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Review

Safety culture across cultures

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ABSTRACT

National culture colors nearly every aspect of human behavior (Javidan et al., 2006). Despite this truism, the concept has yet to be integrated into organizational safety culture theory. The purpose of this article is to bring awareness as to how national culture can influence organizational safety culture. We do so by theorizing that the shared organizational beliefs, assumptions, and values related to safety (i.e., the anthropologic component of safety culture) are a reflection of the national culture in which the organization's workers are embedded. These organizational values, beliefs, and assumptions directly influence worker perceptions of organizational life and their behavioral choices. Given this prospectively strong direct influence on organizational behavior, we reason that the effectiveness of different organizational structure designs, safety management practices, and leadership characteristics (i.e., safety culture's normative component) can depend on characteristics of the national culture within which the organization resides. We conclude by providing a few key practical suggestions and directions for future research.

1. Introduction

The concept of safety culture has a long history in organizational safety, dating back to the International Nuclear Safety Advisory Group's (INSAG) summary report following the Chernobyl accident (Guldenmund, 2010). Although researchers have struggled with agreeing on an operational definition of the concept and the actionable aspects of it have been questioned (e.g., Reiman and Rollenhagen, 2014), recent efforts help to catapult the concept into a sphere of cognitive and operational manageability (Guldenmund, 2000; Cooper, 2000; Edwards et al., 2013; Yorio et al., 2015). These advances seem to bring a universally accepted notion of the concept into view—one in which historically narrow perspectives of safety culture are blended together into an overarching multifaceted concept characterized by the interdependencies between its normative, pragmatic, and anthropological components.

Through the process of refining organizational safety culture theory, Edwards et al. (2013) brought the importance of national culture into the discussion. While Edwards et al. (2013) discussed the concept of national culture as an avenue to further our understanding of organizational culture, the authors also recognized that an organization's safety culture may be influenced by the national culture in which its workers are embedded. The purpose of this article is to further elucidate the ties between national culture and an organization's safety culture.

It is theorized that shared organizational beliefs, assumptions, and values related to safety (i.e., the anthropologic component of safety culture) are, in-part, a reflection of the broader national culture. Nationally held values, beliefs, norms, practices and assumptions may directly influence worker perceptions of the organization around them and, in turn, the behavioral tendencies within their organization in regard to safety. Given this prospectively strong direct influence on organizational behavior, we reason that the effectiveness of different organizational designs and structures, safety management practices, and leadership characteristics (i.e., safety culture's normative component) depend on characteristics of the national culture or cultures within which the organization and its members are embedded.

This is not to say that each individual within a national system holds an identical set of values—the implications of which may give way to stereotyping. Rather, prevalent socially accepted values at the national level create a context that can constrain individual behavior (Johns, 2006). Thus, although workforces may be comprised of individuals from a range of societal cultures—who may even identify as members of differing social groups resulting in a series of nested cultural influences (e.g. sexuality, religion, ethnicity)—the national culture, along with its institutionalized values, creates a backdrop for which locally meaningful and legitimate behavior is rationalized. For the purpose of this

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Table 1
Examples of human performance enhancing normative approaches to OSH from the literature.

Job Design and Organizational Structure	• Autonomy (Parker et al., 2001; Zacharatos et al., 2005) • Decentralized Decision-making and Worker Involvement (Yorio and Wachter, 2014; Zacharatos et al., 2005; Mearns et al., 2003; Liu et al., 2015) • Employment Security (Zacharatos et al., 2005) • Reduced Status Distinctions (Zacharatos et al., 2005)
Policies, Practices, and Procedures	• SAFETY Training (Yorio and Wachter, 2014; Zacharatos et al., 2005; Liu et al., 2015) • Information Sharing and Open Communication (Cigularov et al., 2010; Yorio and Wachter, 2014; Zacharatos et al., 2005; Mearns et al., 2003; Liu et al., 2015) • Cooperation Facilitation (Yorio and Wachter, 2014; Liu et al., 2015) • Accident Investigation/Post-Task Safety Reviews/Learning (Yorio and Wachter, 2014; Griffin and Xu, 2013) • Detection and Monitoring (Yorio and Wachter, 2014; Griffin and Hu, 2013; Liu et al., 2015) • Risk Assessment/Pre-Task Safety Reviews/Self-Checking (Yorio and Wachter, 2014) • Performance Appraisal and Feedback Programs (Makin and Winder, 2008) • Safe Work Procedures (Yorio and Wachter, 2014) • Goal-setting and benchmarking (Zacharatos et al., 2005; Zohar, 2002a)
Leadership Models	• Transformational Leadership (Kelloway et al., 2006; Barling et al., 2002; Zacharatos et al., 2005) • Supportive Leadership (Parker et al., 2001) • Transactional Leadership (Zohar 2002b; Clarke and Ward, 2006) • Leader-Member Exchange (Hofmann and Morgeson, 1999; Kath et al., 2010)

article, we set out to examine the potential influence of this backdrop on behavior in organizations in relation to the strategies used to promote safety by organizational managers. This effort provides a basic underlying understanding of the influence of national cultures on safety culture, while temporarily laying aside the additional layers of complexity which occur in practical application among nonhomogeneous organizations.

