

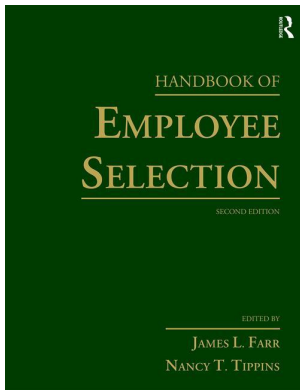
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## **Handbook of Employee Selection**

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## **Employee Work-Related Health, Stress, and Safety**

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## EMPLOYEE WORK-RELATED HEALTH, STRESS, AND SAFETY

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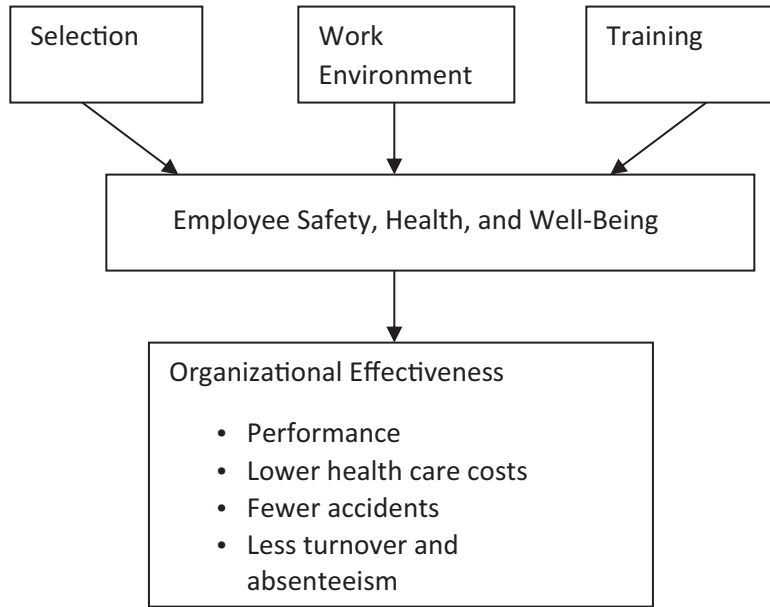
LOIS E. TETRICK, PAMELA L. PERREWÉ, AND MARK GRIFFIN

Organizations are increasingly concerned with the health and safety of their employees. Several factors are contributing to this concern. First, the legal environment in many countries stipulates that employers are responsible for the safety and health of their employees, at least while at work. For example, the U.S. Occupational Safety and Health Act of 1970 mandates that employers provide a safe and healthy work environment for employees, and the European Agency for Safety and Health at Work has issued several Council Directives that protect the health and safety of workers throughout the European Union. It also has been argued that there are growing concerns and expectations by the general public over health protection from communicable diseases and noncommunicable environmental hazards in the work environment (Nicoll & Murray, 2002).

Second, the cost of healthcare continues to climb. Oziransky, Yach, Tsao, Luterek and Stevens (2015) found that 70% of human resources professionals and 60% of chief financial officers reported that healthcare costs were a major financial concern for their organizations. In the United States, health insurance coverage of employees is a direct expense to employers and continues to increase. Although many companies have shifted more of the healthcare costs to employees (Kaiser Network, 2006), there is still a potential savings to organizations to have healthy employees because health insurance premiums in the United States are often based on claims from job-related illnesses and injuries. In the European Union and other countries around the world, the cost of healthcare is more of a social, public health responsibility rather than an organizational responsibility, based in part on differences in funding of healthcare systems. This social value of the health and safety of the workforce appears to be emerging in the United States (National Academies of Science, 2015).

Third, employee health is related to productivity and organizational effectiveness. Recent research on the association of health risks and on-the-job productivity estimated the annual cost of lost productivity in one organization was between \$1,392 and \$2,592 per employee, based on self-reported health risk factors (Burton et al., 2005). In another study of chronic health conditions, Collins et al. (2005) found that the cost associated with lost productivity from chronic health conditions exceeded the combined costs of absenteeism and medical treatment. Therefore, the concern over employees' health and safety is not limited to healthcare costs but also includes loss of productivity, and this concern is increasingly a global issue (World Health Organization, 2008).

The purpose of this chapter is to examine potential mechanisms that organizations may use to maintain and promote healthy employees. These mechanisms might be the selection of "healthy" workers, modifications to the work environment to reduce work stressors and increase



**FIGURE 24.1** Conceptual Overview of Chapter

safety, and employee training. Each mechanism has its pros and cons with respect to maintaining healthy employees as well as a safe and healthy work environment. We examine the importance of having healthy workers and the role of stress and safety in the workplace on organizational effectiveness. Figure 24.1 is an illustration of the chapter overview.

## HEALTHY WORKERS

In this section, we first examine the rising costs of healthcare. Next, we discuss how organizations can develop and possibly obtain healthy workers through wellness programs and selection.

### Healthcare Costs

Healthcare spending is rising faster than incomes in most developed countries, with the United States spending more per capita on healthcare than other countries. The United States spent \$8,745 per capita in 2012, which was 42% higher than Norway, the Organisation for Economic Co-operation and Development (OECD) country with the next highest per capita spending on health (Peterson-Kaiser Health Tracker System, 2016).

International comparisons of individual and family health spending are difficult given differences in healthcare systems. A Kaiser Daily Health Report (2008) indicated that medical care for the typical insured family of four in the United States was \$13,382 in 2006—an increase of 9.6% from 2005, with employers paying 62% or \$8,362 per family in 2006. According to another report by the Kaiser Family Foundation (2008), health insurance premiums had a cumulative growth of 78% between 2001 and 2007, with much of this increase in health insurance cost being borne by employers. Goetz et al. (2014) reported that U.S. employers spent \$16,351 per employee on average for health insurance premiums in 2013. Although the numbers differ based

on industry, size of organization, and exact definitions, it appears that healthcare costs and health insurance premiums for individuals and organizations will continue to increase.

Analyses of healthcare expenditures find that healthcare costs are often related to modifiable lifestyle behaviors. Anderson et al. (2000) found that modifiable health risks were associated with 25% of the total healthcare expenditures among a sample of 46,026 employees. Uncontrolled stress, smoking, and obesity were the three costliest risk factors based on healthcare expenditures in this study. In a larger study of more than 300,000 employees from six companies, Goetzel, Hawkins, Ozminkowski, and Wang (2003) found, based on 1999 data, that physical health problems cost a total of \$3,524 per eligible employee for medical care, absenteeism, and short-term disability program use, and mental health problems cost only \$179 on average, although with increased attention to mental health parity, it is doubtful that the difference between physical and mental health expenditures and productivity would remain as large. It also was noted that expenditures associated with multiple conditions were attributed to the most acute condition, which might also account for the considerably larger costs associated with physical health problems.

