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SAFETY CULTURE AS A CONTEMPORARY HEALTHCARE CONSTRUCT: THEORETICAL REVIEW, RESEARCH ASSESSMENT, AND TRANSLATION TO HUMAN RESOURCE MANAGEMENT

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ABSTRACT

Through a number of comprehensive reviews, the Institute of Medicine (IOM) has recommended that healthcare organizations develop safety cultures to align delivery system processes with the workforce requirements to improve patient outcomes. Until health systems can provide safer care environments, patients remain at risk for suboptimal care and adverse outcomes. Health science researchers have begun to explore how safety cultures might act as an essential system feature to improve organizational outcomes. Since safety cultures are established through modification in employee safety perspective and work behavior, human resource (HR) professionals need to contribute to this developing
organizational domain. The IOM indicates individual employee behaviors cumulatively provide the primary antecedent for organizational safety and quality outcomes. Yet, many safety culture scholars indicate the concept is neither theoretically defined nor consistently applied and researched as the terms safety culture, safety climate, and safety attitude are interchangeably used to represent the same concept. As such, this paper examines the intersection of organizational culture and healthcare safety by analyzing the theoretical underpinnings of safety culture, exploring the constructs for measurement, and assessing the current state of safety culture research. Safety culture draws from the theoretical perspectives of sociology (represented by normal accident theory), organizational psychology (represented by high reliability theory), and human factors (represented by the aviation framework). By understanding not only the origins but also the empirical safety culture research and the associated intervention initiatives, healthcare professionals can design appropriate HR strategies to address the system characteristics that adversely affect patient outcomes. Increased emphasis on human resource management research is particularly important to the development of safety cultures. This paper contributes to the existing healthcare literature by providing the first comprehensive critical analysis of the theory, research, and practice that comprise contemporary safety culture science.

The directive primum non nocere (“first, do no harm”) is a central tenet in medicine. The Greeks recognized “to error is human” a millennia before the Institute of Medicine (IOM) report, To Err is Human: Building Safer Health Systems (Kohn, Corrigan, & Donaldson, 2000). Significant patient harm is caused by errors resulting from healthcare systems that do not adequately protect patients. These problematic systems ultimately lead to poor quality outcomes, which provide a challenging paradigm for the healthcare industry to address (Page, 2004). Empirical studies demonstrate this situation is a global concern and reports indicate patients routinely receive poor quality healthcare. For example, nearly 18% of hospital admissions result in an adverse patient event and 10% of all patients are impacted by medical errors (Andrews et al., 1997; Brennan et al., 1991; Leape et al., 1991; McGlynn et al., 2003; Seddon, Marshall, Campbell, & Roland, 2001; Vincent, Neale, & Woloshynowycz, 2001; Weingart et al., 2002). As such, the World Health Organization (2006) has labeled poor safety and suboptimal care an endemic concern.
Evidence suggests poor patient outcomes result from flawed systems (Zhan & Miller, 2003), faulty processes (Reason, Carthey, & de Leval, 2001), poorly designed work environments (DeLucia, Ott, & Palmieri, 2009), misaligned and missing interactions (Cook, Render, & Woods, 2000), substandard performance (Benner et al., 2006), deficient training (Bohmer & Edmondson, 2001), and inadequate management practices (Palmieri, Delucia, Peterson, Ott, & Green, 2008) that enable human fallibility (Reason, 2000). In comprehensive reports, the IOM recommends healthcare organizations develop safety cultures so that delivery systems and individual processes align with workforce requirements (Aspden, Corrigan, Wolcott, & Erickson, 2004) to “improve the reliability and safety of care for patients” (Kohn et al., 2000, p. 14). Until the healthcare industry provides safer care environments (Vincent, Moorthy, Sarker, Chang, & Darzi, 2004), patients remain at risk for suboptimal care and adverse outcomes (Hofmann, Morgeson, & Gerras, 2003). As such, organizational culture and patient safety have intersected as a priority area of interest for health services researchers (Gershon et al., 2000; Scott, Mannion, Davies, & Marshall, 2003a).

Strategic human resource management (HRM) is a catchall phrase to describe the plans, policies, and procedures organizations implement regarding their employees (Schuler & Jackson, 2007). Specifically, strategic HRM is the process organizations apply to acquire, develop, and reward human capital (Hernandez & O’Connor, 2009). The organizational goal is to ensure employees possess the appropriate knowledge, skills, and abilities (KSAs) needed to achieve the mission and vision. Ideally, successful organizations align human resource (HR) decisions with corporate strategic goals.

Strategic HRM plays a multifaceted role in contributing to the success of organizations, including those in healthcare (Fottler, 2008). Examples of HR functions include (1) hiring qualified employees, (2) training and developing employees, (3) maintaining good work environments, and (4) managing compensation strategies for employees in ways that are both equitable and motivating (Millmore, Lewis, Saunders, Thornhill, & Morrow, 2007). In this regard, the HR department is an important functional unit responsible for creating, maintaining, and reinforcing an organization’s safety culture tenets (Gentry, 2008).

Becker and Huselid (2006) refer to HRM research as a “black box” since it lacks theoretically guided research questions to study HR practitioner practices and the related HRM organizational outcomes. In healthcare management, the theory-research-practice continuum has been described as translational science (Palmieri & Peterson, 2009), or moving theory to research and then research to practice with targeted evidence-based
interventions designed to stimulate measurable organizational improve-
ments. Similarly, HRM is a practice discipline that needs to embrace
translational science as a method to ascertain the effectiveness of current
HRM practices as well as use research to design and implement evidence-
based interventions to address organizational concerns.

The role of HRM in addressing adverse organizational performance has
not been adequately studied in most industries (Haggerty & Wright, 2009).
In healthcare, Khatri and colleagues (2006) report HRM is underdeveloped
and should begin to focus on attributes related to organizational culture.
More recently, safety climate and organizational culture were found to be
significantly and positively related in a large sample of acute care hospitals
(Singer et al., 2009) that have HRM implications for employee training and
development. Importantly, HRM practices and policies directly influence
climate perceptions (Bowen & Ostroff, 2004; Schneider, 1990, 2000), such as
safety, which in turn can impact organizational performance (Khatri &
colleagues, 2006).