To that end, we first present a brief overview of organizational safety culture drawing from the works of Edwards et al. (2013) and Yorio et al. (2015). We then present an overview of national culture relying on the work of Geert Hofstede and Robert J. House and Colleagues' Global Leadership and Organizational Behavior Effectiveness Research Program (GLOBE) research. Through these foundational studies in cross-cultural research, Hofstede (1980) and House et al. (2004) present a set of cultural dimensions, which vary across national societies, theorized to strongly influence behavior in organizations. Following this discussion, we then describe the mechanisms through which unique cultural dimensions permeate organizational boundaries and can influence safety behaviors. Finally, we elucidate how the cultural dimensions can theoretically alter the effectiveness of normative strategies empirically linked to desired safety behavior and accident reduction. Grounded in the review we conclude by providing directions for future research.

2. Organizational safety culture

The concept of safety culture has been discussed in organizational safety literature since the 1986 Chernobyl accident. The three core components of safety culture were included in early writings of Cooper (2000) and developed more recently by Edwards et al. (2013). Edwards et al. (2013) noted that with the inclusion of all three components, the historically disparate views of safety culture—the normative (management), the pragmatic (behavioral), and the anthropological (values, beliefs, assumptions, and attitudes)—are blended nicely into an overarching and interdependent framework of understanding which gives the concept of safety culture new meaning.

Within this understanding, the normative component reflects the traditional notions of organizational safety as being directed and/or influenced through managerial control and leadership. These normative components of safety culture, further elaborated in Section 2.1, are implemented for the purpose of creating a safe and healthful work environment and to foster desired behaviors—both of which decrease the likelihood of unwanted loss events. This view of safety culture recognizes, however, that the extent to which normative control can be effective is limited and moderated by the values, beliefs, assumptions, and attitudes that are shared by members of an organization or groups within the organization—the anthropologic component of safety culture. Thus, the normative and anthropologic components, previously treated as distinct concepts, converge, interact and produce the pragmatic component of safety culture (i.e., the implemented practices and observable safety behaviors)—which are ultimately the proximal antecedent of organizational safety success.

2.1. The normative attributes

In addition to creating a safe work environment, an implicit fundamental intention within an organization's normative components is to elicit decision-making that results in behavior that enable workers to remain safe and healthy (Makin and Winder, 2008; Yorio and Wachter, 2014). This intention is operationalized through policies, programs, and practices—as well as through leadership strategies—ultimately designed to transfer knowledge to and motivate workers. There is a plethora of options that can be used to idiosyncratically operationalize and make clear this intention. These choices can be seen, not only in the variety of possible job designs, programs, policies, and procedures that can be used, but also in terms of the fundamental philosophies that undergird policy choices and the leadership characteristics endorsed.

Although it's not possible, nor the intent of the current work, to specify the entire range of leadership models and policy strategies that can be included within the normative component, we provide approaches in Table 1 that have been empirically linked to enhanced worker safety knowledge, motivation, perceptions, behavior, and/or injury reduction. The references included within the table are not meant to be exhaustive.

2.2. The anthropological attributes

Safety culture theory suggests that the extent to which the normative components can influence the types of behaviors workers exhibit within the organization largely depends on the anthropological component of organizational safety culture—namely, the values, beliefs, assumptions, and attitudes that are shared within the organization, or subsets of the organization. These values can directly influence worker perceptions and interpretations of various organizational strategies, and aid workers in determining their preferred course of action in response. Therefore, they act as a filter through which the normative components must pass in order to influence their target. They are the evaluative standards, or the interpretive mechanism through which the perceptions of behavioral expectations are actually formed and, as a filter, they have the capacity to lead to interpretations which differ from what

was intended. Further, they can moderate the extent to which various management directions and approaches are responded to—in the presence of competing values workers may choose to ignore or disregard policies which contradict culturally shared knowledge and/or if they believe it is safer, quicker, or better to do so. This, then, can be seen as an application of Guldenmund's (2010) assertion that culture can be used to interpret experience and generate behavior.

Importantly, the values, beliefs, assumptions, and attitudes shared by members of the organization do not exist within the vacuum of an organization's boundaries. Given that organizational members also reside within the context of national cultures, an organization's safety culture is, in-part, comprised of the values, norms, attitudes, practices and beliefs people share as members of the greater national context. For example, any element of national culture which influences organizational behavior, or contributes toward beliefs and values which impact behavior, can be seen as either an inherent part of the organizational safety culture, or antecedents to this culture. This premise is consistent with the arguments posited by Hofstede (1980) and Schein (1990) in which they theorized that organizational culture is, to some extent, an extension of the national culture held by members of a given organization.

