upmost concern. Industrial accidents cause nearly 427,000 non-fatal employee illnesses and 5,300 worker fatalities in the United States each year, with an estimated total economic impact of $198.2 billion (National Safety Council, 2014). Organizational safety concerns also affect consumers. In healthcare settings, nearly one in 10 patients experience a healthcare acquired condition (Agency for Healthcare Research and Quality, 2014), and as many as 440,000 patient deaths may be attributed to preventable medical errors every year (James, 2013). Preventable medical errors cost upwards of $19.5 billion, and estimates of the economic impact of poor healthcare quality and medical errors may exceed $98 billion (Andel, Davidow, Hollander, & Moreno, 2012). Thus, organizational leaders - especially in healthcare organizations - seek ways to reduce costs associated with accidents of all types and improve safety and well-being of employees and clients/patients (Chassin & Loeb, 2011; Zohar, 2000). One way to improve safety in organizations is the development and maintenance of a safety climate and group norms for safe behavior (Dunn, Scott, Allen, & Bonilla, 2016; Zohar, 2000).

Organizations with a strong climate for safety often have fewer accidents and injuries (Zohar, 2000) and lower incidences of patient safety events (Singer, Lin, Falwell, Gaba, & Baker, 2009). Safety climate is a type of group and organizational climate in which employees believe that management rewards, supports, and expects safe behavior and safe work practices (Hofmann & Stetzer, 1996, 1998). Thus, when organizations and groups have strong, positive safety climates, employees tend to engage in more safety behaviors and also avoid engaging in risky behaviors (Zohar, 2000). These changes in behavior result in reduced costs associated with accidents or deaths from poor behavior in risky environments. Therefore, one goal of

practitioners and researchers is to determine those organizational and group processes that increase the frequency of safe behaviors; one such process is the use of after-action reviews (Tannenbaum & Cerasoli, 2013).

Interventions like after-action reviews (AARs) may be implemented within an organization to facilitate sensemaking and learning to prevent future errors, and such activities foster a culture and climate of safety (Allen, Baran, & Scott, 2010). AARs are a specific type of workgroup meeting in which people discuss, interpret, and attempt to make sense of a recent event during which they collaborated (Scott, Allen, Bonilla, Baran, & Murphy, 2013). AARs are also referred to as post-incident critiques, post mortems, hot washes, huddles, or debriefs. AARs are a common process in organizations that operate in high risk contexts because they help to maintain reliability and resiliency by facilitating learning in groups/teams from past events and changing perceptions and shared understanding of risky behaviors (Busby, 1999).

Much of the past research on the relationship between leadership and organizational and team culture and climate focuses on the role of the leader in shaping the climate. The purpose of this study was to take a different approach to previous models of establishing a good safety climate and group safety norms (e.g. how a given intervention promotes safety norms; Baran, Allen, & Scott, 2010) (see Figure 1). Specifically, our research here considered how established group and organizational safety norms within an organization related to individual leader behaviors in AARs and the outcomes of AARs used to learn from events (see Figure 2). Using Schein's (2010) model of culture and leadership, we assert that safety norms will promote leader engagement in effective AAR leader behaviors resulting in more effective AARs. Schein argues that leaders both promote organizational culture and are also shaped by the existing culture. Specifically, lower level leaders (such as those that tend to lead AARs) are selected to reflect and

represent the current organizational and group culture. When an organization or group focuses on safety culture, leader effectiveness will be determined in part by the leader's alignment of their behavior with the safety culture (Schein, 2010). We further suggest that group safety norms will facilitate leader behaviors that enable learning from the AAR. That is, leader behaviors that focus on learning from errors or near errors, avoiding blame, showing respect and encouraging different points of view will then facilitate effective communication, information exchange and learning in AARs and improve learning. These in turn will result in increased satisfaction and perceptions of effectiveness by participants in the AAR.

