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THE ROLE OF LEADERSHIP IN SAFETY

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Leadership has often been cited as playing a critical role in safety performance, particularly in the practitioner literature (Cooper, 2001; Geller, 2000; Grubbs, 1999). Although safety climate and culture research often reference leadership in an indirect way—for example, by tapping into employee perceptions of leaders' commitment to safety—there has been proportionally very little research investigating leadership per se. As such, the purpose of this chapter is threefold: (a) to provide a brief overview of the leadership-based safety research conducted to date; (b) to integrate this safety research into a general overview of selective leadership theories that we believe are relevant for safety performance; and (c) to discuss the implications and future research opportunities for the various leadership theories, particularly those that have been underresearched to date.

SAFETY-ORIENTED LEADERSHIP RESEARCH

We should mention at the outset that, with a few exceptions, we do not review safety climate research in this chapter even though much of this research highlights the importance of management's commitment to safety.

Chapter 2 of this volume deals more directly with safety climate research. Instead, we focus on the relatively small body of research investigating leadership and the role it plays in safety performance.

The vast majority of the research linking leadership to safety has adopted a behavioral perspective. In other words, the focus is on actions leaders take that impact safety performance. The types of leader actions investigated have ranged from operant feedback studies investigating the effects of positive feedback to the generalized style of leadership adopted. In addition, this research has investigated both safety-specific leadership behavior and more general leader actions.

Safety-Specific Leader Behaviors

Although there are a number of studies that document the effectiveness of providing feedback and incentives on safety performance and accidents (e.g., Komaki, Barwick, & Scott, 1978; Nasanen & Saari, 1987; Saari & Nasanen, 1989), the vast majority of this research has provided feedback and reinforcement directly to the groups themselves. In other words, they did not rely on the leader to deliver the feedback or incentives. Zohar (2001), however, focused his investigation directly on supervisor actions and their impact on employee safety. Adopting a transactional leadership perspective, Zohar (2001) developed and implemented a training program designed to increase leaders' safety reward and monitoring behavior. Overall, the intervention was effective, with the employees of the trained leaders reporting higher perceptions of safety climate, improved earplug use, and fewer accidents. In sum, and not surprisingly, the results suggested that when supervisors actively monitor and reward safety performance their subordinates engage in more safety-related behavior and experience safer overall performance than when they are not actively monitored.

Other researchers who have investigated the influence of supervisor safety-related behavior and safety outcomes have used either self-report or employee perceptions of supervisor behavior instead of observational data. Simard and Marchand (1994) found that supervisors' self-reported involvement was significantly higher in safe versus unsafe plants—although this effect was found not to be significant after the researchers controlled for the development of safety programs. Even though the authors did not fully investigate the possibility of a mediated relationship, the pattern of results does suggest that supervisor participation in safety activities may very well lead to the development of safety programs, which, in turn, is related to fewer accidents.

Similarly, both Zohar (2000a) and Tomás, Meliá, and Oliver (1999) investigated employee perceptions of supervisor safety-related behavior. In both cases, supervisor safety-related behavior was significantly related to safety outcomes. For example, Zohar (2000a) investigated employee perceptions of supervisor reactions to subordinate safety-related conduct as well as supervisors' relative emphasis on safety versus production. He found that supervisor behavior—as perceived by the employees—was significantly related to subsequent accidents experienced by the work group. Tomás et al. investigated employee perceptions of supervisors' safety response (i.e., supervisor attitude, positive–negative contingencies associated with safety, and supervisor safety performance). They found that supervisors' attitudes toward safety played a critical role in an explanatory chain linking safety climate to coworkers' responses as well as safety-related outcomes (i.e., attitudes, behavior, risk, and accidents).

Along these lines of focusing on leader safety-specific behavior, Barling, Loughlin, and Kelloway (2002) investigated the influence of safety-specific transformational leadership on safety climate, safety events, and occupational injuries. The final structural model revealed that safety-specific transformational leadership and role overload (Hofmann & Stetzer, 1996) influenced occupational safety through their relationships with perceived safety climate, safety consciousness, and safety-related events.