It is with this recognition that the formal integration of national culture and organizational safety culture finds its importance. Edwards et al.'s (2013) initial theoretical extension of these arguments to safety culture, and the empirical conclusion by Merrit (2000) that "even in a highly specialized, highly regulated profession such as aviation, national culture still exerts a meaningful influence on attitudes and behaviors over and above the occupational context" (p. 299), demonstrate that a more elaborate treatment of national culture and safety culture is warranted. In the words of Edwards et al., "It is, therefore, somewhat peculiar that the safety culture literature rarely ventures beyond brief discussions of the organizational culture literature in establishing its own parameters and theoretical basis" (p. 71).

3. Operationalizing national culture

One of the most influential studies designed to operationalize national culture was published by Geert Hofstede in 1980. His book *Culture's Consequences: International Differences in Work-Related Values* presented the results of an empirical effort to classify shared values uniquely embedded within national society that can influence an organization's culture.

Within his work, Hofstede (1980) defined culture as the mind's collective programming that can vary from one group of people to another. Grounded in this definition he initially operationalized four important culturally embedded dimensions: individualism versus collectivism; power distance; uncertainty avoidance; and masculinity versus femininity (later adding two additional dimensions-long-term versus short-term normative orientation and indulgence versus restraint). Despite criticisms that these characteristics were oversimplifications of true cultural complexity, their operationalization moved an elusive and tacit concept into a realm of substance—one that could now be scientifically examined, particularly in the context of organizational behavior. Because of these efforts, Hofstede's original study has inspired thousands of empirical studies (Kirkman et al., 2006).

Building from the foundational work of Hofstede (1980), the GLOBE research effort involved over 170 researchers across 62 cultures in an empirical effort to advance knowledge and understanding relevant to cross-cultural interactions (Shi and Wang, 2011). The researchers examined over two dozen hypotheses through responses from over 17,000 people working in 951 organizations. Through this extensive effort nine cultural dimensions were operationalized: uncertainty avoidance, power distance, institutional collectivism, in-group collectivism, gender egalitarianism, assertiveness, future orientation, performance orientation, and humane orientation. Table 2 summarizes the meaning of each one of these dimensions as provided by House et al., 2004.[1]

GLOBE's efforts to develop the cultural dimensions also included the derivation of psychometric measurement tools for each construct. After collecting data and aggregating the scores to the societal level, GLOBE researchers found a considerable range and variation in each of the dimensions across the 61 societal cultures represented in the sample (Javidan et al., 2004). This variation provided some validity evidence to the argument that meaningful differences do exist on the operationalized dimensions between societal cultures.

4. How national culture influences safety culture

As noted by Dickson et al. (2004) there may be numerous factors that can influence the creation and evolution of an organizational culture. The same may be said of an organization's safety culture. Its management systems and leaders, the economic conditions in which it operates, its industry, its labor supply, and its multinational status and country of origin can theoretically have a significant influence on an organization's safety culture. They also argue, however, that "a wealth of literature indicates that organizations reflect a variety of aspects of the societies in which they exist" (Dickson et al., 2004, p. 76). Kirkman et al. (2006) echoed this premise with their review of the numerous empirical research efforts that have demonstrated the link between a national culture's values and workplace behaviors, attitudes, and other organizational outcomes.

Consistent with the evidence found in the literature, by comparing aggregated national value scores (N = 61) with aggregated organizational value scores (N = 951) the GLOBE researchers were able to determine that organizational cultures reflect the nations in which they are embedded (Javidan et al., 2004). Further, the GLOBE research team offered important theoretical mechanisms through which the broader national context can directly influence the organizational values, beliefs, assumptions, and attitudes.

Cultural immersion theory suggests immersion within a society causes individuals to adopt shared mental models, which can be thought of common patterns of thinking, common interpretations of stimuli, and common behavioral responses to them (Javidan et al., 2006). These influences can be so strong that they act as a sort of programming and "in many ways [people] forget that other cultures perceive and experience the world differently" (Dickson et al., 2004, p. 77). Given that most workers within an organization are also embedded and spend their lives within the broader national culture - the anthropologic component of organizational safety culture is likely to reflect the national culture surrounding it. Similarly, social network theory suggests that, through cohesion and social exchange mechanisms, workers' perceptions and behavioral choices are constrained by the social networks within which they operate (Dickson et al., 2004). These

[1] Although some debate exists regarding which set of dimensions (Hofstede or GLOBE) is most appropriate and numerous explanations for their similarities and differences have been offered (Shi and Wang, 2011; Hofstede, 2006), there is noticeably a considerable overlap between the two sets of dimensions. Indeed, within the extensive list of GLOBE's published work it was indicated that six of nine dimensions identified (i.e., uncertainty avoidance, power distance, institutional collectivism, in-group collectivism, gender egalitarianism, and assertiveness) found their origin in Hofstede's work (Shi and Wang, 2011). The additional three dimensions identified by GLOBE (future orientation, humane orientation, and performance orientation) were rooted in Kluckhohn and Stodtbeck's (1961) theories related to temporal orientation and human nature and McClelland et al. (1953) achievement motivation theory, respectively (Shi and Wang, 2011). It should also be pointed out, however, that GLOBE's future orientation dimension shares some commonalities with Hoftstede's long-term orientation dimension. Given that both GLOBE and Hofstede's dimensions are largely consistent, we rely on the dimensions proposed by GLOBE solely to capture the additional two dimensions (i.e., performance and humane orientation) that are not explicitly identified within Hofstede's work.