On the basis of an earlier study, Goetzel et al. (1998) reported that employees with depression had 70% higher healthcare expenditures than those individuals who were not depressed. In addition, they found that individuals with uncontrolled stress had 46% greater medical costs than those who were not stressed, and the third costliest risk factor was high blood glucose. Employees with high blood glucose had 35% greater medical expenses than those with normal blood glucose. Other costly risk factors were obesity, tobacco use, high blood pressure, and poor exercise habits. Somewhat surprising, excessive alcohol consumption was not associated with increased medical costs, although Goetzel et al. suggested this might be reflective of individuals with drinking problems tending to avoid the healthcare system.

These studies, as well as others, highlight the effects of modifiable health risk factors on overall healthcare costs. It is not surprising then that organizations have become increasingly interested in employees' health and lifestyle factors that are associated with health. Organizations have incorporated certain lifestyle factors into their selection processes (e.g., hiring only nonsmokers) and have implemented wellness programs that focus on developing and maintaining healthy lifestyles through exercise, nutrition, smoking cessation, and stress management programs as attempts to enhance the health of their workforce.

## Organizational Wellness Programs

Rothstein (1983) suggested that many organizations initiated organizational wellness programs beginning in the 1970s. Organizational wellness programs typically have focused on the modifiable health risk factors associated with lifestyle, such as being overweight, lack of physical activity, poor diet, smoking, and alcohol use. These programs often include educational and training components; financial incentives or disincentives; disease management programs; health risk assessments; health screenings; and special programs for medical management such as flu shots, health fairs, on-site fitness facilities, and fitness center discounts (Shurtz, 2005). Organizational wellness programs seek to increase employee health, productivity, and morale while decreasing absenteeism and reducing healthcare expenditures (Goetzel et al., 2014). A recent RAND Health report (Mattke et al., 2013) reported that over half of U.S. employers offer organizational wellness programs, with 72% of those programs offering a combination of screening and interventions. That said, less than half of employees actually complete the screenings offered, and only 20% or fewer of employees identified for interventions participate in the intervention (Mattke et al., 2013). Therefore, consideration of factors to engage employees in available organizational wellness programs is of increasing importance.

As might be expected, these programs vary considerably, with some focusing on only a single risk factor such as lack of physical fitness to others with multiple components and prevention programs, which Parks and Steelman (2008) referred to as “comprehensive programs.” Given

the differences across programs, evaluating the effectiveness of these programs or of specific components within the programs remains a challenge, although an important one if organizational wellness programs are to accomplish their goals.

The effectiveness and return on investment among the various organizational wellness programs is still open for debate. Mattke et al. (2013) reported that employers were confident that their wellness programs reduced medical costs, absenteeism, and health-related productivity losses, although only about half of the organizations participating in the study had actually evaluated their programs, and only 2% indicated that there were actual savings from their programs. A meta-analysis of organizational wellness programs (Parks & Steelman, 2008) found that participation in a wellness program was related to decreased absenteeism and improved job satisfaction, supporting the effectiveness of wellness programs, although direct measures of health or return on investment were not included. Baicker, Cutler, and Song's (2010) meta-analysis found that the return on investment was 3:1 for direct medical costs and also 3:1 for absenteeism; however, other studies have not always found evidence for either improved health or significant saving. Baxter, Sanderson, Venn, Blizzard, and Palmer (2014) included several characteristics of the studies included in their systematic review, including how return on investment was computed and the quality of the study. They found that overall there was a 1.38 return on investment, although interestingly the higher-quality studies tended to show lower returns than the lower-quality studies. This prompted O'Donnell (2015) to conclude that whether organizational wellness programs work relative to the return on investment, at any rate, "depends" on a number of factors.

The evidence relative to health indicators appears to be more consistent. In a quasi-experimental design study, Mills, Kessler, Cooper, and Sullivan (2007) found that participation in a multicomponent organizational wellness program resulted in reduction of health risks on the basis of a 12-month follow-up assessment on several self-reported risk factors, contrasting participants with a comparison group—a decrease of 4.3 days annualized absenteeism compared with the comparison group and an increase in productivity of 7.9% over the comparison group. The convergence of evidence suggests that wellness programs can increase productivity and morale as well as reduce absences and healthcare costs in a cost-efficient manner, although cost savings may depend on a number of factors, including characteristics of the cost-benefit/cost-effectiveness study.

That being said, wellness programs are not without some associated downsides. One challenge has traditionally been getting those with the most risk to participate in the programs. For example, many organizational fitness programs have not engaged those individuals who most need to increase their activity levels. One approach to increase participation has been the use of incentives, but these programs may actually create other concerns because incentives/rewards may be found to be discriminatory under the Health Insurance Portability and Accountability Act (HIPAA), the Americans with Disabilities Act (ADA), or state insurance laws (Simon, Bruno, Grossman, & Stamm, 2006; Simon, Traw, McGeoch, & Bruno, 2007).

Wellness programs need to be designed and implemented such that they are compliant with employment law (Kendall & Ventura, 2005; Shurtz, 2005; Simon et al., 2006). HIPAA bars healthcare plans from discriminating against individuals because of medical conditions and health status. Whether a particular wellness plan is considered a healthcare plan and subject to HIPAA depends on several factors, including what components are included in the program (Simon et al., 2006, 2007). In addition to whether a specific wellness program is considered a health plan, the use of incentives needs to be considered such that they are not construed as discriminatory toward individuals under HIPAA; in other words, that the incentive does not depend on the health status of the individual, and rewards must be available to all similarly situated individuals or at least provide a reasonable alternative standard for attaining the reward. Simon et al. (2006) and Kendall and Ventura (2005) suggested that although a particular wellness program may not be discriminatory on the basis of HIPAA, it may still be counter to the ADA and/or state insurance plans. For example:

If an employer's wellness program offers lower health plan premiums to employees who complete a healthy lifestyles course, the ADA may require the employer to ensure that a blind or deaf employee can access

the classes and course materials. In addition, if a disability prevents an employee from earning a wellness incentive, the ADA may require the employer to work with the employee to develop alternative incentives that are within the employee's ability.

(Simon et al., 2006, p. 57)

Therefore, organizational wellness programs need to be carefully designed to avoid discrimination against individuals on the basis of health status and disability.

## Selecting Healthy Workers

Organizational wellness programs are one mechanism for enhancing the health of workers. An alternative mechanism for enhancing the health of an organization's workforce might be the selection of "healthy workers."

