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HIGH-PERFORMANCE WORK SYSTEMS AND OCCUPATIONAL SAFETY

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Organizations have long focused on the human resource function. Most recently, attention has been focused on how human resource functions can add value to the organization. The potential benefits of an integrated human resource management system have been noted (O'Reilly & Pfeffer, 2000; Pfeffer, 1998a, 1998c), and initial research has supported these ideas (e.g., Ichniowski, Shaw, & Prennushi, 1997; Huselid, 1995). In this chapter, we focus on the extent to which "modern" human resource management practices, which focus on the recruitment, development, and management of employees (Wood & Wall, 2002), might affect occupational safety with the aim of stimulating thinking, encouraging research, and considering potential practical implications of this topic.

Traditionally, occupational safety has been managed by taking a control-oriented approach to human resources (Barling & Hutchinson, 2000), what Wood and Wall (2002) see as the polar opposite of a high-functioning approach to human resource management. The control orientation is based on the assumption that workers will exert only as much effort as it takes to get the job done. Thus, for employees to work effectively, it becomes necessary for

management to use control and coercion to ensure desirable behaviors (Walton, 1985), and punishment to reduce undesirable behaviors. With respect to occupational safety, the control orientation emphasizes the use of rules to enforce behaviors and ensure compliance with government regulations and the provisions in a collective agreement (Barling & Hutchinson, 2000).

More recently, greater attention has been paid to managing human resources by way of a commitment-oriented or high-performance work system approach. In contrast to the control orientation, this approach assumes that workers are capable of performing at high levels if encouraged and allowed to do so. It is argued that workers will be more committed to the organization and more trusting of management if given respect and treated as capable and intelligent individuals—and that organizations that employ such human resource approaches will reap the benefits in terms of improved performance (Walton, 1985). A number of studies now provide support for a relationship between high-performance work systems and employee- and organizational-level performance (Arthur, 1992, 1994; Huselid, 1995; Ichniowski et al., 1997; MacDuffie, 1995; Patterson, West, & Wall, 2001).

With respect to workplace safety, the high-performance work approach emphasizes the role of management in promoting safe work. This is in stark contrast to the control orientation, essentially a victim-blaming approach in which employee behaviors are deemed to be the primary cause of workplace injuries and fatalities. We argue that in order to promote workplace safety, management must adopt a set of high-performance work practices that would serve to improve workplace safety by increasing employee trust in management, commitment to the organization, and positive perceptions of safety climate.

Following the commitment-oriented strategy described by Walton (1985) and the framework proposed by Jeffrey Pfeffer (1998c), we propose 10 human resource practices that would promote workplace safety. These comprise the seven practices described by Pfeffer (1998c) with the addition of three practices we deem equally important.

The seven practices Pfeffer (1998c) described are the following:

1. Organizations must ensure employment security for their employees.
2. Organizations must subject all new personnel to a selective hiring process.
3. Employees should be provided with extensive training.
4. The design of organizations should emphasize decentralized decision making and self-managed teams.
5. The organization must make an effort to reduce status symbols that separate employees into different hierarchical levels.
6. Information sharing throughout the organization should be encouraged.
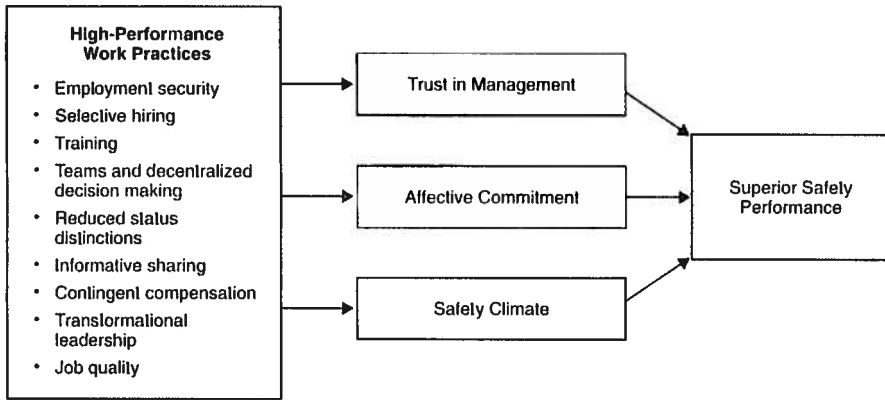7. Employees should receive relatively high compensation dependent on the organization's performance.