Table 2
Theoretical influences of Cultural Dimensions on Normative Strategies.

GLOBE's Cultural Dimensions	Definition (House and Javidan, 2004)	Theoretical Influence on Normative Strategies
Uncertainty Avoidance	The extent uncertainty is avoided by relying on established social norms and practices.	• Safe Work Procedures • Decentralized Decision-making and Worker Involvement • Leadership Characteristics
Power Distance	The extent to which members of a collective expect that power should be stratified and concentrated at higher levels.	• Decentralized Decision-making and Worker Involvement • Reduced Status Distinctions • Detection and Monitoring • Information Sharing and Open Communication • Safe Work Procedures • Performance Appraisal and Feedback Programs • Leadership Characteristics
Institutional Collectivism[a] and In-Group Collectivism[b]	[a]The extent to which collective distribution of resources and collective action is encouraged and rewarded. [b]The extent to which pride, loyalty, and cohesiveness is expressed.	• Autonomy • Compensation Incentive Programs • Cooperation Facilitation • Information Sharing and Open Communication • SAFETY Training • Decentralized Decision-making and Worker Involvement • Goal-setting and benchmarking
Assertiveness	The extent to which members of a collective are assertive, confrontational, and aggressive in social relationships.	• Autonomy • Decentralized Decision-making and Worker Involvement • Reduced Status Distinctions • Cooperation Facilitation • Information Sharing and Open Communication • Detection and Monitoring • Leadership Characteristics
Future Orientation	The extent to which members of a collective engage in future oriented behavior such as planning, investing in the future, and delaying gratification.	• SAFETY Training • Information Sharing and Open Communication • Accident Investigation/Post-Task Safety Reviews/Learning • Risk Assessment/Pre-Task Safety Reviews/Self-Checking • Performance Appraisal and Feedback Programs • Safe Work Procedures • Goal-setting and benchmarking • Compensation Incentive Programs
Performance Orientation	The extent to which performance improvement and excellence is encouraged and rewarded by members in a collective.	• Autonomy • Decentralized Decision-making and Worker Involvement • SAFETY Training • Accident Investigation/Post-Task Safety Reviews/Learning • Detection and Monitoring • Risk Assessment/Pre-Task Safety Reviews/Self-Checking • Performance Appraisal and Feedback Programs • Goal-setting and benchmarking • Leadership Characteristics
Humane Orientation	The extent to which being fair, altruistic, friendly, generous caring, and kind to others is encouraged and rewarded by members of a collective.	• Information Sharing and Open Communication • Cooperation Facilitation • Leadership Characteristics

cognitive constraints are a component of an individual's psychological need and desire to adopt meaning schemes consistent with those they socially interact with in order to feel safe and secure as an accepted member of the collective.

4.1. An illustrative model

Consistent with the discussion thus far, Fig. 1 depicts an illustrative model that integrates the previous works of Edwards et al., 2013, Yorio et al., 2015, and the theoretical processes by which national culture influences safety culture. The figure shows the interdependencies between the normative, anthropological, and pragmatic components of