Insert Figure 1 and 2 about here

Group and Organizational Safety Norms and Leadership

Norms represent the shared way in which individuals understand and behave within a particular setting (Cialdini & Trost, 1998), and reflect the culture of the organization (Schein, 2010). In the context of safety, safety norms reflect individuals' understanding of safety and how to behave safely within their group and organization, respectively (Allen et al., 2010). Norms, such as safety norms, are learned and develop through interactions and communication with others, help individuals identify safety concerns, and guide decisions about how one responds to the situation (Cialdini & Trost, 1998). Furthermore, senior management and leadership may set expectations that guide the development of organizational safety norms through the introduction of organizational policies and procedures needed to attain organizational strategies and goals related to safety (Zohar, 2000). Similarly, supervisors and managers institute practices necessary to implement and execute organizational policies and procedures relevant to safety at various

subunits of the organization, which may guide the development of group safety norms (Zohar, 2000).

Organizations seek to promote group and organizational safety climate and norms as they relate to actual safety outcomes (e.g., accidents) among employees in organizations (Clarke, 2006). What is less known is whether safety norms relate to process-oriented behaviors that enact and regulate such norms within the organizations such as leader behavior and AARs. That is, what processes regulate the behaviors of employees such that accidents are less likely beyond the feeling and desire to maintain alliance with the organizational and group norms? As norms reflect the culture of the group and the organization, we expect that safety norms would have an effect on leader behavior. That is, group and organizational norms can determine how leaders attend to information and how leaders behave. Further, leaders then transmit organizational and group culture through a variety of mechanisms (Schein, 2010). Schein (2010) identifies six primary ways in which leaders transmit the organizational culture. These six mechanisms include (1) what leaders pay attention to; (2) how leaders react to crisis and critical incidents; (3) how leaders allocate resources; (4) role modeling and teaching; (5) allocation of rewards; and (6) how leaders recruit and select. In addition, Shivers-Blackwell (2006) found that perceptions of organizational culture influence how leaders perceive their own role and behaviors within the organization. AARs can be considered as a situation in which a critical incident is being discussed, and the leader of the AAR acts as a role model for how to learn from errors, allowing leaders to engage in two of these mechanisms. Further, leader behavior within the AAR is likely influenced by leader perception of organizational safety climate.

AARs, Safety, and the Post-Fall Huddle

An AAR is a post-event meeting intended to facilitate conversation about an incident or near incident to identify what happened and why, help team members analyze how their actions contributed to the outcome, and identify necessary changes (Ellis, Mendel, & Nir, 2006). Previous work shows that AARs were related to safety climate and the development of safety norms depending upon the quality of the AARs (Dunn et al., 2016) as well as the extent to which they occur on a regular basis (Allen et al., 2010). Much of this research looks at typical military or paramilitary organizations such as firefighter crews, however, the usefulness of AARs may be broader than these studies suggest.

Conducting AARs is particularly important in healthcare settings, where a focus on learning and planning to prevent similar future events or near misses is a beneficial response to a particular adverse event (Nicolini, Waring, & Megnis, 2011). A post-fall huddle is a special case of AAR that occurs immediately after a patient fall, and a best practice in a comprehensive fall risk reduction program (Boushon et al., 2012; Degelau et al., 2012). Post-fall huddles may include a variety of healthcare professionals (e.g., nurses, physical therapists, pharmacists) in addition to family members and the patient. Recent research indicates healthcare professionals may readily adopt post-fall huddles to learn from and prevent future patient falls, and that the use of post-fall huddles over time may reduce certain types of errors that contribute to these patient safety events (Reiter-Palmon, Kennel, Allen, Jones, & Skinner, 2015).

Group and Organizational Safety Norms and Post-Fall Huddle Effectiveness

More frequent use of AARs to discuss and learn from events improves perceptions of group safety norms (Allen et al., 2010; Dunn et al., 2016). However, strong group and organizational safety norms may also provide an environment and context that supports the enactment of AARs and huddles in an effective way. That is, instead of AARs promoting safety