The studies investigating supervisor safety-related behavior—through either self-reports, observational data, or employee responses—all indicate that when supervisors emphasize, discuss, reward, and encourage safe performance, safe performance ensues. Although these results are as expected, it is important that empirical research has confirmed this relationship. In addition to these findings, the results of Zohar's (2001) leadership intervention suggest that organizations can implement training sessions to increase the safety-related behavior of supervisors and, as a result, experience safer performance within their work group. This type of leadership intervention is quite advantageous from an organizational perspective. First, it is less costly because the intervention is done at the leader level instead of the employee level. Second, given the relationship between supervisor behavior and safety climate within work groups (Zohar, 2000a), these interventions serve to change the climate within the group and, as a result, may be more effective in the long run than individual interventions that attempt to change individual behavior without addressing the context (i.e., supervisor attitudes and behavior) within which these behaviors occur.

General Leader Behavior

In contrast to research focusing on safety-specific leader behavior, a number of studies have investigated the relationship between more general leader behavior and safety outcomes. On the operant conditioning front, Mattila, Hyttinen, and Rantanen (1994) investigated the behavior of leaders using the Operant Supervisory Taxonomy and Index (OSTI; Komaki, Zlotnick, & Jensen, 1986). The results suggested that supervisory behaviors that predicted effective financial performance (i.e., completing a construction project on budget) overlapped significantly with the behaviors that resulted in effective safety performance. In general, those supervisors who spent more time on the building site—and more frequently gave feedback, monitored performance, communicated about non-work-related issues, and engaged in a participatory style of leadership—had more safely performing units. Many of these same behaviors were associated with effective financial performance as well.

Moving away from operant conditioning toward a focus on the relationship between leaders and subordinates, Simard and Marchand (1997) investigated both micro- and macro-organizational influences on compliance with safety rules. The results suggested that micro factors were more predictive of compliance. In particular, cooperative supervisor–employee relationships and supervisory involvement in decisions regarding safety issues were significant predictors of safety compliance (as rated by the supervisor). Of all the factors investigated, cooperative supervisor–employee relationships were the best predictor of safety compliance.

Hofmann and Morgeson (1999) have also investigated the notion of cooperative relationships from the theoretical vantage point of social exchange theory (Blau, 1964; Gouldner, 1960). Drawing on research suggesting that high-quality leader–member exchanges (i.e., LMX) between leaders and subordinates result in more open communication and increased value congruence, the authors hypothesized that these relationships occurring in high-risk environments would result in increased upward communication of safety issues, increased safety commitment, and ultimately fewer accidents. The authors found support for these relationships.

Also focusing on relationships between supervisors and employees, Thompson, Hilton, and Witt (1998) investigated supervisor fairness, which they operationalized using interactional justice items (which are similar in content to LMX items). They found that supervisor fairness was significantly related to safety compliance and that this relationship was mediated by supervisor support for safety. In other words, supervisor fairness was related to support for safety, which in turn was associated with safety compliance.

These investigations focusing on general leader behavior and styles raise a question regarding the independence of leadership behavior or style

and leader emphasis on safety. As noted by Zohar (2000b), leadership and safety orientation are likely to be independent constructs. In other words, one leader could have high-quality LMX and strongly emphasize safety, whereas another leader may have similarly high LMX and emphasize safety to a lesser degree. The independence of these constructs suggests the possibility of an interaction. In fact, several recent investigations have focused on the possibility of this interaction.

Zohar (2000b), for example, found support for an interaction between leadership (i.e., transactional or transformational) and the leaders' safety priority in the prediction of safety climate. As part of a larger study, Zohar (2000b) hypothesized that transactional leadership would be positively related to safety only when the supervisor values safety, whereas the relationship would be negative when the leader does not value safety (i.e., the leader provides reward contingencies for other behaviors). He did find support for this interaction.

Hofmann, Morgeson, and Gerras (2003), extending their previous work on the relationship between LMX and safety outcomes (Hofmann & Morgeson, 1999), investigated safety climate as a moderator of the relationship between LMX and subordinate safety-related role definitions and behavior. Of particular interest was when employees defined citizenship-type safety behaviors (i.e., extra-role behaviors focusing on safety) as part of their expected role. Again adopting a social exchange theoretical foundation and drawing on previous LMX research, the researchers hypothesized that employees would reciprocate high-quality LMX relationships with safety-oriented citizenship behaviors only when the leaders' behavior engendered a climate within the group that highly valued safety. The authors found support for the interaction. Under positive safety climates, there was a significant positive relationship between LMX and subordinate role definitions; that is, employees were more likely to view safety citizenship behaviors as in-role when a positive safety climate and high-quality LMX relationships existed. Alternatively, under poor safety climates, the relationship between LMX and safety role definitions was nonsignificant. In other words, when the surrounding context did not signal a strong commitment to safety, employees did not reciprocate high-quality LMX relationships by expanding their safety-related role definitions, nor did they engage in these behaviors more frequently.