As mentioned above regarding wellness programs, selection based on health status and disability may run counter to the ADA (Rothstein, 1983); also see Gebhardt and Baker's Chapter 12 in this volume on physical performance tests. Under the ADA, it would be unlawful to base one's selection decision on a disability, which is defined as a condition that substantially limits one or more major life activities and the individual can perform the essential functions of the job. For example, obesity is not considered a disability under the ADA unless the cause of the obesity is a physiological disorder/impairment or the obesity substantially limits a major life activity, which might be the case with morbidly obese individuals. Therefore, if an individual is morbidly obese and can perform the essential functions of the job, denial of employment may be deemed discriminatory under the ADA. In addition, other employment laws may apply. For example, in Michigan it is illegal to discriminate based on weight. Interestingly, smoking does appear to be one health risk factor that does not have any protections under employment law. Increasingly, employers are not only restricting smoking while at work, but they are also not hiring individuals who are smokers (Smerd, 2007).

It may be possible to build a case that selection based on at least certain risk factors is a business necessity. As indicated above, the cost of healthcare insurance, absenteeism, and lower levels of productivity associated with many health risk factors and ill-health conditions might be regarded as business necessity, which is one justification that has been used in implementing smoking bans at work as well as outside of work.

Regardless of legal issues, the decision to select employees on the basis of health or risk factors has several complications. First, the fundamental principle for selection is that selection criteria should be job-related and consistent with business necessity. Second, selection criteria are generally considered to be relatively stable characteristics of an individual that predict how well an individual will be able to perform a job, such as job-relevant knowledge, skills, and abilities. Use of health and health risk factors may move away from relatively stable selection factors, especially if modifiable health risk factors such as smoking, weight, and lack of physical fitness are being considered as selection criteria. The selection system would then be dealing with a dynamic predictor and a dynamic criterion. Therefore, one would expect the predictive validities to be lower than when the predictors and/or criteria are relatively stable. Further, as Rothstein (1983) indicated, the use of health data as predictors requires that the measurement of these predictors have sufficient sensitivity (i.e., the measure is accurate in identifying people correctly with the condition being assessed) and specificity (i.e., the measure is accurate in identifying people who do not have the condition being assessed). Sensitivity and specificity is a concern for traditional selection factors such as cognitive ability tests as well, but they may be more of a concern for health and health risk factors that are modifiable.

In addition to the legal issues, there are several measurement and validity issues of using health indicators for selection purposes. Hackl, Halla, Hummer, and Pruckner (2015), for example, raised the issue of the validity of general health screenings in predicting actual health status. In a comprehensive study covering a 10-year period conducted in the general adult population of Austria, general health screenings did not predict subsequent health status, and Hackl et al. concluded that general health screenings were not a viable approach for developing and maintaining



the health of the workforce. Lesser and Puhl (2014) suggest another drawback of using health indicators for selection purposes. In their study of the effects of incentives in organizational wellness programs, many health indicators have multiple causes and may not reliably indicate an individual's health, especially over the long run. For example, they point out that excessive weight does not necessarily indicate that an individual is unhealthy, nor does being a normal weight indicate that an individual is healthy. Also, there may be underlying factors of a given health indicator such as weight that an individual has no control over such as genetic conditions, which could create legal issues if used for selection purposes. For additional considerations in using health indicators for selection purposes, readers are referred to Gebhardt and Baker's Chapter 12 in this volume, as many health indicators are assessments of physical abilities.

Another consideration in focusing on selection as a mechanism to improve the health of a specific organization is that as a strategy it does not recognize the relation of employees' health to the health of the community in which the organization is located. There is a growing recognition that the health of the population of a community is reflected in the health of the applicant pool, arguing for organizations to be engaged in the development of the human capital in their communities (National Academies of Sciences, Engineering and Medicine, 2015). Selection as a strategy does not directly recognize this link between an organization's health and the health of the community population. Relatively few organizational wellness programs include family members in the activities and thus miss an opportunity to improve the health of the community (Oziranisky et al., 2015). Certainly, selection would not typically include family members. Inclusion of family members in organizational wellness programs might be a good recruiting program, making explicit the organization's values relative to the well-being of employees and families and a shared value of health and safety and their engagement in the community.

Given the legal implications of using health risk factors for selection and the potentially changing levels of many health risk factors before and after hiring, the advisability of using selection for creating and maintaining a healthy workforce seems weak. There is some evidence that organizational wellness programs can be useful for creating and maintaining a healthy workforce, and they may serve as a recruiting strategy. Future research may determine which health risk factors in interaction with which elements of the work environment and components of organizational wellness programs are most effective and which may be appropriate for use in selection.

### WORK STRESS

Considering the results of Anderson et al. (2000) and Goetzl et al. (2014) that psychosocial risk factors, especially depression and stress, are prevalent in organizations and account for significant proportions of disabilities, absences, and healthcare expenditures, this section will focus on stress in the workplace. Job stress arises from a disruption to employees' cognitive-emotional-environmental system by some external environmental demand in the work environment (Lazarus & Folkman, 1984). Various reviews of the extensive stress literature have generally concluded that prolonged exposure to certain job demands can have debilitating consequences for employees (Tetrick, 2002). Specifically, experienced stress can have adverse effects on individuals' mental health, physical health, and organization-related outcomes (Ganster & Rosen, 2013), which can be very costly for organizations (Perrewé et al., 2005).

It has been estimated that stress costs organizations billions of dollars annually in disability claims, absenteeism, and lost productivity (e.g., Ryan & Watson, 2004). More specifically, the World Health Organization estimates that stress costs American businesses \$300 billion per year (Martin, 2012).

In this section, we examine organizational-, job-, interpersonal-, and personal-level predictors of experienced work stress. At the organizational level, we focus on organizational resources and climate, work hours, and various work schedule arrangements that includes a discussion of the pros and cons of using realistic job previews as a recruiting tool. At the job level, we examine role ambiguity and conflict, job demands, personal control at work, and adaptive performance. At the interpersonal level, we discuss a lack of social support, abusive supervision,

organizational politics, and political skill. Further, at the personal level, we look at several personality types and individual-level demographic predictors that include age and gender. Finally, we review some recent research on the interface between the work domain and the non-work domain.

## Organizational-Level Stressors

Organizations differ in the amount of resources that can be distributed among employees as well as the general culture or climate. Working in a resource-poor environment with poor working conditions and few opportunities for pay raises and advancement can be stressful to employees. There are no easy answers to combatting a dysfunctional work climate, but employees will need to adopt coping strategies. Coping strategies have been defined and operationalized in a variety of ways, but perhaps the most well-known theory of stress and coping comes from Lazarus and Folkman (1984), who distinguished between problem-solving coping and emotion-focused coping. Problem-solving coping is an attempt to get rid of the actual stressor. In the situation described, leaving the organization is one viable way to get rid of the stressful situation (e.g., taking another job to escape a dysfunctional organizational climate). Emotion-focused coping refers to more cognitive ways of coping if ridding of the stressor is not possible. For example, cognitive escapist coping refers to coping patterns that suggest an avoidance mode (e.g., trying not to think about work and blocking out others in the organization) while cognitive reappraisals may refer to employees reevaluating their situation and focusing on the positive aspects of the job. Unfortunately, some organizations are simply 'bad', and employees will need to either leave the organization, cope in different ways to succeed in such an environment, or attempt to change the work environment. The next sections examine several organizational contexts.