This chapter uses the theoretical foundations for safety culture research
to consider two questions: (1) What is the current state of safety culture in
healthcare and (2) How can strategic HRM contribute to creating and
sustaining safety cultures in healthcare organizations? To address these
questions, this paper analyzes the theoretical underpinnings of safety
culture, examines the psychometric performance properties of the measure-
ment instruments, and provides an assessment about the state of safety
culture research in healthcare. We begin by introducing the concept of safety
culture, including its origination, disciplinary influences, and associated
theoretical tenets. We briefly describe the literature and discuss how
researchers have interchangeably used the terms safety attitude, safety
climate, and safety culture and offer the Safety Hierarchy Model for concept
clarification. Then, the conceptual attributes associated with safety culture
are presented, followed by our definition of safety culture. Next, the
psychometric properties for the most widely used instruments in healthcare
are discussed. We conclude the paper with a discussion about the current
state of safety culture research in healthcare and identify future research
opportunities with respect to strategic HRM.

As this paper reviews the state of the safety culture science and the
applicability to HRM, specific management strategies are beyond the
delineated scope of this paper. This paper contributes to the existing
healthcare literature by providing the first comprehensive and critical
analysis of the theory, research, and practice that comprises the state of
healthcare safety culture science. This paper also offers a heuristic model to
clarify the hierarchy of organizational safety constructs and identifies HRM practices as critical antecedents for stimulating and maintaining safety in organizations.

OVERVIEW OF ORGANIZATIONAL CULTURE AND CLIMATE

Although a primary focus of this paper is to examine safety culture and its origins, we would be remiss to overlook the valuable contributions made by the traditional organizational culture literature. Over time, organizational culture has evolved, stemming from organizational psychology, social psychology, and social anthropology. Although organization culture first appeared in Administrative Science Quarterly (Pettigrew, 1979), Jacques (1952) previously referred to the culture of the factory. Not to overlook Selznick (1957/1984) who utilized “organization” as a technical term for harnessing human energies and to direct them toward set aims, whereas “institution” was utilized as a term to suggest an organic social entity or culture.

Various scholars have defined organizational culture (Davies, Nutley, & Mannion, 2000; Guldenmund, 2000; Schein, 1990). One definition suggests the term organizational culture may be used to encompass “a wide range of social phenomena, including on organization’s customary dress, language, behavior, beliefs, values, assumptions, symbols of status and authority, myths, ceremonies and rituals, and modes of deference and subversion; all of which help to define an organization’s character and norms” (Scott et al., 2003a, p. 925). Unfortunately, there is little agreement over what defines an organizational culture, what should be observed, how observations should occur, what methodologies should be utilized, how can routine administration be informed, and what actions should be taken toward organizational change (Clarke, 2006b; Scott et al., 2003a). Organizational culture scholars face challenges in trying to reconcile the divergent aims of the organizational culture members (Guldenmund, 2000; Scott et al., 2003a).

Although less focused on the evolution of social systems, organizational climate researchers tend to be more focused on the impact that organizational systems have on groups and individuals (Joyce & Slocum, 1984). Organizational climate researchers emphasize the perceptions of organizational members in terms of observable practices that are close to the surface of organization life (James & Jones, 1974). Climate is represented in the
deep roots of an organizational value system, manifested in the temporary social environments, subject to direct control and often consciously perceived by organizational members (Denison, 1996).

**EMERGENCE OF SAFETY CULTURE IN HEALTHCARE**

Zohar (1980) is credited with providing the foundation for organizational safety culture research. While studying occupational safety in the Israeli manufacturing industry, Zohar coined the term safety climate to describe the organizational attributes that contribute to employee safety. Safety climate refers to the perceptions and attitudes about safety as an integral part of the work environment (Zohar, 2002). Initially, safety climate instruments were developed to measure individual employee perceptions about safety awareness that drive work behaviors (Zohar, 1980). Shortly after the IOM report (Kohn et al., 2000), the measurement shifted to a group level construct that represents the shared perceptions of workers in reference to management safety practices (Zohar & Luria, 2005). It is important to note that safety climate considers management practices to be a key antecedent (Zohar, Livne, Tenne-Gazit, Admi, & Donchin, 2007).

Safety culture is a term originally used by International Atomic Energy Agency (IAEA) investigators following the Chernobyl disaster (IAEA, 1986) to categorize multiple organizational deficits that directly contributed to the worst nuclear power accident in history (Mearns & Flin, 1999). The phrase “poor safety culture” universally characterized management’s inadequate safety attentiveness and deficient safety promotion behaviors (IAEA, 1986). Parallel to the incident in the nuclear industry, the aviation industry was working on improving cockpit crew performance due to safety culture concerns (Helmreich & Wilhelm, 1991). The work in both the nuclear and the aviation industries informed early safety culture research (Gawande, Zinner, Studdert, & Brennan, 2003; Sexton, Thomas, & Helmreich, 2000), especially regarding the attitudes and behaviors that are a part of crew resource management (Gregorich, Helmreich, & Wilhelm, 1990).

The safety culture concept is deeply rooted in a comprehensive analysis of errors that exposed organizational (Reason, 1998), system (Perrow, 1984), and human failures (Cook et al., 2000). Initially, healthcare focused on human error (Kohn et al., 2000); specifically those errors associated with perceptual limitations (Rasmussen, 1999) and employee behavior...
(van Vuuren, 1999). This approach, although helpful in understanding human error, did little to shift the focus from the traditional person-centered philosophy to a system-oriented perspective for addressing errors that result in adverse events (Palmieri et al., 2008). Recently, however, there has been a movement to more heavily examine organizational factors such as management practices, organization structures, and system processes (Flin, Burns, Mearns, Yule, & Robertson, 2006; Institute of Medicine, 2004), which negatively impact employee performance (DeLucia et al., 2009; Singla, Kitch, Weissman, & Campbell, 2006). System reliability (Amalberti, Auroy, Berwick, & Barach, 2005), teamwork (Helmreich & Davies, 2004), trust (e.g. Dirks & Ferrin, 2002), and management practices (e.g. Konteh, Mannion, & Davies, 2008) have all emerged as specific areas of safety culture research. Yet, the relationship between work environment and clinical performance remains an area needing further research (DeLucia et al., 2009).

Despite the reported preference for outcome improvement measures to evaluate safety culture research (Nieva & Sorra, 2003), specific approaches to quantify outcomes and to construct frameworks incorporating safety culture remain vague and incomplete (Zohar, 2008). There has been considerable debate within the literature regarding the definition of safety culture and climate (Flin, Mearns, O’Connor, & Bryden, 2000; Guldenmund, 2000), as well as strategies to differentiation of these two terms (Hale, 2000). Despite the diverse genesis (Flin, 2007), the terms are frequently used interchangeably (Cox & Flin, 1998) to describe organizational attributes that reflect safe work environments (Guldenmund, 2000). Zohar (2003, p. 125) states “safety climate relates to shared perceptions with regard to safety policies, procedures and practices,” whereas Flin (2007, p. 657) clarifies that culture as described in the organizational literature is “less tractable and more complex than climate.”