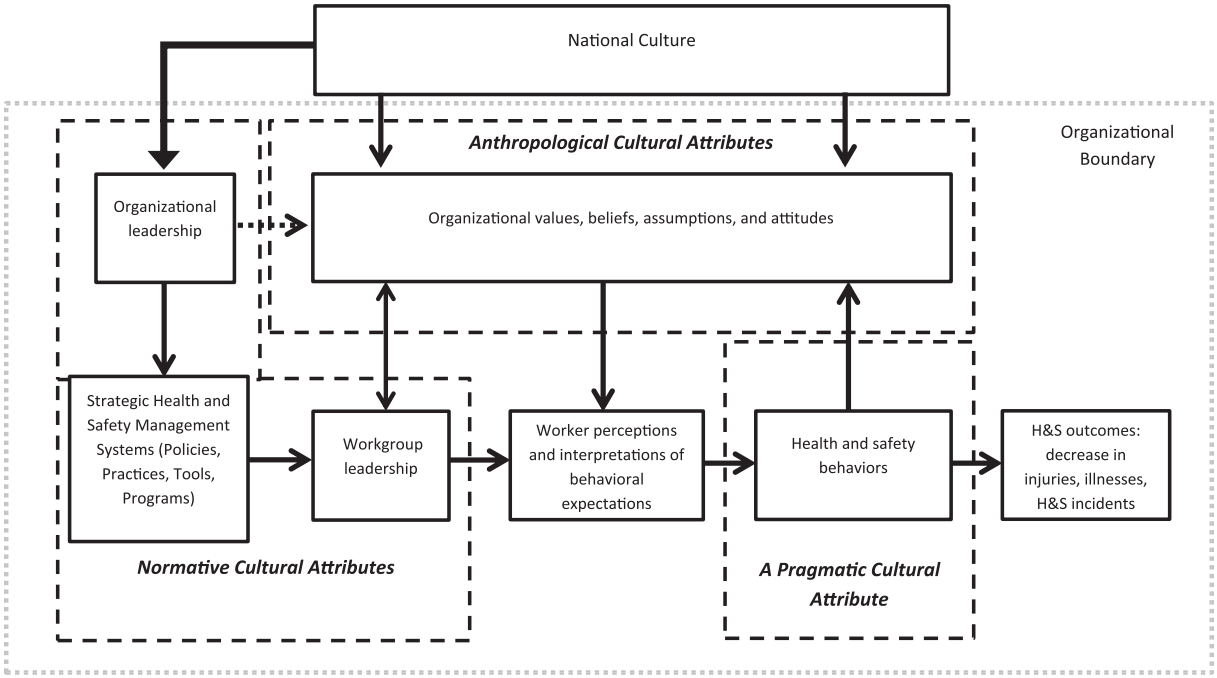

Fig. 1. National culture's influence on an illustrative safety culture model.

safety culture as articulated in the foundational work of Edwards et al. (2013) into a causal model inclusive of Yorio et al.'s (2015) delineation and between an organization's strategic health and safety management system, its implementation, and worker interpretations and perceptions of it.

One notable feature of the model is the inclusion of organizational and workgroup leadership as normative components in addition to the structural programs, policies, and procedures included within the health and safety management system. Within the model, the integration of a dashed arrow between organizational leadership and the anthropological attribute incorporates the recognition that this theoretical link is understudied. The model further depicts organizational values, beliefs, assumptions, and attitudes as an extension of the broader national culture and in doing so, depicts the idea that the cultural dimensions that vary from nation to nation, or society to society can also vary from organization to organization as a function of the context within which it is embedded. Given the linkages depicted in Fig. 1, it is important to recognize that, as cultural dimensions vary, so too will worker perceptions and interpretations of behavioral expectations and, in turn, their behavioral tendencies.

For the purpose of organizational safety, desired behavior entails those that are required to prevent undesired loss events and worker injury—they are risk averse actions and often operationalized as compliance (compliance type behavior or those that conform to role expectations) and participation (behavior that extends beyond compliance to include those that are extra-role in nature). This generalized description of desired behavior may be universally acceptable and elements of the ideal pragmatic component of safety culture are conceivably consistent across broader cultural contexts. This is not meant to imply that an exact set of compliance and participation behaviors generalize to every context—the exact compliance and participation behaviors will naturally be idiosyncratic and subject to specific organizational contexts and work processes. Rather, the general notion of compliance and participation safety behaviors can be applied in any context for the purpose of organizational safety.

Although some desired behaviors may be fixed in the context of organizational safety, worker perceptions and behavioral tendencies may vary as a function of the cultural dimensions that permeate organizational boundaries. Therefore, normative strategies may need to account for fundamental differences in worker perceptions and behavioral tendencies in order to facilitate the desired behaviors across cultures. That is, while organizations in different contexts may aim for the same behavioral outcomes, the strategies which will achieve these outcomes will differ according to cultural profile. As depicted by the solid arrow pointing from National Culture to Organizational Leadership, Fig. 1 reflects the notion that leaders should take the various cultural dimensions into account when deriving normative strategies. This consideration may be implicit on the part of leaders who are also embedded in the broader social context; or conscious and calculated on the part of expatriate leaders and those leading international organizations. Some of the theoretical influences that may be taken into account are presented in Table 2.

The remaining discussion examines each of the GLOBE dimensions and their possible application in the context of safety culture. A short description is provided of each dimension along with the influences it may have on the selection and application of various normative strategies.

4.2. Uncertainty avoidance

Uncertainty avoidance relates to the extent to which groups rely on norms, rules, and procedures (Hofstede, 1980; Andreassi et al., 2014). This cultural dimension incorporates individual needs for security. National cultures low in uncertainty avoidance may be more flexible and willing to engage in new situations. Whereas national cultures high in this dimension prefer routines, clearly defined processes, and may be reluctant to absorb new ideas (van Oudenhoven et al., 1998). Recent empirical research has shown this dimension to be negatively related with individual creativity and innovation behaviors (Sarooghi et al., 2015).

Cultures low in uncertainty avoidance may be more likely to rely on the skill and common sense of workers to handle challenges rather than impose specific rules. In cultures low in uncertainty avoidance, managers may successfully rely less on the formalization of processes, and more on open communication and empowerment to resolve safety problems that arise. Conversely, a high degree of work process formalization and strict reliance on safe work procedures may be more easily attainable in high uncertainty avoidance contexts. As noted by

Andreassi et al. (2014), one potential implication to excessive formalization of work processes can be reduced communication and interdependency between management and workers. Thus, safety specific transformational leadership and leader-member exchange strategies may be less effective strategies in cultures characterized as high in uncertainty avoidance.