Figure 10.1. High-performance work practices and their impact on workplace safety.

We believe these seven practices can be extended by considering three additional factors: the role of transformational leadership, job quality, and the measurement of variables critical to organizational success.

Although Pfeffer (1998b) argued that the implementation of these high-performance work practices results in improved performance at the individual and firm levels, he also claimed that such success extends beyond financial reporting measures; there are now numerous studies supporting this general notion. Following this argument, we predict that occupational safety would be an additional outcome of a high-performance work system. The purpose of this chapter, therefore, is to describe a model of how a high-performance work system can affect occupational safety (see Figure 10.1). We first describe each of the 10 practices that comprise such a system and then discuss the mechanisms that mediate the relationship between these practices and occupational safety—namely, trust in management, affective commitment to the organization, and positive perceptions of safety climate.

TEN HUMAN RESOURCE PRACTICES THAT AFFECT OCCUPATIONAL SAFETY

Employment Security

Employment security encourages a long-term outlook within organizations, promoting trust and organizational commitment. As such, employment security is one means by which firms can improve their performance (Pfeffer, 1998c). We believe that employment security benefits workplace safety for many of the same reasons it benefits a firm's economic performance. First, increased turnover encourages the existence of an inexperienced and less

trained workforce, and consequently increased involvement in safety incidents (Kincaid, 1996). For instance, recent work on the relationship between contingent work and worker safety has found that contract workers typically are less trained, are less experienced, and receive less supervision than their permanent peers (Collinson, 1999; Hofmann, Jacobs, & Landy, 1995; Kochan, Smith, Wells, & Rebitzer, 1994). In addition, within-group instability that arises from absenteeism has been associated with occupational accidents (Goodman & Garber, 1988).

As well, employment security has been shown to increase trust in management (Pfeffer, 1998c; Walton, 1985) and affective commitment (Barling, Weber, & Kelloway, 1996; Meyer & Allen, 1997). In a study of nuclear power plant employees, workers less committed to the organization reported the probability of an accident to be greater than those more highly committed to the organization (Kivimäki & Kalimo, 1993). Similarly, employees' perceptions of nuclear accident risk increases as their trust in management decreases (Kivimäki, Kalimo, & Salminen, 1995).

Finally, employment security encourages a long-term perspective that would benefit workplace safety. It is in the best interest of organizations to protect the safety of employees in whom time and financial resources have been invested. When managers lack a long-term focus, employees are seen as dispensable and short-term profits override concerns for safety (Jackall, 1988; Sells, 1994). Given this, it is not surprising that employment or job security differentiates between low-injury and high-injury companies (Smith, Cohen, Cohen, & Cleveland, 1978; Zohar 1980). In addition, Grunberg, Moore, and Greenberg (1996) found that employees reporting high employment insecurity reported more injuries and resulting days lost in a study of the wood products industry. Similarly, employees suffering from feelings of job insecurity in a study of a food processing plant reported lower safety motivation and safety compliance and greater numbers of injuries than those who felt their jobs were secure (Probst & Brubaker, 2001).

Selective Hiring

If anything, the way in which employees are selected with the intention of promoting workplace safety is consistent with the control orientation. Most studies evaluate the effects of personality screening inventories to exclude potentially unsafe (or accident-prone) employees based on criteria such as drug addiction, alcoholism, emotional maturity, and trustworthiness (see, e.g., Borofsky, Bielema, & Hoffman, 1993; Jones, 1991; Jones & Wuebker, 1988). This approach, however, has serious ethical, scientific, and practical problems. First, from an ethical perspective, this approach focuses on the "thin skull" approach, blaming the victim for his or her own misfortune. Second, scientific problems emerge because of the flawed experimen-

tal designs on which such studies are based. Third, practical problems emerge because the statistical power of the findings from such studies simply does not justify practical decisions within organizations of the magnitude of excluding individuals from the organization.