The widely held assumption that long work hours inevitably lead to negative health and quality-of-life outcomes is highly questionable. Barnett (2006) argued that long work hours appear to be a weak predictor of outcomes because the absolute number of work hours fails to take into account the distribution of those hours. Arguably, the distribution of work hours has greater implications for outcomes than does the number of work hours per se. Over the past two decades, the stereotypical workweek and work schedules have begun to vanish. Typical or standard work is often assumed to be working during the day on the basis of a Monday through Friday schedule. Interestingly, most of us do not fit the assumed typical workweek. In fact, Fenwick and Tausig (2001) found that less than one-third of the workforce in the United States and Canada is employed in jobs that fit the Monday through Friday, full-time day cycle.

In recent years, the presence of contingent workers and flexible work schedules has grown because of an increasingly competitive market and the availability of new information technology. For many organizations, employing workers on a more temporary basis provides a way to maximize flexibility and minimize costs, especially when faced with seasonal work demands. Furthermore, flexibility in work schedules has been seen as a way to not only help organizations to remain competitive but also to offer employees more control over their own work schedules. Even full-time employment can be flexible, such as shift work. Full-time shift work might involve working 35–40 hours during the week, but the work may be performed at night or early mornings, such as the “graveyard shifts.” This can benefit the organization by allowing services or production to be on a continual basis, but this can also help the employees by allowing flexibility in their work schedules so that they best meet their own needs. For example, dual-career couples with small children may like the idea of working different shifts because this might aid in their ability to care for their children. Flexible time schedules, job sharing (e.g., two employees working part-time but they share one job), temporary employment, home-based work, and teleworking (e.g., working from home, hotels, or other remote work sites) have all become more popular in recent years (Barling et al., 2002). However, the concerns are not if these types of arrangements aid in flexibility for the organization and the employee, but rather if these arrangements are reducing experienced stress for employees and are consistent with a healthy workforce. The following section examines the consequences of alternative work arrangements on the well-being of employees.



Research on the psychological well-being of part-time workers versus full-time workers has not demonstrated significant differences in terms of employee job attitudes or well-being (Barling & Gallagher, 1996). What appears to be the most important factor differentiating full-time from part-time workers regarding their well-being is whether working part-time is voluntary. Voluntary part-time employment actually has been shown to be beneficial in terms of job satisfaction and general well-being if the part-time employee has a sense of control over work scheduling (Krausz, Sagie, & Biderman, 2000). Unfortunately, not all “voluntary” part-time employment can be assumed to be positive. For example, many workers are part-time workers who are only working part-time because of a preexisting health concern or disability (Mykletun & Mykletun, 1999). Whether this constitutes true voluntary part-time work is debatable. Additional research examining the extent to which part-time employment is perceived by the employee to be truly voluntary is still needed before definite claims can be made regarding the role of part- versus full-time employment on health and well-being.

Health concerns may become even more pronounced when coupled with rotating shifts (Jamal & Baba, 1997). Shift work, especially night work, has been found to be a risk factor for cardiovascular disease (Boggild & Knutsson, 1999). Parkes (2003) found that, in general, dayworkers reported more favorable perceptions of their work environment than did shift workers. However, she also found that differences in the work environment (i.e., onshore versus offshore) between dayworkers and shift workers were a moderator in these relationships. She argued that the organizational setting in which work routines are similar for dayworkers and shift workers, and in which all resources are available to both groups, might reduce the negative perceptions associated with shift work. Several factors may explain the relationship between shift work and health concerns, including the employee’s ability to adjust to differing schedules and the supportive nature of the employee’s family. Additional research that can separate out these effects is needed before we can make a clear statement about the relationship between full-time versus part-time workers and working shifts on employee stress and health. One factor that does appear to be important in promoting health in employees is whether the work arrangements are voluntary.

In a review of the research on work arrangements, Barling and colleagues reviewed several important work arrangements, including temporary workers, job sharing, shift work, full-time versus part-time work, and seasonal and migrant employment (Barling et al., 2002). They concluded that psychological well-being depends less on the nature of the work arrangement and more on whether the arrangement was voluntary or not. Being able to choose or have some control over work arrangements is a very important factor in the ability to handle job stressors and the health and well-being of employees.

Given that organizational work hours and schedules have the potential to be stressful to many workers, perhaps recruiting individuals who are comfortable with less traditional schedules might help ensure a long and effective employment relationship. One way to recruit workers who have an understanding of the employment environment is through realistic job previews (RJPs). The basic argument is that job applicants will be better able to make informed decisions about whether or not to pursue a job opportunity if they have a clear idea about the job and job environment. RJPs give applicants a sense of realism for positive and negative aspects of the job and job environment that (a) might reduce the number of applicants who remain interested in the job but (b) increase the retention of those workers who are hired (Wanous, 1980). However, some empirical research (i.e., Bretz & Judge, 1998) suggests that RJPs may have too many opportunity costs for the organization because the highest-quality applicants may be less willing to pursue jobs for which negative information has been presented. Clearly, organizations need to be honest about the actual job; however, emphasizing the negative aspects of the job may hurt recruiting, especially with high-quality applicants.

### Job-Level Stressors

Job and role stressors such as role conflict, role ambiguity, and role overload (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964) have long been known to contribute to the stress experience. Role conflict occurs when employees’ expectations are incongruent with those expressed by

their role senders. Communication by those in authority of work expectations that are largely incompatible with those understood and internalized by employees may increase the likelihood of burnout. Role ambiguity is related to the amount of predictability in the work environment; thus, experienced stress may be more prevalent in situations in which employees are uncertain about their work goals and the means available for accomplishing them. Role overload, qualitative and quantitative, can contribute to the experience of burnout. Workers may experience qualitative overload if they feel deficient in the basic skills necessary for effective task completion. Quantitative overload is characterized by the belief that one's work cannot be completed in the time allotted. Employees may experience stress if they perceive that they cannot successfully complete their work because of lack of skill, lack of time, or both. Vandenberg and colleagues have argued how occupational stress research has consistently demonstrated the deleterious effects of role stressors on occupational strain outcomes such as burnout, dissatisfaction, decreased performance, and psychophysiological responses such as increased heart rate and blood pressure (Vandenberg, Park, DeJoy, Wilson, & Griffin-Blake, 2002).