Conclusion and Discussion of Safety-Oriented Leadership Research

Although the summary in the preceding paragraphs provides a general overview of the various leadership dimensions that have been investigated, Table 8.1 provides a more in-depth summary of these investigations. Review of this table allows for several conclusions regarding the current state of

TABLE 8.1
Summary of Leadership and Safety Research

Authors	Leadership dimensions	Level of analysis	Research design	Results
Barling et al. (2002)	Safety-oriented transformational leadership	Individual level of analysis	Investigated a structural model linking leadership to safety consciousness, safety climate, safety-related events, and occupational injuries.	Safety-oriented transformational leadership significantly influenced perceived safety climate and safety consciousness. Perceived safety climate predicted both safety-related events and occupational injuries.
Hofmann & Morgeson (1999)	Leader–member exchange	Individual level of analysis	Investigated bivariate correlations and structural model linking LMX to safety communication, safety commitment, and subsequent accidents.	LMX was significantly related to safety communication, safety commitment, and subsequent accidents. Relationship between LMX and accidents was mediated by safety communication and commitment.
Hofmann, Morgeson, & Gerras (2003)	Leader–member exchange	Multilevel analysis—both individual and group	Investigated the moderating effect of safety climate on the relationship between LMX and safety-related role definitions. Also investigated the relationship between safety-related role definitions and safety behavior.	Found the safety climate significantly moderated the relationship between LMX and safety-related role definitions. Safety-related role definitions were significantly related to safety behavior.

Mattila et al. (1994)	Operant Supervisory Taxonomy and Index: • Consequences • Monitoring • Antecedents • Referring to his/her own performance • Work-related communication • Non-work-related communication • Solitary	Site-level analysis with multiple observations within each site	Categorized construction projects into those that were financially successful (on budget) versus those that were not. Investigated differences in supervisory behavior. Similar to financial performance, categorized safe versus less safe projects, and investigated differences in supervisory behavior.	Supervisors of safety projects spent more time at work site, more frequently gave feedback, spent more time monitoring performance, spent less time discussing antecedents, used more time for communication on non-work-related issues, more frequently used neutral or positive communication, gave incentives more frequently, and made use of a more participatory style of leadership. Many of the same supervisory behaviors were liked to effective financial performance.
Simard & Marchand (1994)	Supervisor behavior toward safety: • Frequency of personal involvement in safety • Frequency of employee participation in safety Senior management commitment: • Involvement in safety • Attitudes toward safety	Plant level	Categorized plants as effective (safe) or not effective (less safe). Investigated differences across plants on leadership and other factors.	Supervisor involvement in safety was related to effectiveness but not after controlling for the development of safety programs. Senior management commitment not significant.

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TABLE 8.1
Summary of Leadership and Safety Research (Continued)

Authors	Leadership dimensions	Level of analysis	Research design	Results
Simard & Marchand (1997)	Workgroup-level leadership variables: • Cooperative relationships among workgroup and with supervisor • Supervisor participative management of safety issues • Plant level leadership variables: • Structural safety commitment (develop of safety programs and joint regulatory committees) • Safety leadership (regular involvement of upper management in safety issues)	Workgroup- and plant-level analysis using Hierarchical Linear Modeling (HLM; Bryk & Raudenbush, 1992)	Multilevel analysis investigated group and organizational predictors of compliance with safety rules (supervisors' ratings of their employees' compliance behavior)	With respect to the leadership variables, the results revealed that cooperative relationships between supervisors and work group, and supervisory participative management of safety were significant predictors of compliance. Overall conclusion was that employee–supervisor cooperative relationships were the best predictors of compliance behavior.
Thompson, Hilton, & Witt (1998)	Supervisor fairness (i.e., interactional justice), management support for safety, and supervisor support for safety	Individual level of analysis	As part of a larger model, the authors investigated the influence of supervisor fairness (i.e., interactional justice) on support for safety and safety conditions/compliance.	Supervisor fairness was significantly related to safety compliance, and this relationship was mediated by supervisor support for safety. Manager support for safety was shown to be related to safety conditions and safety compliance. The relationship between manager support for safety and safety compliance was mediated by supervisor support for safety.
Tomás, Meliá, & Oliver (1999)	Supervisors' safety response (i.e., supervisors' attitudes towards	Individual level of analysis	Investigated structural model including safety climate, supervisors'	Found evidence for supervisors' response playing a critical role in an