Both safety culture and safety climate measurement is context dependant in regard to individual staff attitudes and perceptions (Cox & Flin, 1998; Coyle, Sleeman, & Adams, 1995). Safety attitude is yet another related term used to describe each staff member, or the individual’s attitude and perception about workplace safety. As illustrated in the Safety Hierarchy Model (Fig. 1), safety culture is the relatively stable organizational attribute, safety climate is the more malleable unit or group attribute, and safety attitude is the impressionable individual attribute (see Table 1 for construct stability). Although not explicitly discussed in this paper, in the model we suggest the presence of the safety standard to represent the industry-wide safety culture phenomena often cited in other industries. The industry safety standard results when the vast majority of firms exhibit safety culture as an
Fig. 1. Safety Hierarchy Model.

Table 1. Safety Constructs: Levels of Analysis, Construct Stability, and Modifiability.

<table>
<thead>
<tr>
<th>Safety Construct</th>
<th>Levels of Analysis</th>
<th>Concept Stability/Difficulty to Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety attitude</td>
<td>Individuals and small work groups</td>
<td>Less stable – flexible</td>
</tr>
<tr>
<td>Safety climate</td>
<td>Units and departments</td>
<td>More stable – semi-flexible</td>
</tr>
<tr>
<td>Safety culture</td>
<td>Corporate divisions and organizations</td>
<td>Very stable – inflexible</td>
</tr>
<tr>
<td>Safety standard</td>
<td>Industries</td>
<td>Extremely stable – rigid</td>
</tr>
</tbody>
</table>

organizational property (e.g. aviation and nuclear power) and associated entities (e.g. regulatory and contract services) are also impacted by safety culture. However, the hospital industry has yet to establish such a safety standard (IOM, 2004; Kohn et al., 2000).

Furthermore, comprehensive reviews of safety culture instruments used in industry (Flin et al., 2000; Guldenmund, 2000) and healthcare (Colla, Bracken, Kinney, & Weeks, 2005; Flin et al., 2006; Madsen, Anderson, & Itoh, 2007; Scott et al., 2003a) report considerable inconsistencies in the theoretical grounding and conceptual framework supporting the questionnaires. Theoretical frameworks to support safety culture tools are limited, however when present, the theoretical conceptualizations significantly differ in various ways. For example, most studies associated with safety climate are based on Zohar’s (1980, p. 661) early definition related to shared worker perceptions about safety, but these studies neglect to specify the theoretical basis or conceptual framework that “outline the casual influences between safety climate and the outcome measure.” Complicating this problem further, most studies fail to define basic terms, a necessary prerequisite given the lack of a universal patient safety nomenclature and taxonomy (Zhan et al., 2005). For example, the core term “adverse event,” used to describe an accident that harms a patient, often is not clearly defined (Kellogg & Havens, 2003).

Additionally, many studies indicate the reliance on theories such as high reliability theory (HRT) or normal accident theory (NAT) with sparse supporting details about the guiding framework. For example, researchers indicate questionnaires are based on the seven components of HRT (e.g. Singer et al., 2003) but do not articulate how each survey item, or group of items, links to specific constructs (Flin, 2007) nor do they provide an explanation about the mechanisms that operate within the framework (Guldenmund, 2000). In the healthcare literature, safety culture and climate, and attitude, are also ostensibly correlated descriptions for the same phenomena (Gaba, Singer, Sinaiko, Bowen, & Ciavarelli, 2003) and are all suggested to appropriately represent the construct of safety culture (Nieva & Sorra, 2003; Sorra & Nieva, 2004). In general, there is a noticeable absence of theoretical specificity and clarity regarding the relationship between safety culture and organizational characteristics, or safety culture and patient outcomes.

Organizational safety research, whether described as culture, climate, or attitude, is premised on a perception, individual or shared, about the policies, procedures, and practices specific to safety. While recognizing there are differences between the terms in the management literature, we will
use the term safety culture to represent a global concept for this paper. We define safety culture as the product of individual and group attitudes, perceptions, and values about workplace behaviors and processes, significantly influenced by the actions of managers and leaders that collectively result in the safety and reliability of organizational systems and outcomes (Cox & Flin, 1998; Flin et al., 2000; Hale, 2000; Williamson, Feyer, Cairns, & Biancotti, 1997; Zohar, 1980, 2003).

THEORETICAL INFLUENCES

Several theories are identified as informing safety culture research. Most notably, NAT represents a sociological perspective (Perrow, 1984), HRT reflects an organizational psychology perspective (Roberts, 1990; Weick & Sutcliffe, 2001), and the so-called aviation framework (Helmreich, Merritt, Sherman, Gregorich, & Wiener, 1993) represents a quasi-theoretical human factors perspective (Gregorich et al., 1990). These three approaches to safety research view culture as the key determinant but in different ways (for a comprehensive healthcare discussion see Tamuz & Harrison, 2006). The theories appear remarkably similar across disciplines; however, the emphasis on specific attributes is dissimilar. To tease out the distinctions, the following section offers a brief safety culture discussion seen through each disciplinary lens.

Sociology

The sociological approach highlights safety (Helmreich & Davies, 2004) as an emergent property of the culture (Smirich, 1983) where shared values, norms, and beliefs reflect the collective history of individual contributions to the group (Perrow, 1970). Mearns and Flin (1999) consider culture to be an evolving construct that is complex and resistant to direct management interventions. Arriving from a classic approach to organizational sociology (Sammarco, 2005), NAT views safety as a system property not solely derived from individual behaviors and performance (Perrow & Langton, 1994). Instead with NAT, safety is linked to reductions in complexity and tight coupling resulting from inflexible policies and procedures, and poorly designed processes and systems (Perrow, 1999). Perrow (1999, p. 354) recognized the importance of safety culture as “the metaphor of an accident residing in the complexity and coupling of the system itself, not in the
failures of its components,” which means some accidents are simply normal and unavoidable in the course of work. Learning for organizations is important (Tucker & Edmondson, 2003), but “the politics of blame, however, make learning very difficult” (Sagan, 1994, p. 238). Furthermore, NAT recognizes that accidents often result from safety initiatives that have become irrelevant due to institutional pressures such as production concerns or conflicting leadership interests (Sagan, 1993).