Perhaps one of the most well-known and historical conceptualizations of job stress is that of Karasek's (1979) Demands-Control model. Karasek suggested that heavy job demands, coupled with a lack of control, are associated with strain and job dissatisfaction. This is because control provides individuals with the confidence and efficacy to perceive and interpret their task environment in nonthreatening ways, thereby neutralizing the potentially dysfunctional effects of job demands (Theorell, 2004). Job demands refer to the physical, psychological, organizational, or social aspects of the job that require sustained physical and/or psychological costs. Stress research examining job demands and resources (e.g., control) have found that job demands can result in resource loss because they initiate a job strain process (Bakker & Demerouti, 2007).

Accordingly, research would suggest that organizations should balance the job demands placed on the individual employee with the discretion permitted to the worker in order for the employee to cope with the heightened expectations of these demands. Implicitly, demands can increase with little or no threat to the individual's psychological strain as long as appropriately adequate levels of job control are maintained (Mauno, Kinnunen, & Ruokolainen, 2007). Of course, the employee must have the personal (e.g., resilience) and/or organizational (e.g., autonomy) resources to cope with the job demands. Furthermore, if the job demands are perceived to be unreasonably high, this is another employee health concern because sustained demands may actually reduce employees' perceptions of control at work (Bakker & Demerouti, 2007).

Finally, the need for adaptable workers has become increasingly important, as today's organizations are characterized by changing, dynamic, and sometimes turbulent environments (Ilgen & Pulakos, 1999). Employees need to be adaptable, flexible, and tolerant of uncertainty to perform effectively (Pulakos, Arad, Donovan, & Plamondon, 2000). Employee adaptability encompasses a wide variety of behaviors including handling emergencies or crisis situations, handling work stress, dealing with uncertainty, and learning new technologies and procedures (Pulakos et al., 2000). The question is how can managers select adaptable workers or train workers to be adaptable?

Given the various types of adaptable behaviors, it might not be possible to select or train workers to be adaptable on all aspects of their performance; however, we may be able to offer some general guidelines for selection and training. First, research has shown some evidence that certain personalities might be more (or less) adaptive. For example, LePine, Colquitt, and Erez (2000) examined the effects of conscientiousness on decision making before and after unforeseen changes in a task context and found that individuals who are higher in conscientiousness do not adapt quickly to change. Of course, a plethora of research demonstrates that conscientious employees perform at very high levels (e.g., Barrick & Mount, 1991; Wallace & Vodanovich, 2003). Thus, managers may want to consider how the work environment (e.g., dynamic and constantly changing) might affect employees' health differentially. Employees may be performing well in the short-term, but this performance may come at a cost to employees' health and well-being. Much more research is needed on personality profiles (i.e., examining several personality dimensions in conjunction with one another) before selecting employees based on personality is warranted. This will be discussed in more detail in a later section.

Second, managers may want to consider prior experience in adaptability as a selection criterion. Research has long demonstrated that one of the best predictors of future performance is past performance (e.g., Wernimont & Campbell, 1968). Biodata instruments that emphasize prior experiences with crises and emergencies may prove to be an effective means of selection (cf. Pulakos et al., 2000). Furthermore, training employees to be more adaptive by exposing them to various unpredictable situations in a training setting that they might be expected to encounter in the work setting may prepare workers to be more adaptive and creative. Finally, organizations that customize resource-based interventions to their specific employees and resources relevant to their employees' work contexts likely will prove helpful in bolstering employees' resources (Baumeister & Alghamdi, 2015).

### Interpersonal Relationships

Employees require specific job resources (e.g., social support) to successfully navigate stressful work environments while maintaining psychological health. To date, social support has attracted the most extensive amount of investigation in the interpersonal domain, and findings consistently support the idea that a lack of support from coworkers and supervisors is highly correlated with increases in occupational stress and burnout (Maslach, Schaufeli, & Leiter, 2001). Work environments that fail to support emotional exchange and instrumental assistance may exacerbate strain by isolating employees from each other and discouraging socially supportive interactions. Workplaces characterized by conflict, frustration, and hostility may have the same effect. Besides a general lack of social support, we focus on two additional types of interpersonal stressors commonly found in the workplace—abusive supervision and perceptions of politics. We also examine how having political skill can help alleviate some of the negative effects from interpersonal stressors.

Abusive supervision is one of the most detrimental interpersonal stressors found in the workplace. Abusive supervision reflects subordinates' perceptions of negative and hostile verbal and nonverbal leader behaviors (Tepper, 2007). Behaviors include public criticism, yelling, rudeness, bullying, coercion, and blaming subordinates for mistakes they did not make (Burton & Hoobler, 2006).

Research indicates that abused subordinates are less satisfied with their jobs, less committed to their organizations, and more likely to display turnover intentions than are nonabused subordinates (Schat, Desmarais, & Kelloway, 2006). Employees consider abusive supervision to be a source of stress and injustice in the workplace that has the potential to influence their attitudes, psychological distress, and physical well-being (Tepper, 2007).

If employees believe their behaviors have no bearing on the accrual of desired outcomes, then their sense of volition is weakened (Greenberger & Strasser, 1986), and many researchers believe that perceptions are more powerful predictors of functioning than actual control (Burger, 1989). This distinction is critical because individuals' perceived control influences their behaviors and emotions, regardless of the actual control conditions contributing to these perceptions. Work environment factors such as regulated administration, available help, and feedback influence perceived control. Not surprisingly, research suggests that supervisors may engage in abuse to protect their own sense of power and control over work situations (Tepper, Duffy, Henle, & Lambert, 2006), thus limiting that of their employees. Supervisors who behave in an abusive way toward subordinates have been found to lead to more experienced stress (Tepper, 2007) and reduced psychological and physical well-being for employees (Grandey et al., 2007).

Another well-researched interpersonal-level stressor is organizational politics. Organizations have long been considered political arenas, and the study of organizational politics has been a popular topic for many years. Mintzberg (1983) defined politics as an individual or group behavior that is typically disruptive, illegitimate, and not approved of by formal authority, accepted ideology, or certified expertise. Organizations, indeed, can be viewed as political arenas, where informal negotiation and bargaining, deal-making, favor-doing, quid-pro-quo interactions, and coalition and alliance building characterize the way things really get done. Environmental

circumstances, such as perceptions of organizational politics, can be thought of as work demands, which are potential sources of stress because they threaten or cause a depletion of the resources individuals possess.

Over the past three decades, research examining the relationship between organizational politics and job stress has flourished, with empirical research demonstrating that politics and the ability to manage politics (e.g., political skill) have direct as well as moderating effects on stress-related outcomes, including job anxiety and tension, helplessness, victimization, burnout, depression, and diminished control over personal outcomes (e.g., Chang, Rosen, & Levy, 2009; Perrewé et al., 2004). Thus, research indicates that workplace politics are a significant concern and source of stress for many workers.