norms, we argue that if an organization has good group and organizational safety norms, then AARs are enacted more effectively. Specifically, safety norms may encourage individuals to engage in actions and activities that ultimately promote safety. One mechanism by which safety norms can encourage more effective participation is through leader behaviors in these AARs. Specifically, organizational culture and its related norms, in this case, safety norms, will provide the leader with guidelines as to what behavior is considered appropriate in the context of the AAR (Schein, 2010; Shivers-Blackwell, 2006), such as how to react to critical incidents and role model appropriate behavior in such situations. As such, strong safety norms would indicate not only that AARs are necessary, but also what specific leader behaviors are conducive in facilitating learning (Schein, 2010). Post-fall huddles are uniquely situated to test this idea, as the individuals who convene to participate in a huddle may vary depending upon time of day, shift, location of the fall, and availability of individuals from various health care disciplines beyond nursing (Reiter-Palmon et al., 2015). Due to the variation in personnel that attend post-fall huddles, we expected that organizational and group safety norms will exert even a stronger influence on leader behavior in post-fall huddles.

Specifically, we believe that positive organizational and group safety norms enable leaders to more effectively enact the post-fall huddle and thereby improve the effectiveness of these small group meetings. Meeting effectiveness is the extent to which a meeting accomplishes the goals for which it was called (Rogelberg, Leach, Warr, & Burnfield, 2006). Sometimes these goals can be objectively measured, for example, in the case where the meeting includes an identifiable task and outcome. However, both anecdotal experience and research indicate that meetings are often poorly run and do not accomplish the goal for which they are called, if such a goal even existed (Allen, Lehmann-Willenbrock, & Rogelberg, 2015). As such,

more recently, meeting effectiveness is indexed by asking participants how effective they feel the meeting was based on overall experience (Cohen, Rogelberg, Allen, and Luong, 2011). This more global approach has been used in a variety of studies connecting meeting effectiveness and satisfaction to a variety of workplace attitudes and outcomes (e.g. Rogelberg, Allen, Shanock, Scott, & Shuffler, 2010; Lehmann-Willenbrock, Allen, & Belyeu, 2016).

In regard to post-fall huddles, effective after-action reviews focus on sensemaking, learning from errors, and the development of a plan to address safety concerns to prevent another patient fall (Reiter-Palmon et al., 2015). If group and organizational norms prioritize and emphasize safety, participation in activities such as post-fall huddles may become a standard practice and naturally be supported by these cultural norms. Operating with an understanding that safety is critical to the attainment of group and organizational goals, individuals participating in post-fall huddles may engage in effective discussion and reflection, knowing that learning from and preventing future patient falls are desired safety outcomes for the group and the organization. Thus, we expected that group and organizational safety norms will positively relate to post-fall huddle effectiveness.

Hypothesis 1: Group safety norms and organizational safety norms are positively related to post-fall huddle effectiveness.

Meeting Leader Behaviors and Post-Fall Huddle Effectiveness

As indicated earlier, a post-fall huddle is a specific form of an AAR meeting. More recent research on meetings has explored the role and function of a facilitator or leader to promote effective meetings (Malouff, Calic, McGrory, Murrell, & Schutte, 2012; Ravn, 2013). Ravn (2013) proposed that meeting leaders can engage in activities such as setting direction and focus, monitoring conversation, and encouraging participation, in an effort to enhance the meaning and

value derived from the meeting. Credo, Armenakis, Feild and Young (2010) found that when employees perceive positive relationships with their supervisor, safety norms and safety knowledge were higher. Similarly, Borgersen, Hystad, Larsson, and Eid (2014) found a moderate relationship between leadership behaviors and safety climate in the shipping industry. Keinmann, Nussbaumer, Rosenbaum, Olien, and Rogelberg (2016) found that meeting satisfaction was greater when leaders were viewed as engaging in more considerate behaviors such as encouraging participation, listening, facilitating exchange of information, and ensuing learning from past events. Therefore, we suggest that a constellation of leader behaviors focusing on support of employees, engaging in open and safe discussion of errors and near misses in a positive way, and emphasizing learning will lead to more effective AARs.

These leader behaviors are particularly important to post-fall huddle effectiveness, as there is rarely a set or consistent facilitator who leads any given post-fall huddle given variations in the time of day, shift, and location of the fall (Reiter-Palmon et al., 2015). Leaders may create conditions that support effective and constructive huddles by exhibiting and visibly modeling appropriate and desired behaviors, such as open reflection, sharing information, and respectful interaction (Provost, Lanham, Leykum, Mc Daniel Jr., & Pugh, 2015). Thus, we expected that effective post-fall huddle leader behaviors will improve the effectiveness of these huddles.