Tomás, Meliá, & Oliver (1999)	Supervisors' safety response (i.e., supervisors' attitudes towards safety, positive or negative contingencies provided by supervisor, and supervisors' safety performance)	Individual level of analysis	Investigated structural model including safety climate, supervisors' response, coworkers' response, worker attitude, safety behavior, actual risk, and accidents.	Found evidence for supervisors' response playing a critical role in an explanatory chain linking safety climate to coworkers' response as well as safety-related outcomes (i.e., attitudes, behavior, risk, and accidents).
Williams, Turner, & Parker (2000)	Assessed transformational leadership (Bass & Avolio, 1995)	Individual level of analysis	Investigated the relationship between transformation leadership and safety commitment, self-managing orientation, safety compliance, and safety proactivity.	Transformation leadership was positively related to safety compliance and safety proactivity, but was not significantly related to either safety commitment or self-managing orientation. Some evidence for safety commitment as a mediator of the relationship between transformation leadership and safety compliance. Evidence of an interaction between transformational leadership and employee safety commitment predicting safety compliance.
Zohar (2000a)	Operationalized safety climate as leader safety behavior (2 factors): Overt supervisory reaction to subordinates conduct Supervisory expectations regarding relative importance of safety vs. production	Workgroup level of analysis	Aggregated supervisory behaviors to form climate score for each group. Investigated relationship between climate and microaccidents 5 months later.	Safety climate (supervisor behavior) significantly predicted microaccidents 5 months later.

(continues)

TABLE 8.1
Summary of Leadership and Safety Research (Continued)

Authors	Leadership dimensions	Level of analysis	Research design	Results
Zohar (2000b)	Measured transactional and transformational leadership (Bass & Avolio, 1997)	Workgroup level of analysis	Investigated the interaction between leadership and leaders' safety priority in the prediction of safety climate and microaccidents.	Found evidence for an interaction between leadership and leaders' safety priority in the prediction of employee perceptions of safety climate. In addition, a structural model indicated that leadership influences climate, which in turn predicts microaccidents.
Zohar (2001)	Focused on safety-related transactional leadership (i.e., safety-related rewarding and monitoring interactions)	Individual level of analysis with accidents measured at subunit level	Developed leadership-based intervention designed to increase safety-related rewarding and monitoring. Investigated effects of intervention on safety climate, earplug use, and accidents.	Leadership-based intervention was effective. Experimental group had significantly higher perceptions of safety climate, improved earplug use, and fewer accidents.

affairs of safety-related leadership research. With respect to the independent variable (i.e., leadership), there are essentially two perspectives represented in the literature: those that have investigated safety-specific leader behavior (e.g., Barling et al., 2002; Simard & Marchand, 1994; Tomás et al., 1999; Zohar, 2000a, 2001) and those that have investigated the relationship between general leadership constructs and safety-related outcomes (e.g., Hofmann & Morgeson, 1999; Hofmann et al., 2003; Thompson et al., 1998; Williams, Turner, & Parker, 2000; Zohar, 2000a). The investigations that have focused on safety-specific leader behavior typically have used as their theoretical foundation an operant conditioning model or an implied organizational climate perspective. Both of these perspectives suggest that leader behavior establishes a context in which certain behavior is valued, rewarded, and expected. Not surprisingly, in contexts in which safety is valued, employees are more likely to engage in safe behavior.

Alternatively, investigations linking more general leadership constructs to safety outcomes are typically grounded in current leadership paradigms and their respective theoretical foundations. But linking general leadership constructs to safety outcomes raises a number of questions about the relationship between a leader's general leadership behavior or style and the emphasis the leader places on safety. Although the research suggests that there is likely to be a significant relationship between a leadership style that places a high value on employee well-being and the leader's concern for safety, recent research suggests that this relationship may be interactive as well (e.g., Hofmann et al., 2003; Zohar, 2000b).