Of all the 10 aspects of the high-performance work system, selective hiring has received the least support and is an area in need of greater research scrutiny. Nonetheless, selective hiring could play a critical role in ensuring occupational safety. For example, involving teams in the selection of future members may prove beneficial, as would requiring applicants to participate in several rounds of interviews. The values of the organization more generally, and specifically with respect to safety, could be emphasized during the interview process. In support of this argument, A. Cohen (1977) and Smith et al. (1978) both found that companies with low injury and accident rates had more elaborate selection procedures than did high-injury-rate companies. Further understanding and empirical research are obviously necessary with respect to the link between selective hiring and occupational safety.

Extensive Training

Training is a crucial aspect of any human resource system (Pfeffer, 1998a, 1998c; Whitefield, 2000; Wood & Wall, 2002) and is probably the most frequently used method for ensuring adequate levels of occupational safety in organizations. A review of the literature examining the role of training in workplace safety is well beyond the scope of this chapter. Overall, it has been found when considering well-designed studies that employees who have undergone safety training experience fewer injuries than their untrained counterparts (see chapter 11 of this volume; Hale, 1984). Safety training is especially salient in those instances in which work is inherently dangerous, given the high cost of an error and the inability to learn by trial and error (Weick, 1987). However, the potential benefits go beyond the training itself. It is critical not only that employees are well trained but also that management is seen to be committed to safety training (Zohar, 1980) and that training goes beyond that required by government regulations or the provisions of a collective agreements.

Beyond providing employees with the knowledge and skills to do their jobs to the best of their abilities or to complete the tasks safely, training has the added benefit of increasing organizational commitment. In a study of naval trainees, both the extent to which training met participants' expectations and how satisfied the trainees were with the training they received predicted their subsequent commitment to the organization (Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). This is important because Parker, Axtell, and Turner (2001) found that organizational commitment

predicted the safe working of employees. Overall, therefore, extensive training is an integral part of any high-performance work system targeted at occupational safety.

Self-Managed Teams and Decentralized Decision Making

There is an expanding body of research showing that teamwork and the decentralization of decision making benefit employee performance (Pfeffer, 1998c) and should affect occupational safety as well. For instance, in a study of 1,061 work groups, it was found that the cohesion among members of a work group was a significant predictor of workers' propensity to comply with safety rules (Simard & Marchand, 1997). Earlier, Trist, Susman, and Brown (1977) found that miners working in autonomous teams experienced fewer injuries than their peers working individually, whereas Goodman and Garber (1988) found that as the familiarity between miners working in pairs decreased, safety infractions increased.

One explanation for these findings is that employees working in high-functioning teams tend to feel more accountable for safety in general and for each other's safety in particular. For instance, Geller, Roberts, and Gilmore (1996) found that workers' propensity to actively care for their coworkers' safety was predicted by a sense of belongingness to the group as well as by personal control. Teamwork should also improve workplace safety because teams provide their members with the most knowledge and familiarity with the situation, and more opportunities for control. In fact, Hechanova-Alampay and Beehr (2001) found that the safest teams in a chemical company were those with the greatest control over varied aspects of their work.

Furthermore, and again supporting Wood and Wall's (2002) notion that the elements of a high-performance work system are mutually reinforcing, teams promote the sharing of ideas and this promotion would have a significant impact on worker safety. For instance, Tjosvold (1990) found that flight crews faced with dangerous situations performed more effectively when organized as a group than when organized in a hierarchy with the captain in command. Under such conditions, employees are encouraged to share ideas and develop the best possible solutions to problems. Similarly, in the Trist et al. (1977) study, it was found that sharing ideas and experiencing common goals explained why miners in autonomous groups demonstrated improved safety performance.

To summarize, the implementation of teams has the potential to enhance occupational safety because positive team dynamics encourage team members to assume responsibility and to provide each other with feedback and encouragement for working safely. Furthermore, teamwork ensures the sharing of ideas and greater control over work—factors that will encourage employee safety.

Reduce Status Distinctions

> The biggest problem this plant has is that anybody with a degree thinks they're above the men on the bottom rung. There is no communication whatsoever. They think we're a bunch of dummies because we don't have a degree. (Statement by a chemical operator, Nelkin & Brown, 1984, p. 54)

Status distinctions that convey the message that some members of the organization are more important to its functioning than are others create unwanted barriers between organizational members and breed resentment and harm motivation (Pfeffer, 1998a). Within a high-performance work system, employees from all levels should feel able to contribute their knowledge and energy to benefit diverse aspects of the organization (Pfeffer, 1998c). We argue that reduced status distinctions, which would mutually reinforce the effectiveness of teams and decentralized decision making, would also benefit workplace safety.