Hypothesis 2: Huddle leader behaviors in post-fall huddles are positively related to overall huddle effectiveness.

Mediated Model of Safety Norms, Huddle Leader Behaviors, and Effective Huddles

Given the importance of meeting leader behaviors on effectiveness and outcomes of meetings, organizational and group norms may improve huddle effectiveness through its effects on huddle leader behaviors. Although cultural expectations and norms within groups and

organizations may be supported by managers and leaders, culture and norms may also indicate to and constrain leadership actions that are expected within the group and organization (Alvesson, 2011; Shivers-Blackwell, 2006). As indicated by Schein (2010), leader behavior often reflects organizational culture and norms. Leader behaviors are not only a mechanism that transmits culture and norms, leader behaviors are also shaped by the organizational culture and reflect it. When group and organizational standards indicate safety is necessary to attain group and organizational goals, post-fall huddle leaders are likely to be motivated to encourage open discussion and reflection and role model behaviors necessary to learn from and prevent future patient falls, therefore facilitating the transmission of these important norms. Post fall huddles are a particularly effective approach as these take place after an error or adverse event (a fall). This allows the post fall huddle leader to reinforce safety norms by engaging employees in a discussion around how the event could have been prevented and how future events can be prevented. Thus, consistent with previous work on culture and its transmission, we expected group and organizational safety norms will create an environment that condones huddle leader behaviors that focus on learning and modeling of support and respect, and that such behaviors would in turn improve huddle effectiveness (see Figure 2).

Hypothesis 3a: Huddle leader behaviors mediate the positive relationship between group safety norms and huddle effectiveness.

Hypothesis 3b: Huddle leader behaviors mediate the positive relationship between organizational safety norms and huddle effectiveness.

Method

Sample and procedure

Hospital staff from 15 small rural critical access hospitals (CAHs) in a Midwestern state participated in a two-year project funded by the Agency for Healthcare Research and Quality (AHRQ) to decrease fall risk. CAHs are a special category of hospital created in 1997 by the U.S. government to maintain access to care in rural areas by providing cost based reimbursement for services provided to Medicare beneficiaries. CAHs are licensed for 25 or fewer beds, have an annual average length of stay less than 4 days, and are at least 35 miles from the next hospital (U.S. Department of Health and Human Services, 2013). CAHs may benefit from interventions to improve fall risk reduction practices because they have higher inpatient fall rates than larger hospitals (Jones et al., 2015), lack external financial regulatory incentives to reduce falls (Center for Medicare and Medicaid Services), and have limited resources to implement quality improvement activities (Flex Monitoring Team, 2004).

In February and March 2014, 2,550 hospital staff who provided direct patient care, those whose work directly affected patient care, providers, and those who identified as administration and management were invited to complete an online survey about the hospital's safety culture. Approximately 1,701 staff members among the 15 hospitals completed this survey, with an average hospital response rate of 67% (range 40-81%).

Approximately three to six months later (i.e., June through August 2014), 1,550 hospital staff who provided direct patient care, provided services in patient rooms, were members of the hospital fall risk reduction team, or were part of management were invited to complete a survey about their experiences with post-fall huddles. Consistent with evidence-based practice, hospitals in the fall risk reduction project were expected to implement post-fall huddles after each patient fall, regardless of whether harm occurred (Degelau et al., 2012). These staff were instructed that the purpose of the huddles was three-fold: (1) to identify the factors that contributed to that

specific patient fall (i.e. the root causes), (2) to identify interventions to reduce the risk of a future fall, and (3) to apply what is learned in a huddle to other patients, thus improving the reliability of the system. Participants were asked to complete the post-fall huddle questions if they had participated in at least one post-fall huddle during the two year falls project. Approximately 245 staff members (15.8%) among those surveyed in the 15 hospitals indicated they had participated in at least one post-fall huddle (M = 3.83, SD = 3.03) and completed the survey. Falls are typically an infrequent adverse event (Mahoney, 1998), thus, there were a relatively small number of patient falls reported among the project hospitals (N = 328, M = 22 per hospital, range 6-50). Approximately 65% of falls were followed by a huddle (n = 213, M = 14 per hospital, range 4-33), and personnel who may participate in a post-fall huddle vary based on time of day and patient.