Psychology

The psychological perspective is similar to the sociological perspective with one important difference. Although the shared values, norms, and beliefs remain constant, organizational psychologists theorize that culture exists for the purpose of manipulation (Schein, 1990). HRT is premised on the “collective mindfulness” of employees where situations are viewed from multiple angles and diverse perspectives to prevent operational failures from resulting in accidents (Weick & Roberts, 1993; Weick & Sutcliffe, 2006). Management involvement in organizational safety is critical to prevent accidents (Weick, 1987, 2002), which explains how many organizations can achieve remarkably safe and reliable outcomes despite encountering complex and tightly coupled processes (Hopkins, 1999; Roberts, 1990). As such, HRT scholars argue poorly structured and inadequately managed organizations produce more discrete errors, originating from unexpected interactions or actions, which circumvent system defenses. Employees are openly encouraged to support learning from errors as HRT emphasizes “blame-free” reporting systems. Error reporting is essential to facilitate learning from mistakes to protect system integrity and prevent or mitigate catastrophic failures (Reason, 1990, 2000).

Aviation (Human Factors Framework)

The “aviation perspective” differs from NAT and HRT since a theoretical framework is not explicitly used to guide knowledge generation. The aviation perspective depends on the human factors framework, similar to the biomedical model, with a practical emphasis on application instead of theory production. Most papers citing aviation safety research do not disclose this significant theoretical limitation; however, aviation researchers rely on observation, expert opinion, and/or data mining analyses
as the methodology to construct safety culture instruments. Yule, Flin, Paterson-Brown, and Maran (2006) noted previous aviation research related to behavioral markers was incomplete, early in development, and not psychometrically validated. Aviation safety research is grounded in methodologies related to critical incident (Flanagan, 1954; Woods & Shattuck, 2000) and critical decision (Klein, Calderwood, & MacGregor, 1989). These methods offer a deductive approach to gain knowledge through incident evaluation that includes the following activities: describing the situation, recording possible influences, reviewing the preceding issues, and considering interactions (Carlisle, 1986).

**MEASURING SAFETY CULTURE**

Across industries, safety culture research remains focused on the measurement of a concept without continued conceptual development and expansion. Zohar (2008, p. 385) argues that “merely developing more measurement scales and re-testing climate-behavior relationships will hold back scientific progress.” Despite the theoretically rich domains of organizational theory and behavior, measurement instruments have been developed without the prerequisite systematic literature review that normally guides concept development. In addition, we found HRM is noticeably absent from the safety culture literature in regard to instrument design and research methods despite repeated emphasis on measuring employee perceptions about staffing, job satisfaction and stress, policies and procedures, communication and teamwork, and management performance as safety culture antecedents. These areas are established HRM domains, for both researchers and practitioners.

Reviews of safety culture instruments used in industry (Flin et al., 2000; Guldenmund, 2000) indicated a considerable degree of inconsistency in the conceptual and thematic basis of survey instruments that may be responsible for contradictory findings. Similar issues were reported in reviews of healthcare safety surveys (Colla et al., 2005; Scott et al., 2003a) that found a wide variety of tools available for research; however, these instruments varied considerably with regard to general characteristics, dimensions covered, availability of psychometrics, and applicability in studies. Some experts suggest finding issues result from the absence of a unified theoretical foundation and the diverse industrial environments being studied (Flin, 2007).

Most healthcare instruments have been constructed by researchers trained in different fields with dissimilar perspectives. These researchers often
adapted instruments from external industries, with varied focal characteristics. For example, the concepts of safety culture (Nieva & Sorra, 2003; Singer et al., 2003; Weingart, Farbstein, Davis, & Phillips, 2004; Yates et al., 2005), safety attitude (Sexton et al., 2004, 2006a; Thomas, Sexton, Neilands, Frankel, & Helmreich, 2005) and safety climate (Ashkanasy, Broadfoot, & Falkus, 2000; Flin et al., 2006; Gaba et al., 2003; Zohar, 1980, 2000; Zohar et al., 2007) were operationalized from multiple research instruments that varied in levels of analysis, item construction, and dimensional focus (Colla et al., 2005; Flin et al., 2006). Only the lack of theoretical grounding, scarcity of conceptual framework, and the presence of a dimension related to leadership and management practices were common across the reviews.

An organizational culture can be defined by the human behaviors and the interactions that facilitate the product of work (Helmreich & Merritt, 1998). Building on a rather comprehensive organizational culture literature, including NAT and HRT, Reason (1998) identified four cultural characteristics that permit the organization of work supportive of a safety culture, including (1) learning, (2) reporting, (3) justice and fairness, and (4) flexibility. These cultural characteristics are comparable to those values typical seen in high reliability organizations (HROs) (Weick, 1987). The Joint Commission (2005) specifically includes these characteristics within the Management of Human Resource and Leadership chapters in the accreditation standards for acute care hospitals.

HROs are those organizations believed to exhibit strong safety cultures (Vogus & Sutcliffe, 2007). HROs harbor cultures that promote interpretation, improvisation, thoughtful action in an atmosphere of trust and openness among management and employees (Roberts, 1990; Weick & Sutcliffe, 2006, 2007). For example, flexible and more participative culture types seem to be willing to accept more risk in changing processes that results in increase quality improvement activities and better patient outcomes (Shortell et al., 1995). Collectively, these safety culture characteristics result in a set of social norms (Reason, 2000) viewed as unspoken rules of behavior (Ostram, Wilhelmsen, & Kaplan, 1993) and when violated, tend to result in disciplinary action (Vincent et al., 2004).

Most safety experts believe intricately related organizational characteristics, those specifically linking fundamental management practices to outcomes, are vital to safety culture sustainability (Aspden et al., 2004; Nieva & Sorra, 2003; Reason, 2000; Singla et al., 2006; Vincent, 2006; Zohar, 2003). Characteristics such as good teamwork and multidisciplinary collaboration have been demonstrated to decrease patient mortality and hospital length of stay (Grol, Bosch, Hulscher, Eccles, & Wensing, 2007),
although organizations reporting positive perceptions about culture have not been shown to contribute to improved performance outcomes (Scott, Mannion, Marshall, & Davies, 2003b). However, positively impacting safety culture is postulated to improve organizational, employee, and patient outcomes (Clarke, 2006b; Mustard, 2002).

Strategies to measure management’s commitment to safety and the associated independent outcomes have not always been fully or directly reported in the literature. Management may go through the motions of promoting a safety culture or talking about the importance of safety culture in meetings. However, if researchers do not directly ask management to respond to surveys, researchers may not get a complete picture of safety culture actually present in an organization. Instead, employees are often asked to provide their perceptions of management as a proxy measure for the management’s level of safety culture commitment. This practice can lead to inaccurate assessments and erroneous conclusions.