In organizations where status distinctions between employees are evident, it would be difficult for management to appreciate the risks encountered by frontline employees. In addition, the objective and perceived gap would make it less likely that employees would perceive the extent to which management is concerned with their well-being. In a study of British Rail employees, Clarke (1999) found that both workers and management failed to appreciate the value that each group placed on the other's workplace safety. Furthermore, when hierarchical status distinctions are evident, each group is more likely to lay blame for safety incidents on the other group (DeJoy, 1994). In contrast, increasing exposure between the members of hierarchically distinct groups increases the likelihood that both parties will realize their groups are interdependent with regard to safety and will feel jointly responsible for workplace safety.

There is one empirical study that is relevant to status distinctions and workplace safety. Milanovich, Driskell, Stout, and Salas (1998) note that in airline cockpits, individuals of lower status (namely, first officers) were often too compliant and obedient in the presence of captains (who enjoyed higher status), whereas the captains often missed opportunities to listen to their first officers. Milanovich et al. further showed that individuals held higher general and specific expectations of pilots than of copilots. This important finding highlights the danger of status distinctions because it suggests that copilots holding higher expectations of pilots may change their own behavior by, for example, becoming more subservient in their presence. This could have serious consequences in terms of both performance in general and safety performance in particular. Thus, much as a reduction in status distinctions would serve to improve employee and organization performance within a high-performance work system described by Pfeffer

(1998c), it would similarly serve to improve workplace safety. By encouraging communication, the sharing of ideas, and greater mutual concern and trust among workers, reduced status distinctions play an important role in enhancing occupational safety.

Share Information

Information is one of the most important organizational resources (Pfeffer, 1998c), and providing employees with information allows them to best understand the operation and its goals and thereby increase organizational functioning. The critical role of information sharing is also evident within occupational health and safety legislation, which is typically based on the assumption that workers have access to complete information about their jobs and can therefore refuse unsafe work. However, the potential benefits go beyond the sharing of information per se: Organizations that share information with their employees signal to those employees that they are trusted.

The role of information sharing in workplace safety is illustrated by a number of empirical studies. Both A. Cohen (1977) and Smith et al. (1978) found that companies in which there was more contact and more open discussion between management and shop floor employees reported fewer safety incidents. Similarly, Hofmann and Morgeson (1999) found that to the extent that employees felt comfortable discussing safety-related issues with their supervisors they also more closely followed safety procedures and practices and, in turn, experienced fewer injuries.

Other than simply giving employees the information they need to work safely, information sharing may also impact worker safety by ensuring that employees feel they are an important part of the organization, and this has positive consequences. Sjöberg and Drottz-Sjöberg (1991) found that to the extent that nuclear power plant workers lacked knowledge regarding safety issues, they also experienced greater perceived risk. This finding is important because perceived risk had been found to be negatively correlated with organizational commitment (Kivimäki et al., 1995) and positively correlated with task distraction (McLain, 1995), both of which are potentially important factors in workplace safety.

Information sharing is also particularly important in the safety context, for it allows workers to learn vicariously about their work. In an environment in which mistakes are costly both financially and personally, and in which learning from mistakes is undesirable, information sharing is critical to learning and to incident prevention (Weick, 1987). In sum, the sharing of information between organizational members is an important part of any high-performance work system. It is also has an integral role in the reduction of safety incidents such as near misses, injuries, and fatalities.

Compensation Contingent on Safe Performance

Within the high-performance work system described by Pfeffer (1998c), paying people well is argued to enhance organizational performance. Paying employees well expands the pool of potential applicants for any available jobs in the organization and signals to current employees that they are valued by the organization. The same holds true with respect to workplace safety. As one North Sea oil worker stated, "If you're getting paid a wage that you're happy with, then you're happy at your work so you're switched on and alert. You don't mind doing your bit" (Collinson, 1999, p. 591).

Even more important is the opportunity that contingent compensation provides to organizations to convey unambiguously which behaviors are most valued. Under such a compensation system, employees are also motivated to contribute to the organization to the extent to which their interests are aligned with those of the organization. In terms of enhancing worker safety, compensation that is dependent on occupational safety (rather than on the number of accident reports) would signal to employees what the organization really values.