The desire for certainty via established and formal procedures can also conceivably reduce flexibility and adaptive type behaviors needed during times of change. High uncertainty avoidance cultures may be reluctant to adopt new safety procedures and technologies if they are perceived to be inconsistent with established ones. In the presence of new and emerging technologies, and new work processes and protections that must follow, workers in high uncertainty avoidance cultures may be less inclined to adopt the behaviors necessary to protect themselves, their coworkers, and other organizational assets from new risks. Finally, individuals in high uncertainty avoidance national cultures may be less likely to engage in extra-role safety behaviors. Given that high uncertainty avoidance cultures tend to rely on established norms, proactively seeking out ways to improve work processes and procedures may be seen as too risky. Thus, strategies with worker involvement nuances may be less successful in cultures characterized as high in uncertainty avoidance.

4.3. Power distance

Power distance represents the range in which workers expect boundaries between leaders/supervisors and subordinates (House et al., 2004). In cultures high in power distance, workers may not understand or respond to organizational structures characterized by decentralized decision- making and efforts to involve workers in deriving normative safety strategies. This premise is consistent with the findings of Brockner et al. (2001), in which it was determined that the level of voice deemed as legitimate depends on national cultural norms. Voice encompasses the extent to which workers provide input into occupational decision-making processes (Brockner et al., 2001). The authors found that national cultures high in power distance legitimize relatively lower levels of voice when compared to low power distance cultures. Consistently, Robert et al. (2000) found that management practices related to empowerment were negatively related to job satisfaction in high power distance national cultures and positive in countries low in this dimension. Thus, it is conceivable that cultures high in power distance may be more accepting of management decisions and defer to management to define procedures and safe work rules. Further, high power distance cultures may be more amenable to some levels of behavioral detection and monitoring when compared to cultures low in this dimension.

Similarly, the style of leadership which is most effective in organizational safety may be very different in cultures that vary in power distance. Cultures high in power distance may not be able to adequately respond to the characteristics displayed within models of safety specific transformational leadership, high-quality leader member exchange relationships, and supportive leadership characterized by free-flowing information, a social type relationship, and trust. This premise is consistent with Kirkman et al.'s (2009) finding that the association between transformational leadership and procedural justice perceptions increased as power distance orientation decreased. Cultures low in power distance may be more amenable to open communication and information sharing around organizational safety and respond less favorably to forms of transactional leadership characterized by compliance through incentives and sanctions. Cultures low in power distance may respond favorably to efforts designed to motivate workers through reduced status distinctions and less favorably to motivation efforts characterized through strict safe work rules. Finally, cultures low in power distance may be less amenable to performance appraisal, performance feedback, and rewards/sanctions for performance as these motivational approaches illuminate status distinctions.

4.4. Institutional and In-group collectivism

Institutional collectivism reflects the extent to which collective distribution of resources is accepted and in-group collectivism reflects the degree to which collective loyalty, pride, and cohesiveness is expressed (House et al., 2004). Both dimensions of the collectivism concept incorporate elements related to an individual's identity as either being individualistic or being a member of an organizational collective (Hofstede, 1980).

National cultures high in collectivist mentality have strong orientations toward teamwork and altruistic and positive working relationships with their coworkers (Rode et al., 2016). Thus, cultures high in collectivism may respond well to incentives allocated at the organizational and group levels—rewards which are shared equally among groups of workers. Organizational structures such as profit sharing and employee ownership that incorporate rewards/incentives for safety performance may be more successful in cultures high in collectivism as opposed to those low in this dimension. Conversely, national cultures low in collectivism may be more supportive of incentives (such as compensation or other rewards that are contingent upon safety performance) rewarded at the individual level.

Rode et al. (2006) argued that normative efforts designed to facilitate cooperation tend to be interpreted in individualistic ways in cultures low in collectivism, whereas cultures high in collectivism interpret these efforts as a mechanism for group and organizational involvement and to further align individual goals with that of the organization. Thus, in high collectivism cultures, normative efforts, such as group safety training, mentoring programs, and formal efforts to facilitate safety information exchange, may be more successful at elucidating the desired cooperation behaviors for the benefit of safety.

Cultures high in in-group collectivism may also be more responsive to autonomous work structures that are team-based (Zacharatos et al., 2005) rather than individually-based. Similarly, cultures high in in-group collectivism might set team goals and assess safety performance at the team level rather than at the level of individual workers. Conversely, cultures low in this dimension may be less interested in the performance of their group and more focused on their own performance. As such, efforts focused toward group recognition, and teamwork may be less effective.

4.5. Assertiveness

Assertiveness reflects the extent to which people are assertive, confrontational, and aggressive in relationships (House et al., 2004). Although there is a lack of empirical evidence needed to provide definitive statements regarding the effect of this cultural dimension on safety culture, a few logical hypotheses can be offered. Workers in cultures that are high in assertiveness may be more competitive with their coworkers, and therefore, potentially less inclined to be amenable to normative efforts to facilitate cooperation around safety issues. Conversely, cultures high in assertiveness may be more amenable to autonomous work structures and be more willing to voice opinions even if they are considered to be confrontational. In addition, individuals within cultures high in assertiveness may be more amenable to involvement initiatives in safety decision-making processes. Given that less value is placed on confrontation and aggression in cultures low in assertiveness, they may be more open to normative strategies that incorporate moderate levels of behavioral detection and monitoring. They may also be more trusting of the intentions of coworkers and managers and, therefore, may be more receptive and open to free-flowing communication and information sharing.