Viewed together, the studies involving facet-specific (i.e., safety-related) and facet-free leadership constructs seem complementary. In other words, it seems as though there is some mounting evidence suggesting that general leadership behaviors or styles that emphasize employee well-being may be necessary, but not sufficient, for developing employee commitment to safety and safety behavior. The leader must also create a context that signals a high value for safety. One way the leader can do this is by engaging in the safety-specific behaviors being investigated under the purview of facet-specific leadership research (i.e., Simard & Marchand, 1994; Tomás et al., 1999; Zohar, 2000a, 2001). In fact, Hofmann et al. (2003) and Zohar (2000b) have investigated the interrelationships among facet-free leadership constructs; safety-specific leader behavior (e.g., safety climate); and safety-related outcomes. This integrative approach seems like a fruitful avenue for future research.

Table 8.1 also reveals a number of different dependent variables and levels of analysis that have been investigated in this research. Several researchers (e.g., Mattila et al., 1994; Simard & Marchand, 1994) have categorized plants as safe versus unsafe and have investigated differences in leadership at the plant or work-site level. Others (Zohar, 2000a, 2000b)

have investigated accident rates at the group level of analysis, and some (Hofmann et al., 2003; Simard & Marchand, 1997) have investigated the effects of independent variables at two levels of analysis on individual-level outcomes. Finally, there have been a number of individual-level investigations of employee safety outcomes (Hofmann & Morgeson, 1999; Thompson et al., 1998; Tomás et al., 1999; Williams et al., 2000; Zohar, 2001). With respect to dependent variables and level of analysis, there is no right or wrong answer. But clearly, the level of analysis needs to be congruent with the level of the theory (Klein, Dansereau, & Hall, 1994; Morgeson & Hofmann, 1999). We encourage scholars to justify their choice of levels and link it to their theoretical model.

Finally, we encourage researchers to continue the recent trend of investigating the structural relationship among these variables as well as potential moderators, yet we feel that research should move away from situations where all the variables are measured from the same source in order to avoid potential problems with common method variance.

LEADERSHIP THEORIES

It is important, when either reviewing or investigating the relationship between leadership and safety, to move beyond the safety-specific literature to consider the broader leadership literature. This is important because it may yield additional insight into how leadership can impact safety. Although several of the studies reviewed in the preceding section focused on leadership, they did not cite and seemed to be relatively uninfluenced by the broader research into leadership. In order to understand the influence of leadership on safety—or any other organizational outcome of interest for that matter—it is necessary to look at the various approaches to leadership and consider the theoretical linkages to the outcome of interest. In the following section, we highlight several existing leadership theories. Where possible, we integrate the safety research that has been conducted. Where no research has been conducted, we provide some thoughts about how the respective theory might influence safety outcomes.

Leadership has been defined in many different ways. Yukl and Van Fleet (1992) offered a comprehensive account: "Leadership is viewed as a process that includes influencing the task objectives and strategies of a group or organization, influencing people in the organization to implement the strategies and achieve the objectives, influencing group maintenance and identification, and influencing the culture of the organization" (p. 149). Leaders enact many different strategies to effectively influence others in their environment, be they subordinates, peers, or superiors. Likewise, scholars have studied organizational leadership from numerous perspectives. For our pur-

poses, the leadership literature can be divided into three major approaches: (a) behavioral, (b) situational, and (c) power and influence.

Behavioral Approaches

Behavioral approaches to the study of leadership focus on the range of behaviors leaders exhibit. Researchers at Ohio State University conducted early research into leader behaviors. They developed extensive lists of leader behaviors, collected questionnaire data on the performance of those behaviors, and subjected the data to factor analysis. This research revealed two primary factors: consideration and initiating structure (Fleishman, 1953). Consideration involved people-oriented behaviors, whereas initiating structure involved task-oriented behaviors.

Although important historically, this two-factor conceptualization has been criticized for being overly general. Consequently, various more complex behavioral taxonomies have been proposed. For example, Mintzberg (1973) intensively studied a small number of senior managers, concluding that their jobs could be described in terms of 10 discrete roles, and Yukl (1989) proposed an integrating taxonomy of leader behavior consisting of 14 generic categories: planning and organizing, problem solving, clarifying, informing, monitoring, motivating, consulting, recognizing, supporting, managing conflict and team building, networking, delegating, developing and mentoring, and rewarding.