Each participant was assigned a unique identifier that was linked to their name and hospital to match survey respondents across the two surveys that occurred three to six months apart. In total, 206 staff members among the 15 hospitals completed both the safety culture and post-fall huddle surveys. Most respondents were middle-aged (M = 44.20, SD = 12.61), Caucasian (90.8%), and female (85.4%). Nearly two-thirds (63.6%) were registered nurses, licensed practical nurses, nurse practitioners, or certified nursing assistants; the remainder were physical and occupational therapy and assistants (9.7%); management (8.3%); pharmacy and assistants (2.4%); quality improvement, risk management, and patient safety (2.4%); physician assistants (0.5%); and other ancillary hospital staff (12.6%).

Measures

***Organizational and group safety norms*.** Participants completed two domains of the Agency for Healthcare Research and Quality's (AHRQ) Hospital Survey on Patient Safety

Culture (HSOPS): management support for patient safety (i.e., organizational safety norms; three items; sample item, "Hospital management provides a work climate that promotes patient safety"), and supervisor and manager actions promoting patient safety (i.e., group safety norms; four items; sample item, "My supervisor/manager seriously considers staff suggestions for improving patient safety"). Although norms are considered a shared belief, we focus on individual level perceptions of the norms which is consistent with previous work on safety norms in organizations (Allen et al., 2010). Items in these two domains are the items used in Zohar and Luria's (2005) organization safety climate measure, and Zohar's (2000) group safety climate measure. Participants responded to each survey item on a 1-5 Likert-type scale (*1 = Strongly Disagree, 5 = Strongly Agree*).

***Huddle leader behaviors*.** Approximately 178 (73%) respondents indicated their huddle had a formal or informal leader and were asked to complete eight items from the huddle leader behaviors survey (Dunn et al., 2016) to evaluate their perceptions of post-fall huddle leader behaviors from their most recent huddle (sample item, "During the huddle, the leader allowed everyone involved in the huddle a chance to speak"). Participants responded to each survey item on a 1-5 Likert-type scale (*1 = Strongly Disagree, 5 = Strongly Agree*).

***Huddle effectiveness*.** Post-fall huddle survey participants indicated the effectiveness of their most recent huddle with three items from the huddle effectiveness survey (Cohen, Rogelberg, Allen, & Luong, 2011). Participants indicated the extent to which their most recent huddle was efficient, productive, and effective, on a 1-5 Likert-type scale (*1 = To no extent, 5 = To a great extent*).

Demographic control variables. A variety of potential demographic control variables were assessed including age, gender, and race; none demonstrated a significant correlation with

the study variables. Consistent with current conventions concerning the use of control variables (Becker, 2005), we did not include them in the subsequent analyses.

Results

Table 1 displays variable means, standard deviations, correlations, and Cronbach alpha reliabilities. All measures demonstrated acceptable reliabilities. Correlations among all variables were significant and consistent with the direction of the hypotheses.

Insert Table 1 about here

Hypothesis Tests

Multiple regression was used to test Hypothesis 1, which indicated group safety norms and organizational safety norms would be positively related to post-fall huddle effectiveness rated approximately three months later. Consistent with this hypothesis, group safety norms ($\beta = .27$, $p < .001$), and organizational safety norms ($\beta = .24$, $p = .002$), were both significantly and positively related to post-fall huddle effectiveness and explained a significant amount of variance ($R^2 = .21$). Hypothesis 2 stated huddle leader behaviors in post-fall huddles would be positively related to overall huddle effectiveness. Consistent with this hypothesis, huddle leader behaviors ($\beta = .60$, $p < .001$) were significantly and positively related to huddle effectiveness.