In other research contexts, measurement perceptions are often identified by direct research studies conducted by management researchers; however, this direct response is generally lacking in healthcare research. Safety culture perception data provides management with another method, similar to staff satisfaction survey results, for benchmarking and trends analysis (Mearns, Flin, & Whitaker, 2001). The safety culture literature does not reflect the involvement of HRM researchers or practitioners in this process; yet, staff satisfaction surveys and employee opinion feedback are fundamental HRM concerns. Also, it is important to account for both employee and management perspectives in safety culture research, which leads to concerns about the level of analysis, as discussed in the next section.

Safety culture researchers face significant challenges regarding the appropriate level of analysis (Table 1). Factor interactions at different ecological levels influence quality improvement interventions (Ferlie & Shortell, 2001; Shortell et al., 2000b). Collectively hospital departments and nursing units are clinical microsystems that represent conglomerates of discrete, yet interdependent parts, defining the organization (Mohr, Batalden, & Barach, 2004). Safety culture instruments often reflect a global measurement approach, instead of a more targeted approach despite research that demonstrates clinical microsystems are better improved with targeted interventions (e.g. Shortell, Gillies, Anderson, Erickson, & Mitchell, 2000a; Shortell et al., 1995, 2000b).

In terms of data collection, Hofmann and Stetzer (1996) identified five levels appropriate for measuring safety culture, including (1) individuals, (2) work groups, (3) departments, (4) organizations, and (5) environments.
The consideration of instrument selection, measurement strategy, and data analysis plan is seldom discussed when describing the methods, analysis, or limitations of a study. Most safety culture data are collected through Likert-type questionnaires that are administered to individuals (Clarke, 2006a) with statistical analysis performed by aggregating individual data without clearly defined levels of analysis (Flin, 2007). Since safety culture is defined, in virtually all accounts, as a “shared phenomena” such as perceptions and values, instruments that measure individual perceptions within studies designed to analyze data at the group or organizational level is “theoretically incompatible” (Zohar, 2003).

SAFETY CULTURE STUDIES AND INSTRUMENTS

Charged by the United States Congress to measure and monitor healthcare organization safety, the Agency for Healthcare Research and Quality (AHRQ) developed the Hospital Survey on Patient Safety Culture (HSOPSC). The HSOPSC is a 54-question Likert-type scale, with a demographic section that measures safety culture across 14 dimensions (12 safety related and 2 outcomes related, see Table 2 for details) (Agency for Healthcare Research and Quality, 2004). Each dimension is represented by three to five questions with five-point Likert scale responses to ascertain agreement (strongly disagree to strongly agree) or frequency (never to always)

Table 2. Hospital Survey on Patient Safety Culture (HSOPSC) Dimensions.

| 1. Hospital management support for safety |
| 2. Organizational learning |
| 3. Teamwork within units |
| 4. Supervisor/manager expectations and actions promote safety |
| 5. Compliance with procedures |
| 6. Staffing |
| 7. Error feedback and communication |
| 8. Overall perceptions of safety |
| 9. Openness of communication |
| 10. Nonpunitive response to error |
| 11. Positive-reporting norms |
| 12. Frequency of event reporting |
| 13. Teamwork across units |
| 14. Hospital handoffs and transitions |

for each question. The outcome measures are single-item responses inquiring about the number of events reported within the past 12 months and asking for an overall patient safety score (excellent to failing). For the reported error questions, errors are defined as any type, without regard to harm.

The 2003 HSOPSC pilot study included 1,419 hospital employees at 21 United States hospitals. The HSOPSC internal consistency for the individual dimensions was acceptable, using factor item clustering; the dimensions yielded Cronbach alpha scores from 0.72 to 0.84. However, one score, the staffing dimension, yielded a Cronbach alpha of 0.63 (Sorra & Nieva, 2004). Similarly, a nursing home study reported a Cronbach alpha of 0.50 for the staffing dimension (Handler et al., 2006). Given the complexities inherent in staffing measures and the lack of congruency in staffing characteristics, the staffing dimension is satisfactory but requires additional refinement and testing (Nieva & Sorra, 2003). In a two-hospital study with a purposeful sample of 158 medical-surgical nurses, Moody, Pesut, and Harrington (2006) found an internal consistency reliability of 0.87. Another study reported internal consistency ranging from 0.61 to 0.89 with appropriate discriminant validity (Hartmann et al., 2008). Overall, the Cronbach alpha scores greater than 0.70 indicate the measures, other than for the staffing dimension, performed with acceptable internal consistency (Nunnally, 1967).

The first large multiple institution safety culture survey of the attitudes and experiences of workers in hospitals examined 15 hospitals with 6,312 employee responses (Singer et al., 2003). Singer et al. (2003) found the cultures differed significantly not only between hospitals but also by clinical department and by job function within the institutions. Importantly, the scores for this study and others have not been normalized to gauge “how well” or “how poorly” the safety culture exists in an organization. In addition, scores are seldom reported as correlated to independent outcome measures. Singer et al. (2007) recognized further research is necessary to validate or refute their results.

In a Veterans’ Administration (VA) HSOPSC study of 30 hospitals with 4,547 employee responses, researchers found psychometric results strongly support all scales, other than the staffing scale, as representative dimensions of safety climate (Hartmann et al., 2008). When responses by job category were explored, the senior management level reported the lowest problem in safety climate rating, whereas nurses had the highest problem ratings. The difference between organizational level and professional affiliation manifests in different perceptions of the same environment. Halbesleben, Wakefield, Wakefield, and Cooper (2008) demonstrated that increased burnout
(measured with the Maslach Burnout Inventory) was correlated to poor safety culture reported by nurses. These researchers found that higher levels of nursing burnout were significantly associated with lower levels of perceived safety culture and lower reported errors. Similarly, using a motivation inventory and the HSOPSC instrument, Moody et al. (2006) found nurses were motivationally inhibited when safety culture scores were lower.

An important, but unanticipated, finding was offered by Singer et al. (2005) when these researchers longitudinally developed their earlier investigation (Singer et al., 2003). Despite different hospitals implementing various targeted interventions to improve error reporting and management safety practices, the researchers detected only trivial improvements in measured safety culture (Singer et al., 2005). In a related cross-sectional, safety culture intervention study, executive walk rounds were incorporated into nursing units for one week per month for four months (Thomas et al., 2005). This intervention was reported to positively improve the perception of management practices by nursing staff in the experimental units when compared to the perception of management practices in the control units. Both study instruments measured only “perceived safety” without measuring associated outcome variables. Researchers also indicated concern about the long-term translation of these varying levels of improvement. Overall, the studies support Clarke’s (2006b) finding that empirical research is limited; however, when present, the research does not support the probability of stimulating change with safety culture interventions.