Two additional lines of research that fall under the behavioral category deserve mention. First, the increased use of teams in organizations has called into question the need for leadership. As a consequence, scholars have begun to investigate what leaders actually do in these more participative situations. Manz and Sims (1987) found that a key leader activity in these settings is supporting the team's self-management, thus facilitating the team's ability to manage itself. Second, Quinn (1988) outlined a set of managerial roles and suggested that a manager's job is inherently paradoxical and that reconciling the paradoxes would lead to better managerial performance. Denison, Hooijberg, and Quinn (1995) empirically tested this proposition and found that executives who evidenced greater behavioral complexity (i.e., engaged in a greater variety of leadership roles) were more effective than executives who engaged in a more limited variety of leadership roles.

Implications of Behavioral Approaches for Safety

With respect to safety, the majority of the research has focused on safety-specific actions. Evidence has clearly shown that when leaders monitor and reward safe performance, employees perform more safely. Evidence

for this effect has been found with both safety-specific behaviors (Zohar, 2001) and more general monitoring, rewarding, and communicating behaviors (Mattila et al., 1994). These relationships, particularly with the general leader behavior, however, would be considered moderate only to small effect sizes. This seems to open the door for potential moderators.

One explanation for the relationship between general leader behavior and safety outcomes is that this research has been conducted in environments where safety is highly valued. Thus, one might assume that, on average, leaders to at least some degree emphasize safety. But we know from the climate literature (e.g., Hofmann & Stetzer, 1996, 1998; Hofmann et al., 2003; Zohar, 2000a) that even leaders within the same organization working under similar conditions can significantly vary in their emphasis on safety. If leaders vary in their emphasis of safety, then it seems that the relationship between generalized leader behavior and safety outcomes would be moderated by safety commitment or climate (e.g., Hofmann et al., 2003; Zohar, 2000b). In other words, leaders who more frequently monitor and reward their subordinates *and* are committed to safety (and create climates that emphasize safety) will likely monitor and reward safety behavior. It is certainly possible, however, that some leaders who frequently monitor and reward performance do not particularly care about safety. In this case, we would not expect to find a significant relationship between leader behavior and safety outcomes.

This notion of the moderation of the relationship between leader behavior and safety outcomes by leader values or organizational climate is related indirectly to Quinn's (1988) emphasis on the inherent paradoxical nature of leadership. Specifically, leaders are confronted with a number of often competing goals and objectives. The key to effective leadership is to manage these different goals and roles and do so such that the appropriate goals and roles are matched to the appropriate situation. Some leaders will view safety and production or efficiency as trade-offs and choose to emphasize (i.e., establish a climate the emphasizes) production to a greater extent than safety. We would, as a result, expect their behaviors—such as rewarding, monitoring, initiation of structure, and motivating—to be focused on production. Other managers, perhaps those who have been better able to master the inherent paradoxes of leadership, will be able to emphasize both safety and production and, as a result, will engender both effective and safe performance (see Mattila et al., 1994). This suggests that leadership development focused on managing seemingly contradictory goals may be worthwhile.

Situational Approaches

Situational approaches to the study of leadership suggest that only under certain circumstances will leadership be effective. Although situa-

tional research peaked in the 1960s and 1970s, the implications of a situational approach might hold some relevance for the role leaders play in safety at work.

Normative decision theory (Vroom & Yetton, 1973) offered a process for deciding what type of decision procedures are most likely to result in effective decisions. The five types of decision procedures range from completely autocratic to a group decision. Seven situational variables determine how a particular decision procedure will affect decision outcomes: (a) whether decision quality is important, (b) whether the decision problem is structured, (c) whether the leader already has sufficient information to make a good decision, (d) whether subordinate acceptance is important for effective implementation, (e) whether subordinate acceptance is likely with an autocratic decision, (f) whether subordinates share the organizational objectives sought by the leader, and (g) whether conflict exists among the subordinates.

Building off valence-instrumentality-expectancy (VIE) theory (i.e., expectancy theory; Vroom, 1964), the path–goal theory of leadership (House, 1971) suggested that leadership is centered on showing subordinates how they can achieve valued goals. In particular, leaders can motivate higher performance by behaving in ways that influence subordinates to believe that valued outcomes can be achieved if they exert effort toward those outcomes. House suggested that different leadership styles (supportive, directive, participative, and achievement-oriented) are differentially effective depending on subordinate, task, and organizational characteristics.