We followed Hayes' (2009) recommendations to test the mediation hypotheses, and Preacher and Hayes' (2008) bootstrapping methods to evaluate the indirect effects of group and organizational safety norms (independent variables) on huddle effectiveness (outcome) through huddle leader behaviors (mediator). Hypothesis 3a indicated huddle leader behaviors would mediate the positive relationship between group safety norms and huddle effectiveness (see Table 2). Results indicate a partial mediation, such that the positive effect of group safety norms on huddle effectiveness is partially mediated by huddle leader behaviors. Hypothesis 3b stated

huddle leader behaviors would mediate the positive relationship between organizational safety norms and huddle effectiveness (see Table 3). Results also indicate a partial mediation, such that the positive effect of organizational safety norms on huddle effectiveness is partially mediated by huddle leader behaviors. Using 5,000 bootstrap samples, we computed indirect effect estimates and 95% confidence intervals for these estimates. Table 4 displays the results of the bootstrapping analyses. The indirect effects of both organizational safety norms and group safety norms on huddle effectiveness by huddle leader behaviors were significant.

Insert Tables 2, 3, and 4 about here

Discussion

The impact of organizational and group safety norms on AAR effectiveness was partially mediated by huddle leader behaviors. This suggests that individuals in organizations with environments supporting strong group and organization safety norms may be primed to initiate safety improvement processes, such as AARs, and do so effectively. That is, positive safety norms may set the stage for subsequent behaviors that are rewarded, supported, and expected by the organizational or group safety climate (Hobfoll, 1989; Zohar, 2000). Those that lack such norms may require more extensive actions, incentives, and effort to reframe individuals' attitudes and understanding around the benefits of safety for themselves and others in order to improve effectiveness of safety actions and learning experiences. Specifically, one reason why safety initiatives may not immediately work is because the prevailing safety climate/culture does not support the behavior and therefore, more robust efforts may be needed to reframe attitudes towards safety generally.

Theoretical Implications

Several theoretical implications follow from the current study. First, this study suggests a possible feedback loop in the relationship between AARs and group safety norms. Previous research indicates AARs may improve norms (Allen et al., 2010; Dunn et al., 2016), and our results further suggest that safety norms may improve perceptions of AARs. That is, more frequent and effective use of AARs can improve individuals' perceptions of safety norms, which may, in turn, improve their use and perceptions of AAR effectiveness. Furthermore, this study supports the importance of leader behaviors in conducting effective meetings (Malouff et al., 2012; Ravn, 2013; Seibold & Krikorian, 1997) such as AARs. Our research indicates that strong group and organizational safety norms may be an important antecedent to effective AAR leadership, and that engagement in effective leadership behaviors in AARs may explain part of the effect of safety norms on perceptions of effective AAR meetings such as post-fall huddles. This finding is particularly important as effective post-fall huddles facilitate sensemaking, learning from errors, and the development of a plan to address safety concerns to prevent another patient fall (Reiter-Palmon et al., 2015).

Second, this study confirms that AARs may be a useful tool in a variety of contexts. The majority of research on AARs or debriefs has occurred in military, paramilitary, and other high risk occupations (Tannenbaum & Cerasoli, 2013). The nature of risks in healthcare domains is not the same as military contexts, yet the complexity of the situations, the consequences of mistakes, and the need for high levels of expertise make healthcare an appropriate context to deploy a learning tool such as AARs, particularly at an identifiable problem such as patient falls (Reiter-Palmon et al., 2015).

Third, demonstrating that effective AAR leader behaviors increase as the positive safety norms increase has implications for leadership research and theory. Specifically, this study adds

more to the ongoing discussion of how organizational culture, and specifically norms, shape leader behaviors and facilitate what behaviors are viewed as effective (Schein, 2010). Based on this study, the desired behaviors in AARs emerge as a function of a work environment that promotes such behavior, thereby supporting leadership emergence through their behavior. Future research should investigate individual differences in those who do and do not respond favorably to the positive safety norm environment identified here. This study adds to the limited empirical testing of this notion.