What we know less about are the characteristics that enable one to exercise influence in ways that lead to success in political work environments. Some have referred to such qualities as interpersonal style, “savvy,” “street smarts,” and “political skill” (e.g., Reardon, 2000). Research has demonstrated how different forms of personal control (e.g., interpersonal social skill or political skill) can mitigate the negative effects of job stressors. Political skill is the ability to effectively understand others at work and to use such knowledge to influence others to act in ways that enhance one’s personal and/or organizational goals (Ferris et al., 2007).

Politically skilled individuals are socially astute and keenly aware of the need to deal differently with different situations and people. Therefore, they reflect the capacity to adjust their behavior to different and changing situational demands (i.e., self-monitoring) in a sincere and trustworthy manner. It has been suggested that political skill generates an increased sense of self-confidence and personal security because politically skilled individuals experience a greater degree of interpersonal control, or control over activities that take place in social interactions at work (Perrewé et al., 2005). Furthermore, greater self-confidence and control lead individuals to interpret workplace stressors in different ways, resulting in such individuals experiencing significantly less strain/anxiety at work (Kanter, 2004). Consistent with this argument, Perrewé et al. (2004) found that political skill neutralized the negative effects of role conflict on psychological anxiety, somatic complaints, and physiological strain (i.e., heart rate, systolic and diastolic blood pressure) and that political skill moderated the role overload–strain relationship in a similar manner (Perrewé et al., 2005). Recently, Rosen and Ganster concluded that political skill can help mitigate the negative effects of workplace stressors (e.g., organizational politics), such that stressors have less of a negative impact on employee psychological as well as physiological health outcomes (Rosen & Ganster, 2014). The important message is that personal control, such as believing one has the political skill to successfully navigate his or her work environment, appears to play a fairly significant role in buffering the negative effects of work stressors. On the other hand, a lack of personal control may exacerbate the stressor-strain relationship, or it may even be perceived as a stressor itself.

Given the importance of political skill, we recommend organizations consider this an important attribute in employee selection and training. Political skill is an individual characteristic that can be learned and developed (Ferris, Davidson, & Perrewé, 2005). Today’s training, more than ever before, needs to be compelling, realistic, practical, relevant, and lasting. In addition, training should encourage risk taking and facilitate improved awareness and behavioral flexibility. Assessment centers that include simulations and drama-based training may be viable options for political skill development (see Ferris et al., 2005, for a more in-depth discussion of developing political skill). Drama-based training is a training model that includes lifelike simulations for participants to practice managing complex human interactions in a safe and controlled learning environment (St. George, Schwager, & Canavan, 2000), and, as such, it provides a useful vehicle to shape and develop various social skills.

Furthermore, assigning individuals to work with skilled mentors is another important way to develop influence skills. Individuals can observe professionals in real work situations as they exercise influence in meetings with subordinates and peers. Language, facial expressions, body posture, and gestures will convey messages to observers as to how influence is best exercised. The key is to be sure that individuals are assigned to talented and understanding mentors who have plenty of social influence interactions and are given plenty of opportunities to discuss various social influence interactions encountered.



## Personal Characteristics

Although various aspects of the external environment play a critical role in the experience of stress and burnout, specific personal characteristics may lead some individuals to be more likely than others to experience strain in the same environment. The evidence on individual differences, such as personality differences, suggests that certain individuals are more prone to strain than others. The Five-Factor Model, or “Big Five” model of personality, has been extensively examined in the organizational context over the past decade. Although some disagreement exists over the appropriate names for the five factors, most would agree that the Five-Factor Model consists of five broad dimensions of personality: extraversion, neuroticism, conscientiousness, agreeableness, and openness to experience. Research using this typology indicates that individuals who are high in neuroticism are more likely to experience stress and burnout (Zellars & Perrewé, 2001). Furthermore, those with extraversion, agreeableness, and openness to experience are less likely to experience stress (Zellars, Perrewé, & Hochwarter, 2000). In a review of the role of personality in organizations, Perrewé and Spector (2002) discussed how Type A behavior pattern and negative affectivity have been shown to have positive associations with experienced stress and negative associations with health and well-being. In addition, individuals with a high internal locus of control experience strain less than individuals with high external locus of control.

Individuals high in conscientiousness are described as efficient, diligent, thorough, hard-working, persevering, and ambitious (e.g., McCrae & John, 1992). Conscientiousness has been related to a number of positive work outcomes, such as organizational citizenship behaviors (Borman & Penner, 2001), job performance (Barrick & Mount, 1991), workplace safety performance (Wallace & Vodanovich, 2003), and intrinsic and extrinsic career success (Judge, Higgins, Thoresen, & Barrick, 1999). However, more research is needed on personality before selecting employees based on personality for their ability to perform well and/or cope with stressful work environments is warranted. For example, conscientiousness had a negative relationship with decision quality after an unanticipated change, which suggests that conscientious people do not adapt quickly to change (LePine et al., 2000). Thus, we do not recommend selecting (or not selecting) employees on the basis of one personality dimension (e.g., conscientiousness) alone. Perhaps future research should examine a more holistic approach to personality by looking at several combinations of personality dimensions (i.e., personality profiles) and the relationship with important outcomes, such as coping with stressful situations and job performance. For example, research has found that conscientiousness, when coupled with positive affectivity (i.e., the dispositional tendency to experience positive emotions across situations and time), resulted in the lowest levels of reported job tension (Zellars, Perrewé, Hochwarter, & Anderson, 2006). Furthermore, the individual difference variables of perceived control, optimistic orientation, and self-esteem are highly correlated variables and, together, form a hardy or “resilient personality” (Major, Richards, Cooper, Cozzarelli, & Zubek, 1998) that can help workers adapt to change and cope with work stressors. Although a comprehensive examination of personality is beyond the scope of this chapter, personality clearly has the potential to be a powerful selection tool. However, additional research is critical before confident predictions about workers’ ability to handles stressors and adaptable performance can be made.

In addition to personality characteristics, simple demographic differences have been shown to have an association with experienced stress. We focus on two demographic characteristics that have been found to have some relation with occupational stress—specifically, age and gender. Research has demonstrated that younger employees consistently report a higher level of burnout (Maslach et al., 2001). Some researchers suggest that older employees experience lower levels of burnout because they have shifted their own expectations to fit reality on the basis of their personal experiences (Cordes & Dougherty, 1993). These findings suggest that older, more experienced employees are better able to handle the demands of stressful work environments. Or alternatively, the findings regarding older workers may reflect that they have passed some critical threshold of burnout that would trigger turnover; that is, they may handle stressful environments by altering their perceptions and reducing their expectations of what is possible



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in terms of career accomplishment or satisfaction. High expectations and unmet expectations can encourage increased levels of burnout (Cordes & Dougherty, 1993). Younger employees tend to be more idealistic and thus may react more intensely when their overly optimistic career expectations are shattered.