Another instrument, called the Safety Attitude Questionnaire (SAQ) (Table 3) is often used to measure healthcare safety culture. The SAQ is a 40-item questionnaire designed as a self-report instrument for frontline

<table>
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<tr>
<th>Dimensions</th>
<th>Definition</th>
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<tr>
<td>1. Teamwork climate</td>
<td>Perceived quality of collaboration between personnel</td>
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<tr>
<td>2. Job satisfaction</td>
<td>Positivity about work experience</td>
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<td>3. Perceptions of management</td>
<td>Approval of management actions</td>
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<td>4. Safety climate</td>
<td>Perception of strong and proactive organizational commitment to quality</td>
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<td>5. Working conditions</td>
<td>Perceived quality of the work environment and logistical support</td>
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<td>6. Stress recognition</td>
<td>Acknowledgement of how performance is influenced by stressors</td>
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Source: Sexton et al. (2006a).
The SAQ does not claim a theoretical basis but is reported to measure perceptions about organizational safety climate (Sexton et al., 2006a). The SAQ has been slightly modified for use in multiple countries and in several specialty areas including intensive care units (ICUs) (Huang et al., 2007), operating rooms (Makary et al., 2006), labor and delivery (Sexton et al., 2006b), ambulatory clinics (Modak, Sexton, Lux, Helmreich, & Thomas, 2007), and other general hospital settings. Overall, these study results support the assertion by Colla et al. (2005, p. 364) that safety culture survey results vary considerably since “more effort should be expended on understanding the relationship between measures of patient safety climate and patient outcomes.” For example, in a single hospital four-unit ICU study employing the SAQ, researchers found mean and percent-positive scores differed significantly (p < .0083, Bonferroni correction) across units; however, independent outcome variables were not reported (Huang et al., 2007).

A newer instrument, the Safety Organizing Scale (SOS), introduced by Vogus and Sutcliffe (2007) is a promising behavioral measurement tool for safety culture research. The instrument lacks psychometric and validity testing when compared to the often-used instruments, the HSOPSC and the SAQ, however. The SOS is a nine-question tool designed from an organizational theory perspective for measuring behaviors that translate into organizational safety culture. The instrument was grounded in the case studies and work of Karl Weick (Weick & Quinn, 1999; Weick & Roberts, 1993; Weick & Sutcliffe, 2001), related to HROs (Vogus & Sutcliffe, 2007). Collective mindfulness is a concept extensively described in the literature (see Weick & Sutcliffe, 2006, 2007) and served to guide item development (Table 4). As a result of the theoretical foundation and the appreciably shorter length, the SOS could improve the ability of organizations to gauge their safety culture. Once additional psychometric and validity tests have been performed in diverse environments, the tool could be readily incorporated into standard employee satisfaction surveys.

Table 4. Safety Organizing Scale (SOS) Dimensions.

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<table>
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<tr>
<td>1.</td>
<td>Preoccupation with failure</td>
</tr>
<tr>
<td>2.</td>
<td>Reluctance to simplify</td>
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<tr>
<td>3.</td>
<td>Sensitivity to operations</td>
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<tr>
<td>4.</td>
<td>Commitment to resilience</td>
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<tr>
<td>5.</td>
<td>Deference to expertise</td>
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Source: Vogus and Sutcliffe (2007).
CONCEPT CRITIQUE

Pidgeon (1998) labeled safety culture work as unsystematic, fragmented, and, particularly “underspecified in theoretical terms,” research that was subsequently reaffirmed in a review by Zhang, Wiegmann, and von Thaden (2002). In an aviation safety culture review, Wiegmann et al. (2004) noted there is considerable disagreement among safety experts about the definition of safety culture and how this differs from safety climate. This point is further elucidated by the Colla et al.’s (2005) review title that states “safety climate” when in fact the review evaluates studies with safety culture, safety climate, and safety attitude measures.

Expert panels and IOM reports lend guidance to understand the tenets proposed to impact the degree of safety culture exhibited by an organization. However, there are no recommendations to guide healthcare organizations in selecting an appropriate measurement instrument (Singla et al., 2006). The inconsistencies and deficiencies outlined in this paper evidence continued fragmentation and incomplete theoretical grounding will continue to impede rapid changes to the accepted safety cultures survey instruments. The studies by Singer et al. (2003, 2005) suggest there are significant issues with the present operationalization of the safety culture concept, especially when interventions targeted at the specific survey dimensions fail to produce measurable results. The applicability of safety culture as a universal concept across disciplines and specialties within healthcare as well as the relationship to specific safety performance measures remain questionable and unsettled (Flin et al., 2006).

Terminology and concept confusion notwithstanding, many experts believe poor safety management practices (Perrow, 1984; Reason, 1990, 2000), especially those impacting employee safety attention (Rasmussen, 1999) and perception (Weick & Quinn, 1999), represent the root cause of most adverse events (Cook & Woods, 1994). Fleming and Wentzell (2008) suggest two assumptions guide the majority of safety culture research: (1) improved safety performance is produced by positive safety cultures (Clarke, 2003) and (2) organizations can improve culture to include safety as a priority (Guldenmund, 2000). Safety culture is often used as a synonym to describe focused efforts to increase error reporting (Piotrowski & Hinshaw, 2002), eliminate person-centered blame (Dekker, 2007), build trust (Dirks & Ferrin, 2002), improve leadership involvement (Thomas et al., 2005; Wong, Helsinger, & Petry, 2002), and enhance system processes (Barach & Johnson, 2006). Safety culture is a complex concept.
Similar to the majority of safety culture surveys, the HSOPSC responses are collated, and the mean scores are calculated for each item, then aggregated to the associated dimension (Fleming & Hartnell, 2007) at the unit and organizational levels of analysis. This horizontal aggregation methodology is problematic (Table 1) since individual perceptions are assumed to “roll-up” into group level and organizational constructs. Furthermore, the survey items should purposefully reflect the intended level of analysis. Surveying individual perceptions and subsequently aggregating the responses is not advisable (Zohar, 2003).

Generally, methods used to aggregate individual data to characterize collective responses are rudimentary (Shortell et al., 2000b), and the overall validity is questionable (Scott et al., 2003a). Also, multiple concerns about the vertical level of analysis were noted and discussed in a review of 12 frequently cited healthcare culture studies (Flin et al., 2006). Determining individual perceptions about safety culture homogeneity within and across functional units is important to address this analysis concern (Flin, 2007). Industrial safety culture researchers (Schneider, 1990; Zohar, 2002) indicate inter-rater consistency should be assessed when individual data are aggregated into a nursing unit, functional department, or organizational measurement. This additional assessment may address the challenge in linking outcome variables to safety culture data, such as attempting to correlate staffing levels (Aiken, Clarke, & Sloane, 2002; Clarke, 2006b) and Nursing Sensitive Quality Indicators (NSQI) (Aspden et al., 2004).