Smale (2016) noted that one benefit to highly assertive cultures is that they tend to be more successful in the implementation of new and innovative strategic management decisions. In the context of safety management, this finding implies that adoption and implementation of strategic policies and practices within a safety management system may

be more successful in highly assertive cultures. Further, the level of assertiveness in a culture may influence the types of leadership approaches that are effective. Specifically, high levels of assertiveness will allow leaders to confront issues in a direct and aggressive manner, trusting their workers to be assertive about their view points, allowing resolution to be achieved. Conversely, cultures low in assertiveness may be more inclined to back away from assertive leaders, giving a perception that resolution has occurred, without necessarily resulting in improved performance.

4.6. Future orientation

Future orientation reflects the degree to which members engage in future orientated thinking and acting such as planning and delaying gratification for future benefit (House et al., 2004). As much of organizational safety entails proactive planning and individual decisions to sustain safety are often subject to trade-offs between comfort and future benefit, this cultural dimension has important implications. Indeed, organizations embedded in cultures low in future orientation may be challenged in attempts to attain full maturity in their safety culture as proactive safety decision-making and future oriented behaviors may be counter to the norm (Fang and Wu, 2013; Goncalves Filho et al., 2010; Lawrie et al., 2006). Similarly, organizations within cultures that are low in future orientation may struggle with adopting continuous improvement practices, such as those associated with accident investigation and post-task safety reviews, therefore limiting its prospects for ongoing organizational learning.

Cultures high in future orientation may be more risk averse and potentially more likely to follow safe work procedures established within the organization. Similarly, workers may be less likely to engage in instantly gratifying behavior—such as forgoing the use of personal protective equipment, skipping safety procedures and favoring production, and/or moving quickly through a task—in favor of safer and healthier risk averse behaviors. These types of cultures may also be more willing to participate in goal setting and benchmarking processes as well as the behaviors required to attain them. Because of this, safety incentive programs may be more effective in contexts characterized by high future orientation.

Given the low cognitive focus on the future, it is likely that cultures low in future orientation may not see the benefits in disciplined risk planning activities, pre-task safety reviews, and self-checking processes. Further, workers in cultures low in future orientation may have less interest in mastering the safety knowledge and skills through training, information sharing, open communication, and feedback programs. This premise is consistent with the findings of Bashir and Usuro (2017) in which they discovered, in the context of a virtual environment, that individuals low in future orientation were less likely to engage in knowledge sharing efforts given a predisposition to focus on past events. Given the potential emphasis on instant gratification, healthful and safe actions may be ignored at the expense of ease, speed, and comfort—thereby increasing the potential for near misses, accidents, and injuries as well as occupational diseases, illnesses, and musculoskeletal disorders through chronic hazard exposure. In such settings, there may also be a greater need to design work processes that do not rely on voluntary rule adherence, instead requiring adherence to function—for example, forklifts which require a seatbelt be engaged to operate.

4.7. Performance orientation

As performance orientation reflects the degree to which people strive for excellence (House et al., 2004), cultures low in performance orientation may be less motivated to achieve goals and less responsive to performance appraisal and feedback attempts. They may also be less likely to try to master the knowledge, skills, and abilities associated with training efforts. Cultures low in performance orientation may also be less inclined to see the benefits of continuous improvement practices such as accident investigation and post-task safety reviews.

Safety specific transformational leadership may be a less effective motivation strategy in cultures with low performance orientation given inspiration may have little bearing on worker decision-making and behavioral tendencies. Similarly, high-quality leader-member exchange relationships may be difficult given the low desire on the part of workers to achieve superior levels of performance. Low performance orientation cultures may be more responsive to transactional style leadership models and detection and monitoring type activities.

Workers in cultures high in performance orientation may be more easily motivated to achieve excellence. Consistently, efforts such as goal setting, training, autonomous work structures, worker participation, continuous improvement practices, risk planning, procedure development, etc. may be effective normative strategies. High performance oriented cultures may also be more amenable to transformational and supportive leadership styles and allow for the development of high-quality social exchange relationships as workers strive to attain superior performance. Conversely, leadership and management styles which fail to inspire a desire to achieve excellence, instead focusing on tightly controlled behavior with little room for differences in performance may be disliked.

4.8. Humane orientation

Humane orientation reflects the degree to which altruism, friendliness, care, and fairness are rewarded and supported (House et al., 2004). Workers in high humane oriented cultures may be more open to coworker cooperation initiatives and vertical and horizontal information sharing and open communication. Further, they may assume that engaging in safety issues and tasks on behalf of the collective is universally desired and, thus, they may be more willing to engage in extra-role safety behaviors. Consistent with the arguments posed by Peretz et al. (2018), they may also be willing to lend a hand and/or pick up the slack on safety sensitive issues in the context of flexible work arrangements and task assignments.