Practical Implications

The importance of leader behaviors in conducting effective meetings (Malouff et al., 2012; Ravn, 2013; Seibold & Krikorian, 1997) is well-established. Efforts to develop and train leaders to demonstrate specific behaviors related to leading effective meetings, including AARs, are certainly necessary. Knowing that post-fall huddle leaders respond favorably to strong positive safety norms suggests another mechanism to encourage effective leader behavior in AARs is to improve organizational and group safety climate. Thus, a practical application of these results suggest organizational leaders and managers should identify ways to improve the safety climate/norms of their organizations at both the organizational and the group levels. Such efforts may start with senior leadership and group level management to establish and enforce expectations, policies, and procedures (Zohar, 2000) prior to initiating safety protocol interventions. Evaluation of safety climate and tracking changes in safety climate over time may be fruitful.

Targeted efforts to improve safety climate/culture may also provide opportunities for promoting a variety of safety behaviors, including AARs (i.e. huddles). In this case, these efforts are particularly important given the retrospective nature of post-fall huddles. These types of

AARs occur post-event (e.g., after a patient fall) to facilitate sensemaking, learning from errors, and the development of plans and commitment to actions to prevent a similar event from occurring in the future (Reiter-Palmon et al., 2015). If safety climate/culture can encourage effective leader actions in such meetings, organizations confronted with safety concerns may embrace the benefits of a climate of safety on proactive actions to prevent safety events from occurring at all. By extension, if leaders respond favorably to one type of organizational environmental factor, it stands to reason that other climate factors may have similar effects on leader behavior and employee enactment of such norms (Schein, 2010).

Limitations

The limitations of this study must be taken into account when considering the study results and their respective implications and generalizations to theory and practice. The small sample size of hospitals and large variation in survey response (specific to post-fall huddles and matched responses with the safety assessment) within hospitals limited our ability to control for hospital effects and nesting of data. As indicated in the method section, inpatient falls are typically an infrequent adverse event (Mahoney, 1998), explaining the large variation in number of falls, the subsequent number of post-fall huddles across hospitals, and the number of respondents who completed all of the study assessments. However, the pattern of results were consistent across hospitals, independent of hospital size.

All study variables were measured with perceptual, self-report surveys, suggesting a susceptibility to method variance and common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We took steps to attempt to minimize the impact of method bias in our results, following recommendations established in the literature (Conway & Lance, 2010; Podsakoff, MacKenzie, & Podsakoff, 2012). In particular, given the limited frequency and relative

unpredictability of inpatient falls, and respect for patient and staff privacy in the process of care, the feasibility of using other methods, such as direct or videotaped observation, to evaluate the study variables in question was limited. Further, the study participants worked within the organizational and group safety norms, were exposed to the effects of the huddle leader behaviors, and formed perceptions of the effectiveness of the huddle. Thus, consistent with the intentions of our research questions, we used perceptual survey measures to evaluate individuals' perceptions of group and organizational climate, huddle leader behaviors, and huddle effectiveness. The study design and methodology evaluated safety norms independent of, and just prior to, the evaluation of huddle effectiveness and leader behaviors, creating a temporal separation in measurement of the key predictors and criterion. Finally, the survey used in the evaluation of safety norms is a widely used measure of hospital safety culture with strong psychometric properties (Agency for Healthcare Research and Quality, 2016).

Finally, the unique nature of our sample (small, rural critical access hospitals) may bound the generalizability of our findings as it is unclear whether such "small scale" initiatives can have an equally meaningful impact on a large system hospital. Replications and extensions of this work are necessary to further support the stability and generalizability of the study findings. Future research can explore these effects in larger systems, and within other high-reliability industries seeking approaches to improve effectiveness of AARs and other structured reflection and learning opportunities.

Future Directions

The forgoing study turned the typical model of promoting safety in organizations on its head, to some extent. Instead of simply trying to promote safety norms through a variety of means, this study argued that having a positive safety climate/norms made the enactment of a

subsequent safety initiative more effective. The opportunities for future research, given the findings here, are quite exciting. For example, a variety of other safety initiatives such as rewards, incentives, adoption of safety equipment, and so forth may be more effective when employees already buy into safety generally.