Safety culture instrument development and measurement strategies in healthcare are in the early developmental stages (Flin et al., 2006). As a result, Flin (2007) argues the science is limited by the inadequate attention to establish suitable psychometric properties such as reporting essential validity and reliability standards (American Educational Research Association, 1999). A recent safety survey methodology review indicted research was primarily conducted at the institutional level of analysis while questions focused on group level structures and outcome relationships perceived by individual staff (Hearld, Alexander, Fraser, & Jiang, 2008). Focused research to clarify the previously discussed concepts (culture, climate, and attitude), to define the appropriate level of analysis variables (e.g. individual, group, organization, and within/across subgroups and groups), to operationalize the concept with a psychometrically sound instrument, and to establish outcomes variables is necessary to improve the science.
HUMAN RESOURCE MANAGEMENT AND SAFETY CULTURE

Health professionals have long recognized the importance of strategic HRM to the general success of their organizations (Gowen, McFadden, & Tallon, 2006; Kharti & colleagues, 2006). The HRM area is ideally equipped to help an organization create, develop, and reinforce safety culture as evidenced by the role that HRM currently plays in promoting employee safety (e.g. West, Guthrie, Dawson, Borrill, & Carter, 2006). Compliance with safety regulations, incentives for “safe days,” and employee training regarding safety are features of many organizations. These areas could be expanded to focus on patient safety, in addition to employee safety (Brown, Metz, Cregan, & Kulic, 2009; Carignani, 2000).

Another functional area within HRM critical to the creation of a safety culture is training and development. Here, the organization’s strategy on safety should be communicated, reinforced, monitored, and evaluated by HRM professionals. Many companies create modules to train and test employees on work-specific knowledge, or other organizational information employees need to know. Similar modules could be created with regard to patient safety, and employees can be certified as “safety specialists” upon satisfactory completion of these modules. Furthermore, adding a safety component to each employee’s performance appraisal to assess the steps employees have taken toward ensuring patient safety. Then, merit pay raises can be based on these appraisals, which would provide financial incentive for workers to adopt a safety culture. For such appraisals to be effective, however, the organization must ensure the appraisals are appropriately designed to be fair by setting challenging, realistic, objective, and measurable goals (Lavelle, McMahan, & Harris, 2009).

On the theme of “what gets measured gets attention,” HRM could not only implement individual and unit-based assessments of safe organizational behaviors but also evaluate the overall safety culture program. HR professionals should establish benchmarks, goals, timetables, and valid measures for safety culture behaviors the organization needs to improve. Quantifying a return on investment, a consideration not addressed in the literature, further reinforces to leadership the value safety cultures provide to the organization. With objective evaluation of an organization’s effort to adopt a safety culture, the self-fulfilling prophecy to further emphasize the culture among the organization’s stakeholders is established (Gowen et al., 2006; Janssens, Brett, & Smith, 1995; Pronovost et al., 2003).
RECOMMENDATIONS AND FUTURE RESEARCH

Safety culture is an important area of research for both healthcare and organizational scholars and HR and management professionals. Although safety culture is “borrowed” from other industries, healthcare operates under a remarkably different set of environmental characteristics in terms of organization and industry complexity. For example, accidents in nuclear power and aviation tend not only to be significantly more noticeable to the general public, but these events also have a greater impact on the physical and emotional condition of the humans involved. The function and design of the 737 aircraft operated by each individual airline does not vary, yet the function and design of each hospital facility is remarkably dissimilar.

Design complexity is further obscured by differences in the layout of each unit or, in some cases, differences that occur room by room. Furthermore, the policies and procedures for nuclear power plants and airlines have been principally established by regulatory agencies (e.g. Federal Aviation Administration and the Nuclear Regulatory Commission, respectively). However, in the United States, healthcare has modest indirect operational regulation and oversight. Additionally, healthcare is subject to contradicting or competing expectations (e.g. The Joint Commission, Center for Medicare and Medicaid Services, and various regulatory agencies) at both the state and national level. Manifesting additional complexity in the daily care delivery process, each hospital, and most departments and units within the facility, has different policies, procedures, professional expectations for performance, and workforce competency. Unlike the aviation and nuclear power industries, organizational sovereignty in healthcare is preferred over the industry standardization necessary to construct safe work environments.

Health Professional Contributions to Research

Future research must focus on the unique attributes associated with different healthcare professionals to construct theoretically grounded frameworks to guide safety culture research. The existence of diverse groups and subcultures within an organization is particularly relevant in health settings where professional cultures are strong (Degeling, Kennedy, & Hill, 1998; Degeling, Sage, Kennedy, & Perkins, 1999; Hofstede, Neuijen, Ohayv, & Sanders, 1990), as loyalty to the profession is stronger than loyalty to the organization (Mintzberg, 1996). Additionally, nurses represent the largest professional group and deliver the bulk of hospital patient care...
(DeLucia et al., 2009), yet few studies focus on linking safety culture with nursing performance and outcomes (Clarke, 2006b). Safety culture research specific to the nursing environment, performance, and outcomes should be developed and supported as an essential healthcare funding priority.

**Psychological Mediators and Moderators**

In healthcare and other industries, few studies have considered the psychological mechanisms that mediate (Flin, 2007) or perhaps moderate the relationship between safety culture and the associated safety-related behaviors. The choice of research methods can distinguish both what is measured and the depth of inquiry (Denison, 1996; Mearns, Flin, Gordon, & Fleming, 1998). Schein (1990) believes climate is simply a superficial time-specific manifestation of an organizational culture that can be measured with quantitative survey instruments. To understand the dimensions of organizational safety culture and to describe the likely mediators and moderators (Flin, 2007), superficial aspects of staff safety attitudes answered through survey instruments will not suffice (Mearns et al., 1998). Theoretically guided scale development and conceptual analysis to illuminate the core safety culture antecedents is important to further expand the science.

**Qualitative Research**

Qualitative methodology has been suggested as the most appropriate technique with which to determine safety culture characteristics (Denison, 1996; Scott et al., 2003a) since organizational culture exists as the established underlying suppositions that manifest as organizational outputs (Ashkanasy et al., 2000; Schein, 1991; Strauss, 1987). In the qualitative research tradition, a grounded theory approach is purposed to explicitly form concepts and build theory using a systematic methodology (Glaser, 1978; Glaser & Strauss, 1976; Strauss & Corbin, 1990). Healthcare is a social process (Stevens, 1989; Stevens & Hall, 1992) where individual actions occur in a social context shaped by social processes (Strauss & Corbin, 1994). As such, Schein (1990) argues shared organizational values and assumptions gradually emerge, with clarity and meaning through iterative interviews.