As cultures high in humane orientation are characterized by altruism and care, safety specific transformational and supportive leadership strategies may be more effective in cultures high in this dimension. Workers may also be more open to and accepting of the altruistic elements involved in high-quality social exchange relationships and, therefore, leader-member exchange strategies may be more effective. However, cultures low in humane orientation may see approaches which are high in altruism, friendliness and care as ‘fluff’, or too ‘touchy feely’, thus undermining their intended purpose. Further, where elements of the leader-member exchange relationship are strained due to poor performance, the altruistic nature of the social exchange can be replaced by discipline in lieu of the need for improvement. This may limit the effectiveness of leader-member exchange leadership strategies in cultures characterized as high in humane orientation (Rockstuhl et al., 2012).

4.9. Gender egalitarianism

House et al. (2004) defined gender egalitarianism as the extent to which gender role differences are minimized while gender equality is promoted. Although gender is an important consideration in organizational safety, arguments needed to make clear statements regarding the effects of the gender egalitarianism cultural value on the normative component of safety culture are largely absent from the literature. In addition, developed countries and regions such as Europe, Canada, the United States, and Australia where gender egalitarianism relatively high, males are much more likely to die from an occupational injury than women (Bauerle et al., 2016; Stergiou-Kita et al., 2015). Stergiou-Kita et al. (2015) reported recent statistics that suggest that males comprise greater than 90% of all occupational fatalities within many

developed economies. Statistics such as these suggest that even where occupational opportunity is comparatively equal, stark differences in safety outcomes as a function of gender remain. Thus, in this instance, postulated reasons behind these differences, may have less to do with the ideal and value of gender egalitarianism at the societal level and more to do with how gender identity and biologically-based psychological differences that influence occupational choices, risk perception, and safety behavior (Bauerle et al., 2016; Stergiou-Kita et al., 2015).

5. Discussion and directions for future research

Within this manuscript we made an initial attempt to elucidate the ties between national culture and an organization's safety culture. We emphasized the importance of the link and stressed the implications of national culture on empirical safety research. We further presented some ideas for how operationalized national values can permeate organizational boundaries and moderate the relationship between normative strategies and safety behaviors. Finally, we attempted to impress the notion that effective normative strategies are most likely culturally contextualized, and that alignment between chosen strategies and existing values is imperative to a successful safety culture. These restricted examples show that knowledge, understanding, and, in-turn, the appropriate behaviors related to the perception and potential effectiveness of safety strategies across national cultures can be developed. Any specific strategy may be logically considered in relation to the dozens of cultural dimensions that have been discussed within the cross-cultural discipline.

An undertaking such as this implies, in-part, that future research designed to examine the cross-cultural implications of organizational safety is encouraged. The narrative provided, as well as the conceptual model depicting the linkages, lays out some direction for potential empirical studies. It is important to acknowledge, however, the challenges associated with cross-cultural research. Given the lack of cross-cultural theory and research within the safety discipline, initial studies will likely require complex theoretical development. When cross-cultural studies are conducted across national borders the need for international collaboration also adds considerable complexity. Further, cross national research issues, related to research design and variable measurement, make it challenging to isolate and fully understand the effects of normative management and leadership strategies and anthropological values on the safety behaviors and lagging indicators chosen for the study.

In recognition of the empirical challenges, numerous efforts outside of the safety discipline have been published to help guide similarly situated cross-cultural empirical research. The works of Tsui et al., 2007, and Schaffer and Riordan, 2003 can be consulted for detailed literature reviews and methodological guidance related to cross-culture research. Based on a review of the cross-cultural management and organizational behavior literature, Tsui et al. (2007) provide seven "recommendations" for researchers seeking to study cross-cultural variables across national boundaries. Similarly, based on a review of the literature, Schaffer and Riodan (2003) outline the best practices related to management and organizational cross-cultural research methodology. Within their review they highlight best practices related to the development of cross-cultural research questions, aligning research contexts, and validation of research instruments and data collection approaches—all of which have applicability to potential cross-cultural research in safety.

The challenges highlighted should not deter us from pursuing studies that seek to examine the cultural boundaries of generalizability for which organizational safety normative strategies are effective. The global concern for safety and the burden of work related injuries, illnesses, and fatalities will not diminish in the near future. Finally, this current effort and future cross-cultural empirical efforts should not be interpreted to suggest that potentially effective practices should be omitted from a safety program merely because a national culture may not be readily supportive. Indeed, worker safety is the paramount outcome that deserves unwavering attention regardless of where an organization is located. Cross cultural safety research may serve an important role by investigating which normative approaches are most acceptable and effective among a set of potentially equally effective approaches within a proven programmatic domain (e.g., leadership or continuous improvement). Research such as this may serve as a knowledge base regarding the types of challenges and possible roadblocks that safety managers may encounter when operating in a cross-cultural context and the strategies that are likely to be most effective in a given context.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention National Institute for Occupational Safety and Health (NIOSH). In addition, citations to websites external to NIOSH do not constitute NIOSH endorsement of the sponsoring organizations or their programs or products. Furthermore, NIOSH is not responsible for the content of these websites. All web addresses referenced in this document were accessible as of the publication date.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssci.2019.07.021.

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