Finally, substitutes for leadership theory (Kerr & Jermier, 1978) have indicated that certain subordinate, task, and organization characteristics reduce the importance of leaders. The four subordinate characteristics were (a) ability, experience, training, and knowledge; (b) need for independence; (c) "professional" orientation; and (d) indifference toward organizational rewards. The four task characteristics were (a) unambiguous and routine; (b) methodologically invariant; (c) provides its own feedback concerning accomplishment; and (d) intrinsically satisfying. The six organizational characteristics were (a) formalization (explicit plans, goals, and areas of responsibility); (b) inflexibility (rigid, unbending rules and procedures); (c) highly specified and active advisory and staff functions; (d) close-knit, cohesive work groups; (e) organizational rewards not within the leader's control; and (f) spatial distance between superior and subordinates.

Implications of Situational Approaches for Safety

The situational approaches to leadership raise a number of potentially interesting questions when considered from a safety vantage point. For example, the literature on substitutes for leadership identifies a number of

potentially interesting constraints on the opportunity for leaders to influence subordinate safety. It may be the case that when employees have a great deal of experience and training, the task context is very routine, a large number of safety policies and procedures have been developed (i.e., high formalization), and organizational rewards are linked to safety, then leadership will have less of an impact than it would otherwise have. In other words, when individuals know what to do, know how to do it, know when to do it, and are rewarded to do it, the importance of leadership may be decreased.

The trend toward high-performance work practices (e.g., Arthur, 1992; Huselid, 1995) and more flexible manufacturing systems (Weick, 1990), however, renders obsolete many of the conditions noted in the preceding paragraph. These types of work systems typically involve many more technical exceptions that require real-time decision making in which the decisions have both safety and performance implications. When this is the case, the organization wants to establish a context in which both safety and performance concerns factor into the decision premises used by employees. In other words, the organization wants to create a culture that encourages employees—as they go about making decisions—to consider both safety and performance implications of different potential actions. It is only through considering both implications that employees will be able to identify the course of action that jointly optimizes both outcomes.

This raises the question of how organizations go about creating such a context. This is where, we would argue, that leadership becomes critical. The path–goal theory of leadership offers some initial guidance. Specifically, the leader needs to convey expectations regarding safe performance and provide appropriate rewards and recognition. Coupling this with the behavioral perspective described earlier in this section suggests that after establishing these expectations leaders need to effectively monitor and reward decisions and actions that take into consideration both safety and performance. In other words, leaders need to establish an organizational climate that stresses the importance of safety and puts in place rewards and accountabilities that further encourage the consideration of the safety implications of difference actions (Frink & Klimoski, 1998).

We believe that the implications of normative decision theory (Vroom & Yetton, 1973) are most significant for the identification and implementation of safety programs. In general, this theory suggests that the leader should engage in different decision-making processes depending on the characteristics of the situation. Seemingly all too often in the context of safety-related organizational learning, a culture of blame develops in which the organization attempts to find a convenient scapegoat (Hofmann & Stetzer, 1998; Reason, 1994). This is a maladaptive response for the organization because it short-circuits organizational learning and improvement (Hofmann & Stetzer, 1998; Reason, 1994). A better approach is a problem-oriented one whereby the

organization attempts to identify the true underlying causes and implement potential remedies. This, it seems, returns us to normative decision theory with respect to how the organization should go about diagnosing the root causes and developing remedies. Different situations may require different approaches. When employees have a great deal of information and when the acceptance of that information is critical to effective implementation (e.g., changes in work practices), then normative decision theory would recommend a more participative process. Other types of changes (e.g., government-required procedures) may be effectively implemented with a less participative approach. At any rate, thinking more critically about the process used to diagnose root causes and initiate safety-related organizational learning might benefit from a consideration of both the theory and research findings underlying normative decision theory (see Vroom & Jago, 1988).

Power and Influence Approaches

Power and influence approaches to the study of leadership focus on how leaders are able to influence their subordinates. This ability to influence includes the sources of power leaders can tap into when influencing subordinates, the different influence tactics that can be used, and the relationship leaders have with their subordinates. Research in this area is most directly related to the core of the definition of *leadership* offered above, namely, influencing others in an organizational system.