A grounded theory methodology will facilitate an inductive rather than the traditional deductive approach to study safety culture. Beginning with data collection and analysis rather than hypothesis testing based on an
a priori framework, the subsequent construct and theory building provides a rich and context-specific sense making of healthcare professional experiences. Research with a grounded theory approach may result in the development of a substantive safety culture theory relevant to healthcare organizations by identifying, defining, and categorizing the “safety culture” phenomena for the purpose of “doing good science” (Strauss & Corbin, 1990). Considering the absence of outcome-rich studies, the reported inconsistencies in survey instruments, the demonstrated lack of intervention effectiveness, and the varying degree of theoretical grounding, safety culture should be re-evaluated and replaced with frameworks developed from concepts with theoretical foundations that can guide the construction of psychometrically valid instruments. These instruments should then be correlated with independent organizational, patient, and staff outcomes. Over the long term, healthcare researchers should be able to use survey results to devise intervention strategies that positively impact the organizational culture and improve patient safety outcomes.

**Human Resource Management Research**

Becker and Huselid (2006) refer to HRM research as a black box due to the lack of clarity in explaining “what exactly leads to what” (Gerhart, 2005). The field is challenged by inadequate theoretical underpinning and ambiguous theoretical models (Wright & Boswell, 2002) such that outcome measurements vaguely associate performance antecedents and organizational outcomes (Purcell & Kinnie, 2007; Wright, Gardner, Moynihan, & Allen, 2005). Although the strategic role of HRM in addressing adverse organizational performance has not been adequately studied in most industries (Haggerty & Wright, 2009), in healthcare, the role of strategic HRM has only recently begun to appear (Fottler, 2008; Hernandez & O’Connor, 2009).

In healthcare, Khatri and colleagues (2006) report HRM is underdeveloped and should begin to focus on organizational attributes closely associated with safety culture (Khatri, Halbesleben, Petroski, & Meyer, 2007; Palmieri et al., 2008). Safety and organizational cultures were recently found to be significantly and positively correlated in a large sample of acute care hospitals (Singer et al., 2009). HRM practices and policies influence culture perceptions (Bowen & Ostroff, 2004; Schneider, 1990, 2000), which in turn impact organizational performance (Khatri, 2006). HRM research in safety culture might be challenging at the start as there is “difficulty in defining and
operationalizing both ‘culture’ and ‘performance’ as variables that are conceptually and practically distinct” (Scott et al., 2003b). HRM theory development and research studies specific to safety culture and performance measurements can address this gap.

HRM practices facilitate employee interactions and behaviors (Glendon, Clarke, & McKenna, 2006), which can assist in the development of safety cultures (Clarke, 2003). Despite the clear linkage between HRM practices and employee social interactions (Bowen & Ostroff, 2004), healthcare safety culture instrument dimensions have been suggested to serve as critical antecedents that HRM professionals can impact with strategies. These strategies include (1) encouraging camaraderie and improving employee morale (Khatri et al., 2007), (2) minimizing human factor limitations in the work environment (DeLucia et al., 2009), (3) supporting a commitment-based management philosophy (Khatri, Brown, & Hicks, 2009), (4) preventing individual-focused attributions for clinical mistakes (Palmieri & Peterson, 2009), (5) recognizing and respecting system complexity when implementing policies and procedures (McDaniel & Driebe, 2001; Palmieri et al., 2008); and (6) establishing and monitoring clinical competencies (Scott et al., 2003a). HRM theory was neither implicitly considered nor reviewed for each of these suggested strategies. As such, research studies specifically designed to examine these strategies, with a HRM perspective, should be undertaken.

Finally, although this paper has focused on developing safety cultures, researchers should also consider how additional factors such as burnout and work fatigue (Halbesleben et al., 2008) or intention to leave the organization (Stone et al., 2006) can mediate and/or moderate the various dimensions presently guiding safety research efforts. Surprisingly, research that evaluated the relationship between reported employee satisfaction and safety culture scores was not present. This is yet another important area for HRM involvement in safety culture and healthcare work environment research.

CONCLUSION

Florence Nightingale (1863, p. iv) recognized the patient safety dilemma when she stated, “It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm.” Yet, safety culture is an emerging science that examines how individual attitudes, perceptions, values, competencies, and behaviors collectively determine an organization’s commitment to safety management. Many healthcare
organizations have room for significant improvement when patient safety outcomes are used as a measure of quality. Reason (1998, p. 295) argues safety culture “is a concept whose time has come” and calls for researchers to “develop a clearer theoretical understanding of these organizational issues [and] to create a principled basis for more effective culture-enhancing practices.”

HRM practitioner and researchers can contribute to change the representative organizational culture from the current “blame and shame” in the face of medical errors, to an improved progressive culture where errors are recognized as learning opportunities to better the organization. This task is a challenging undertaking for any healthcare organization; however, this culture shift is necessary to create safe and reliable care delivery systems. The key elements that support safety culture is an organizational commitment to (1) construct reliable systems and processes, (2) detect and analyze errors and adverse events with robust investigation, (3) support and encourage error reporting with an open and just culture, and (4) embrace management practices and behaviors supportive of safety (IOM, 2001; Page, 2004; Weick, 2002).

The IOM recommends organizations routinely assess their safety culture, establish comprehensive patient safety plans to improve error detection and reduce opportunities for error by redesigning care systems (Page, 2004). Theoretically derived survey instruments are essential to ensure successful implementation of safety management practices (Hudson, 2003; Reason, 1998) and to appropriately monitor systems for unsafe or suspect conditions (Parker, Lawrie, & Hudson, 2006). With theoretically grounded survey data, safety culture scientists can identify problematic attributes and characteristics, and HRM professionals can develop meaningful organizational interventions. Once evidence-based interventions are developed, tested, and used in organizations, then real change or quantified improvements to patient safety outcomes can be demonstrated. With successive changes in different organizations, achievements can be shared, which in turn will stimulate further improvements throughout the healthcare industry.

The healthcare system in the United States is broken, and system reliability and safety is only one solution with significant improvement potential. Health services researchers, leadership and management professionals, clinical professionals, and other staff have an aggregated responsibility to improve organizational outcomes, most importantly those related to the patient. By better understanding what it takes to develop a safety culture, and how to implement the necessary changes in an organization, each healthcare professional is poised to contribution to establish safety as an industry standard.
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