There are data demonstrating that rewarding employees on the basis of their safety performance is effective in reducing workplace injuries. The use of tokens and other reinforcers has been examined in a number of studies and has been shown to reduce injury rates (see, e.g., Austin, Kessler, Riccobono, & Bailey, 1996; Haynes, Pine, & Fitch, 1982). Nevertheless, this approach is undesirable from a high-performance work system perspective. Beyond the facts that many of the behaviors learned are highly specific and do not generalize to other contexts and that the long-term effects are ill understood (McAfee & Winn, 1989), this method of encouraging occupational safety also suffers because of its inherent reliance on the use of control to encourage behaviors. This is undesirable to the extent that it constitutes manipulation; consequently, these methods fail to be endorsed by unions (Walker, 1998).

More consistent with Pfeffer's (1998c) proposition are (a) that employees be compensated for organizational performance at the group level and (b) that compensation must be provided for behaviors beyond individual-level safety. For instance, it was found in an open-pit mine that employees who were rewarded with tokens for working safely not only on an individual basis but also as a group, and who were rewarded for making suggestions of ways to improve safety and for taking unusual action to prevent injuries, experienced significantly fewer injuries than their unrewarded peers (Fox, Hopkins, & Anger, 1987). Although the approach applied in this study is more in line with a high-performance work system model than other compensation approaches are, it is necessary for future research to

more thoroughly examine the role of fair and contingent compensation on workplace safety.

Nonetheless, for conceptual, measurement, and empirical reasons, we conclude our comments on contingent compensation with a word of caution. Conceptually, it should be noted that not all researchers view contingent compensation as part of a high-performance work system. As Wood and Wall (2002) remind us, Arthur (1994) initially conceptualized compensation as part of a control orientation. Measurement issues also loom large because of reports showing that focusing employees' attention on a reduction in the number of accidents rather than an improvement in occupational safety can result in less safety (Collinson, 1999).

Transformational Leadership

The focus in the literature on the role of leadership in enhancing workplace safety is by no means new (e.g., Butler & Jones, 1979; Dunbar, 1975). For instance, both A. Cohen (1977) and Smith et al. (1978) found that strong management commitment to worker safety characterized low-injury-rate companies, and Hofmann et al. (1995) showed recently that management commitment to safety impacted how motivated employees were to work safely. We believe that transformational leadership provides an appropriate leadership model for demonstrating a commitment to safety and in turn enhancing workplace safety.

Transformational leaders are able to act as role models to their followers. They are highly respected because they do what is right and not necessarily what is easy or personally profitable. They are able to inspire their followers to go beyond their individual needs and work toward the collective good of the group, and they are able to encourage followers to challenge assumptions and to examine problems from new angles. Finally, transformational leaders are concerned with the needs and interests of their followers (Bass, 1998). With respect to workplace safety, transformational leaders would be able to convey to followers the value they place on occupational safety and would be able to persuade employees to work as safely as possible. They would also be capable of encouraging their followers to look at safety problems from different angles and would demonstrate concern for each individual's safety.

Indeed, transformational leadership has been found to be associated with improved safety. In one study of the offshore oil and gas industry, managers' transformational leadership predicted the willingness of workers to take initiative in safety matters (O'Dea & Flin, 2000). Similarly, to the extent that supervisors exhibited transformational leadership, restaurant workers experienced fewer occupational injuries (Barling, Loughlin, & Kelloway, 2002).

Similar results were found within the team context. Williams, Turner, and Parker (2000) found that transformational leadership predicted the extent to which individuals working in teams followed safety procedures and participated in safety behaviors beyond those required. Zohar (2002) showed that transformational leadership was negatively associated with the number of minor injuries experienced by workers in a metal processing plant. Collectively, therefore, the findings from these studies provide evidence for the role of transformational leadership in reducing the number of safety incidents experienced, and injuries suffered, by workers.

High-Quality Work

A job that is "more fulfilling and effective" (Parker & Wall, 1998, p. ix) will ensure that workers are focused, attentive, and emotionally engaged. In Wheatley's (1997) words, "You can't direct people into perfection; you can only engage them enough so they want to do perfect work" (p. 25), and job quality will also promote safe working. Although there are a number of dimensions of job quality (task significance, feedback), we will consider only three: appropriate workload, employee control, and role clarity.