On the other hand, younger workers have been shown to respond more positively to some workplace stressors—specifically, perceptions of organizational politics. Results across three studies demonstrated that increases in politics perceptions were associated with decreased job performance for older employees and that younger employees achieved higher performance scores when perceptions of politics were high (Treadway et al., 2005).

In regard to gender, stress can result from feelings of discrimination in a male-dominated work environment (Sullivan & Mainiero, 2007). First, much literature suggests that working women are more likely to experience stress on the basis of being female (see Powell & Graves, 2003). Being employed in a male-dominated work environment is a cause for stress, because the norms, values, and expectations of the male-dominated culture are uniquely different (Maier, 1999). Furthermore, women in male-dominated environments are more likely to face certain stressors such as sexual harassment and discrimination (Nelson & Burke, 2000).

Gender does not appear to be a strong predictor of preferred work hours (Jacobs & Gerson, 2004). Family circumstances are more important than gender in predicting preferred work hours (Barnett, 2006); specifically, women and men with young children want more time away from work than do other groups. Although women with young children cut back on their time at paid work more so than do men, they do so to a smaller extent than in previous generations. Jacobs and Gerson (2004) found little support for the popular belief that married women with young children are the primary group wishing to work less, and they state that “About half of married men and women across a range of family situations express such a desire” (p. 73). Selecting employees on the basis of personality, gender, or age is not recommended. What is encouraged is setting realistic expectations for career advancement, allowing flexibility and control in work schedules, and training opportunities for all employees. It is important for managers to understand the entire person (not just the employee) and to help employees achieve a balance in their work and non-work lives.

## Work and Non-work Interface

The examination of the work and non-work interface is one of the most critical challenges organizations and individuals face today. Research on the work-family or work and non-work interface typically focuses on the antecedents and consequences of work-family conflict. In a meta-analysis of more than 60 studies, Byron (2005) identified the most common work and family domain antecedents of work-family conflict. Work domain antecedents included job involvement, hours spent at work, work support, schedule flexibility, and job stress. Family domain antecedents included family/non-work involvement, hours spent in non-work, family support, family stress, family conflict, number of children, the age of youngest child, marital status, and spousal employment. Research has demonstrated that job stress, family stress, and work-family conflict are all related to each other bi-directionally, which underlines the reciprocal nature of family interference with work and work interference with family (Frone, 2003).

This emphasizes the importance of better understanding how stressful events at home (work), such as psychological bullying, impact workplace (home) attitudes and behavior. Based on decades of research, Frone (2003) argued that both work interfering with family and family interfering with work were positively related to individuals’ anxiety, negative moods, and substance abuse disorders. The consequences of work-family conflict have been linked to both physical and psychological outcomes such as depression, physical health complaints, and hypertension (Frone, 2003). Work-family conflict has been linked to lower job satisfaction, greater turnover intentions, lower perceived career success, lower career satisfaction, and lower family satisfaction (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). When the experienced stress from work affects the non-work domain (and vice versa), this has been termed ‘spillover’. When

the experienced stress from work for one person affects the experienced stress of another person, this has been termed ‘crossover’.

Spillover theory describes a process by which feelings, attitudes, and behaviors spill over from one role to another for the same individual (Piotrkowski, 1979), and it has been used to describe the transference of moods, skills, values, and behaviors from one role to another (Carlson, Kacmar, Wayne, & Grzywacz, 2006). Stress spillover, a form of stress contagion, occurs when stress experienced in one domain of life results in stress in another domain for the same individual (Edwards & Rothbard, 2000).

Previous research on the work-family interface has shown that work stressors (e.g., abusive supervision) are linked to work interference with family (Carlson, Ferguson, Perrewé, & Whitten, 2011). Carlson et al. (2011) found that abusive supervision had detrimental effects not only on the subordinates at home (i.e., spillover) but also on their partners (i.e., crossover). Thus, when an employee experiences stress from work, this may spill over into his or her family life, affecting both the employee as well as the employee’s partner. Furthermore, recent research has demonstrated that partner aggression at home affected employee job withdrawal as well as performance (LeBlanc, Barling, & Turner, 2014). As stress researchers have long acknowledged (and continue to find), the work domain is not independent of the other domains in employees’ lives. The work-life interface continues to be an important area of inquiry.

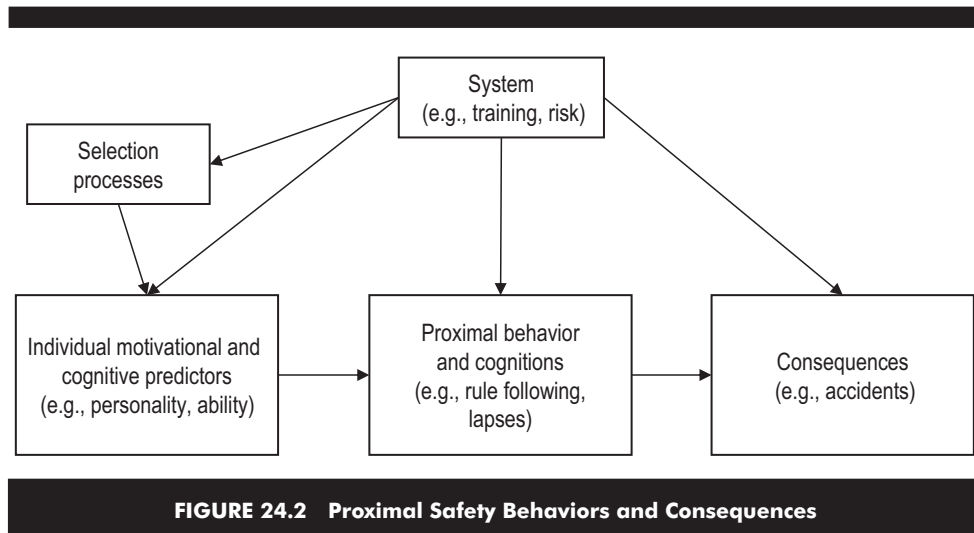
### Summary of Work Stress

In this section, we examined organizational-, job-, interpersonal-, and personal-level predictors of experienced work stress. Furthermore, we examined the interface between work and non-work such as spillover and crossover. Although we examined several personal characteristics that have been associated with higher levels of experienced stress, the selection of “strain-resistant” individuals into organizations is not necessarily recommended. Just as environmental conditions can affect employees, employees can adapt to and change their environments to make the work situation less stressful. Given the complexity and reciprocal effects of individuals and their environments, we do not have enough empirical findings to be confident that certain individuals are strain-resistant in all situations. Furthermore, efforts to recruit and select strain-resistant individuals do little to help existing employees. For most organizations, strain prevention programs, such as the wellness programs discussed earlier, may be useful. Such programs can be used to teach individuals how to identify stressors and modify their coping strategies. Specific training strategies include specific goals to provide more realistic expectations of work, better time management strategies, facilitation of social support, simulation and drama-based training, and developing social networking skills through mentoring.