Further, future research could identify at what level of safety climate/norms are specific safety initiatives more likely to be effective and enacted by employees. For instance, do safety norms at the group or organizational level, or at both levels, enhance the effectiveness of safety equipment use and incentives or rewards for engaging in safe behaviors. It is likely that some initiatives, perhaps more passive in nature, could be enacted in low safety norm settings, thereby enhancing perceptions of safety norms making more active initiatives possible. Further, additional research may evaluate the mechanisms by which group and organizational safety norms improve leadership and team interactions in more interactive types of safety initiatives, such as AARs.

Finally, additional research may also link these relationships to objective safety outcomes specific to the industry of interest. Such outcomes may reflect adverse event occurrences—in the case of this study, an objective outcome would be the number or rate of falls. However, objective safety outcomes may also emphasize near misses or ‘good catches’ in which an action that had the potential to cause harm or damage was caught and avoided.

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Table 1

Descriptive statistics and correlations between variables

	M	*SD*	1	2	3	4	5	6
1. Group safety norms	4.03	.69	(.80)					
2. Organizational safety norms	4.00	.68	.57**	(.70)				
3. Huddle leader behavior	4.07	.60	.36**	.36**	(.96)			
4. Huddle effectiveness	3.78	.79	.41**	.40**	.60**	(.94)		
5. Gender	--	--	.08	.10	-.05	.04	--	
6. Age	42.91	12.58	.05	.13	.04	.01	.05	--

Note. $N = 206$. Cronbach alpha reliabilities reported on the diagonal in parentheses.
**$p < .01$.

Table 2

Multiple regression analysis to test group safety norms mediation

Model	Variable	*b*	*SE*	*t*	β	*F*	R^2	Δ*F*	ΔR^2
1	Intercept	1.88	.35	5.30**		29.56**	.17		
	Group safety norms	.47	.09	5.44**	.41				
2	Intercept	-.22	.40	-.05		48.10**	.40	55.59**	.23
	Group safety norms	.26	.08	3.29**	.23				
	Huddle leader behavior	.68	.09	7.46**	.51				

Note. $N = 206$.
**$p < .01$.

Table 3

Multiple regression analysis to test organizational safety norms mediation

Model	Variable	*b*	*SE*	*t*	β	*F*	R^2	Δ*F*	ΔR^2
1	Intercept	1.94	.36	5.42**		27.23**	.14		
	Organizational safety norms	.46	.09	5.22**	.40				
2	Intercept	.03	.40	.07		47.01**	.38	56.48**	.24
	Organizational safety norms	.24	.08	3.01**	.21				
	Huddle leader behavior	.68	.09	7.52**	.52				

Note. $N = 206$.

**$p < .01$.

Table 4

Mediation of the effects of group safety norms and organizational safety norms on huddle effectiveness through huddle leader behaviors

				Bootstrapping					
		Product of Coefficients		Percentile 95% CI		BC 95% CI		BCa 95% CI	
	β	*SE*	*Z*	Lower	Upper	Lower	Upper	Lower	Upper
GSN - HLB - HE	.24**	.069	3.92	.112	.385	.122	.397	.120	.394
OSN - HLB - HE	.23**	.107	3.94	.058	.450	.048	.429	.019	.391

Note. $N = 206$. GSN = group safety norms; OSN = organizational safety norms; HLB = huddle leader behaviors; HE = huddle effectiveness; CI = confidence interval; BC = bias corrected; BCa = bias corrected and accelerated; 5,000 bootstrap samples.
** $p < .01$.

Figure 1: Traditional Safety Intervention to Safety Climate Model

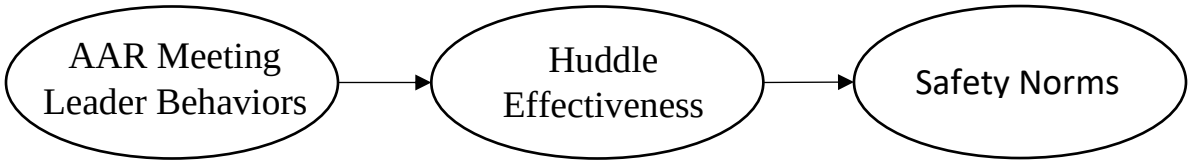

Figure 2: Mediated Model of Safety Norms on Huddle Effectiveness through Leader Behaviors