With respect to appropriate workload (i.e., work that is neither overly taxing nor boring), both work overload and underload are associated with worker safety. In a study of petrochemical workers, high job demands were associated with greater perceived risk (Baugher & Roberts, 1999). Eyssen, Hoffman, and Spengler (1980) found that safety was compromised when managers suffered from unusually heavy workloads. Similarly, Hofmann and Stetzer (1996) demonstrated that a greater push for production was associated with diminished workplace safety in a chemical processing plant. Work underload can have similarly negative effects on worker safety. In a study of employed adolescents (Frone, 1998), on-the-job boredom and work overload were both positively related to work-related injuries.

The provision of greater autonomy is a further aspect of job quality that has been found to benefit workplace safety (Barling, Kelloway & Iverson, 2003). Parker et al. (2001) reported that job autonomy increases employee commitment to the organization and, in turn, employee safety compliance. Similarly, Simard and Marchand (1995) found that a participative approach to managing safety predicted the extent to which employees were proactively involved in their own safety; autonomy also predicted group cohesion, a further factor in individuals' propensity to work safely.

Finally, role clarity—a further component of job quality—is also important to workplace safety. In a study of junior medical doctors, Houston and Allt (1997) showed that assuming a new role and the associated distress of not knowing the role requirements were associated with a greater number of medical errors. The potential for the generalizability of these findings to

occupational safety is strong but remains to be tested empirically. Similarly, Hemingway and Smith (1999) found that role ambiguity among nurses was significantly associated with the number of injuries they experienced. Overall, therefore, high-quality work characterized by an appropriate amount of work, role clarity, and employee control has been associated in the literature with workplace safety.

Measurement of Variables Critical to Organizational Success

Measurement is an important human resource practice, given that "organizations get the kinds of behaviors they measure and reward" (Lawler, 1996, p. 232) and should therefore be a part of current conceptualizations of human resource management systems. In terms of workplace safety, there are a number of measurement issues that deserve attention. First, most organizations are preoccupied with complying with government regulations and provisions in collective agreements that regulate occupational safety. This is problematic in the extent to which this directs attention on the number of accidents and events, and as a result measures behaviors consistent with a control orientation. Second, as Wheatley (1997, p. 25) notes, focusing on compliance with government regulations encourages the identification and correction of safety-related infractions while neglecting those opportunities to go beyond regulations and enhance safety through, for instance, the sharing of ideas. Third, government fines for safety infractions, increasing insurance premiums, and collective agreements provide numerous incentives to organizations to underreport safety infractions (Collinson, 1999; Conway & Svenson, 1998). As such, safety levels measured in terms of the number of incidents may provide organizations with data that are unreliable (Collinson, 1999; Donald, 1995). Furthermore, this type of record keeping does not provide the organization with any information regarding the number of near misses or less severe injuries that occur.

In contrast, optimal measures will provide information that is useful for interventions. The usefulness of financial reporting systems provides a good lesson. Such systems are limited because they often focus on events that have already occurred while providing less information about current conditions (Pfeffer, 1998b). With respect to safety, therefore, focusing on current safety conditions and employee attitudes and behaviors that predict subsequent safety performance would provide more relevant information for the prevention of future safety incidents than would focusing on past safety incidents. This is not to say that the number of safety incidents need not be considered. Rather, considering process-oriented measures would provide an organization with much richer information regarding safety. What is needed to enhance safety in the long term, therefore, is the measurement of varied aspects of safety, including the proximal causes of injuries such as worker

attitudes and behaviors. For instance, it would be worthwhile to measure employees' commitment to the organization, job satisfaction and trust in management, and the extent to which workers take initiative with respect to safety and participate in safety matters. Furthermore, it would be worthwhile to measure the high-performance work system discussed here by considering, for instance, perceived employment security, the amount of training received, job quality, and the extent to which employees work in teams.

HOW DO HIGH-PERFORMANCE WORK SYSTEMS INFLUENCE OCCUPATIONAL SAFETY?

In the preceding section of this chapter we discuss each of the 10 high-performance work practices and their potential effects on workplace safety. The question remains as to how these practices exert positive effects on occupational safety. We believe that these practices serve to increase employees' trust in management, affective commitment to the organization, and perceptions of safety climate—all of which improve safety performance. Each of these will be discussed in turn.