The classic work of French and Raven (1959), who identified several different types of leadership power, represents the beginning of research on the sources of a leader's power. Yukl and Falbe (1990) extended this work by suggesting that there are two primary sources of power, with several more specific types of power for each primary source. *Position power* is given to a leader by the organization and consists of legitimate, reward, coercive, and informational sources. *Personal power* is given to a leader by his or her subordinates and includes expert, referent, persuasive, and charismatic sources.

Just having certain sources of power, however, does not mean that the leader will use them. As a consequence, research has been conducted on the types of influence tactics leaders use (Kipnis & Schmidt, 1988; Kipnis, Schmidt, & Wilkinson, 1980). Yukl and Van Fleet (1992) summarized the range of influence tactics that have been studied. These include legitimating tactics, rational persuasion, inspirational appeals, consultation, exchange, pressure, ingratiation, personal appeals, coalition tactics, and upward appeals.

Other researchers have focused on the reciprocal influence leaders and subordinates can have on each other. Foremost among these approaches is the leader–member exchange (LMX) approach developed by Dansereau, Graen, and Haga (1975). The hundreds of studies of this approach have been meta-analytically summarized by Gerstner and Day (1997). At its

most basic level, LMX suggests that leaders develop different quality exchange relationships with individual subordinates. There is considerable evidence that the quality of exchange relationship is related to a host of affective and behavioral outcomes.

The final approach within power and influence is transformational leadership. Although transformational leadership could be placed under the behavioral approach category, we have placed it here because transformational leadership concerns itself with "influencing major changes in attitudes and assumptions of organizational members . . . and building commitment for major changes in the organization's objectives and strategies" (Yukl & Van Fleet, 1992, p. 174). Leaders empower and elevate their subordinates by espousing a compelling vision and convincing them to transcend their self-interest. These subordinates then become change agents and leaders in their own right. Bass (1985) has suggested that transformational leadership contains three components: charisma, intellectual stimulation, and individualized consideration.

Implications of Power and Influence Approaches for Safety

There has been no research into how a leader's sources of power or use of influence tactics impacts safety behavior. It is likely that personal sources of power will better enable leaders to influence the safety behavior of subordinates. But, as noted earlier in this chapter, this influence will impact safety behavior only if safety is a core value of the leader.

The work of Hofmann and Morgeson (1999; also Hofmann et al., 2003) has shown the influence relationships between leaders and subordinates (operationalized with LMX) can have on such things as safety communication, commitment, role definitions, and accidents. Future work can investigate how leader–member relationships impact the adoption of other kinds of role behavior and subordinate values.

With few exceptions (Barling et al., 2002; Zohar, 2000b), researchers have left the area of transformational leadership untapped. It may be the case that if leaders can articulate a compelling vision of safety and persuade subordinates to transcend their self-interest, this will motivate greater safety behavior, increase helping behavior among subordinates, and serve as a substitute for leadership. One challenge in conducting research into transformational leadership, however, is the need for samples where there is variance in transformational leadership. This may require research that spans multiple organizations.

CONCLUSIONS

Although much has been done with respect to understanding the link between leadership and safety, much more needs to be done. In addition to

reviewing existing safety-related research, we have highlighted some relatively untapped areas of leadership theory that hold promise for increasing our understanding of how leaders can improve safety in organizations.

Looking across the findings of the relatively small body of leadership-based safety research, we are encouraged. Overall, the findings suggest that perhaps the age-old assumption that safety and production are inherent trade-offs is not as certain as once believed. Although Mattila et al. (1994) bring some direct evidence to the table, there is much indirect evidence as well. Specifically, research has linked LMX and transformational leadership to safety outcomes. These two leadership constructs are also associated with a number of other positive outcomes in organizations such as increased organizational commitment, productivity via the performance of both in-role and citizenship behaviors, and reduced absenteeism and turnover (e.g., see Gerstner & Day, 1997). Perhaps it is the case that it is possible for leaders to develop organizational cultures that are healthy in the sense that the organization is effective and safe. We believe that for safety research to continue to make significant contributions to mainstream organizational research, establishing this link between safety performance and organizational performance is critical. We hope that future research will further explore these relationships.

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