When evaluating management practices, Pfeffer (1998a) opined that the single most important factor is whether the practices convey trust or destroy trust. An examination of the literature indicates that a number of studies have demonstrated that high-performance work practices promote trust in management. For instance, it has been found that trust in management mediates the relationship between transformational leadership and follower performance (Barling, Moutinho, & Kelloway, 2001; Jung & Avolio, 2000). Similarly, employment security has been found to be another factor promoting trust in management, especially in unstable times (Brockner, 1988).

The sharing of information within an organization should also serve to increase trust between management and employees. As we mentioned earlier in this chapter, Clarke's (1999) study of British Rail employees found that both management and employees underestimated the extent to which the other group valued workplace safety. Under these conditions, we should not expect workers to trust management when safety-related issues are concerned. Encouraging the sharing of information between the two parties, however, would have promoted trust between workers and management.

There is a paucity of research examining the effects of trust on workplace safety. However, a literature review by Kramer (1999) may be informative. Kramer reported that trust results in spontaneous sociability such that employees are more likely to cooperate, act in ways that extend beyond their roles, work toward common goals, and share information—all behaviors that may well promote workplace safety.

Affective commitment to the organization (Meyer & Allen, 1997) is a further mediating mechanism through which high-performance work practices impact desirable organizational outcomes, one of which is workplace safety. Numerous studies support the role of the high-performance work practices in encouraging affective commitment. For instance, a meta-analysis conducted by Mathieu and Zajac (1990) found that leadership predicts overall loyalty to the organization, whereas transformational leadership more specifically has also been associated with greater affective commitment (Barling et al., 1996; Barling et al., 2001). Similarly, both job quality (Mathieu & Zajac, 1990) and employment security (Ashford, Lee, & Bobko, 1989; Probst & Brubaker, 2001; Tsui, Pearce, Porter, & Tripoli, 1997) have been found to be related to affective commitment to the organization.

In turn, affective commitment has been found to predict work performance (Barling et al., 2001; Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989), including safety performance. Hackett, Bycio, and Hausdorf (1994) found in a sample of bus operators that affective commitment to the organization was significantly associated with the number of accidents they experienced in a year. In addition, Parker et al. (2001) found that communication quality and the ability to work autonomously, a function of job quality, were both associated with greater affective commitment to the organization and, in turn, to safer working. In the team context, organizational commitment was negatively related to the number of days lost due to a work injury (S. G. Cohen & Ledford, 1994). Most likely on account of range restrictions in the data, organizational commitment was not found to be associated with safety levels in this study.

Finally, we argue that perceived safety climate provides a further mechanism by which the high-performance work practices impact workplace safety. Safety climate is a subset of the overall organizational climate and refers to employees' perceptions of their work environment with respect to safety policies, procedures, and rewards (Griffin & Neal, 2000). Although there is little research examining the organizational factors that promote safety climate, such practices as the provision of extensive training beyond that mandated by government regulations would serve to increase employees perceptions that their organization is committed to workplace safety. Similarly, to the extent that jobs are of high quality and, for instance, the workload is appropriate (Zohar, 1980a), positive perceptions of safety climate will be encouraged. Transformational leadership is also expected to result in more favorable perceptions of the company's safety climate (Barling et al., 2001; Zohar, 2002).

Safety climate has been found to be a proximal predictor of safety behaviors. For instance, employees in a chemical processing plant with more positive perceptions of safety climate engaged in unsafe behaviors with less frequency (Hofmann & Stetzer, 1996). Furthermore, Zohar (2002)

found that safety climate predicted actual injuries in a sample of production workers, as did Barling et al. (2002) in a sample of restaurant workers.

CONCLUDING THOUGHTS

We have highlighted the value of 10 high-performance work practices, each of which (a) are associated with occupational safety and (b) encourage trust in management, affective commitment to the organization, and perceived safety climate, which in turn enhance occupational safety. Nonetheless, much of the discussion in this chapter is speculative, and it now remains for future research to focus in detail on these relationships. Given the extent to which prior studies have shown the wide-ranging effects of high-performance work systems, these effects may well extend to our understanding, prediction, and control of occupational safety.

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