### OCCUPATIONAL SAFETY

Accidents and injuries at work are costly for individuals and organizations, and avoiding severe accidents is an essential priority for all organizations. Therefore, it is not surprising that considerable attention is paid to factors that might influence whether an individual is involved in an accident. Sanders and McCormick (1987) identified selection as one of the key strategies used to reduce human error in addition to training and job design.

Despite the popularity of selection systems to manage safety, there is limited evidence for the effectiveness of selection for improving organizational safety, particularly when implemented in isolation from other interventions to improve safety. Guastello (1993) conducted a meta-analytic review of accident prevention programs and found that personnel selection programs had a relatively weak relationship with accident rates. He found that although individual selection practices were the most common type of accident reduction programs used, they had the least effective outcome compared with 10 types of intervention. Sanders and McCormick (1987) considered work design to be a more effective approach to improving safety compared with



**FIGURE 24.2 Proximal Safety Behaviors and Consequences**

selection because it requires less ongoing maintenance and support. Moreover, they argued it is easier to limit the occurrence of human errors by making them impossible, difficult, or inconsequential through work design rather than relying on changing and managing individuals.

There is substantial agreement among researchers that safety needs to be considered from a systemic perspective that includes factors at the individual, micro-organizational, and macro-organizational level (Hofmann, Jacobs, & Landy, 1995). Vredenburg (2002) found that selection practices were effective as part of a broader proactive strategy of recruiting and training safety-conscious individuals. However, focusing solely on individual causes is not sufficient for understanding safety at work. Some researchers suggest that selection practices designed to improve safety will be less important than training and design interventions, which have a more systemic and wide-ranging impact on safety (Lawton & Parker, 1998).

Figure 24.2 depicts how selection processes can be situated within a larger systemic framework that includes other systems (e.g., training) while focusing on individual differences and behavior. The goal of selection is to identify individual characteristics that might influence individual behavior and cognition, which, in turn, might influence consequences such as accidents in an organization. The figure also shows that systemic factors might shape any aspect of the causal chain from individual differences to consequences. In a safety context, these systemic factors have been conceptualized in terms such as “latent failures.” They represent the impact of managerial and organizational processes on safety outcomes.

With the above considerations in mind, our review will focus on the role of selection within a broader context. We begin by looking more closely at the meaning of safety as a criterion construct.

## Safety Criteria and Safety Systems

Like other topics in this chapter, the criterion of interest is complex and conceptually problematic. Safe working can be viewed as the presence of safe behaviors (e.g., following correct procedures) or the absence of unsafe ones (e.g., avoiding errors). In addition, the criterion of safe behavior is often not clearly distinguished from its consequences, such as personal injury. For example, much of the research investigating individual differences and safety focuses on the prediction of accidents reported by the organization. However, accidents might be determined by a range of situational factors beyond the proximal behavior of the individual. We emphasize the distinction between accidents and more proximal behaviors in Figure 24.2. These proximal

behaviors include individual actions such as slips that might lead to accident and injury, as well as positive behaviors such as using safety equipment that might reduce accidents and injury. Next, we review the literature predicting accidents at work and then consider the prediction of individual behavior more proximally associated with accidents.

### Predicting Workplace Accidents

It is estimated that at least 80% of accidents are the result of some kind of human error (Hale & Glendon, 1987). Accidents have been the main focus of much safety research, including that related to selection. However, the notion of accidents is a broad and limiting criterion for selection. Accidents are a broad criterion because they range from minor falls to events that result in death. Accidents are a limiting criterion because they do not include important events such as narrowly missing a serious injury. Accidents are also constrained as a criterion because of problems in recording and reporting these events, as discussed later in this section.

Despite these concerns with accidents and injury as criteria for evaluating selection practices, they remain the most commonly used measure of safety outcomes. Therefore, we first review evidence for selection methods and measures that reduce accident outcomes. Many reviews of safety also include road accidents and injuries as part of their measurement. However, we exclude studies of road safety unless they specifically incorporate the work context.

There is a long history of research seeking to identify factors that predict whether individuals will experience a work accident. The most often-studied attribute—and perhaps least successful—has been the search for an “accident-prone” individual. Despite the popularity of this idea, there is little consistency in the findings from research. Glendon and McKenna (1995) concluded that it is impossible to define a stable profile that identifies an accident-prone individual. Overall, there is little evidence that an accident-prone personality can be identified that distinguishes employees who have accidents from those who do not (Lawton & Parker, 1998).

Beyond the search for a general personality type who is prone to accidents, there is growing evidence to link more specific dispositions and behavioral orientations to safety outcomes. Research into specific traits is producing a more complex picture of the way individual differences relate to safety, and a wide range of personality dimensions has been investigated as potential antecedents of accidents and injury. Dimensions of the Big Five categorization of personality traits have received the most attention. Clarke and Robertson's (2005) meta-analysis of studies involving workplace and motor vehicle accidents showed that low conscientiousness (nine studies) and low agreeableness (seven studies) were associated with more individual accidents in the workplace studies. In an updated meta-analysis, Clarke and Robertson (2008) found that low agreeableness was the personality trait most consistently linked to higher workplace accidents. The other four personality dimensions were also linked to accidents, although the effects were more variable and showed stronger evidence of moderation by unmeasured variables.

More recently, a meta-analysis by Beus, Dhanani, and McCord (2015) also showed significant links between the Big Five dimensions and accidents, with only extraversion having 95% confidence interval that included zero. The results also showed that the effect sizes for personality dimensions were smaller than those for situational measures of safety climate. This study extended previous meta-analyses by including safety behaviors and facets of the Big Five dimensions. Similarly, Christian, Bradley, Wallace, Burke, and Spears (2009) investigated the meta-analytic link between personality and accidents as part of a broader model linking proximal and distal antecedents to safety outcomes via safety behavior. We discuss implications of these findings in the next section on predicting safety behavior.

Trait affectivity has also been considered as a broad personality dimension that might predict accidents and injury. Iverson and Erwin (1997) found trait positive affectivity and trait negative affectivity were related to accidents one year later after controlling for a range of job conditions. Although they did not control for stability in these characteristics, the design was stronger than many in this area. They suggested that extraversion factors such as overconfidence and intolerance were associated with risk taking, and neuroticism factors such as anxiety and indecision were associated with task distractibility. Frone (1998) found negative affectivity but not

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rebelliousness and impulsivity to be related to accidents. However, this relationship disappeared after taking account of physical hazards and workload.

Outside of the Big Five and trait affectivity, Guastello (1993) found that predictors associated with maladjustment did show a positive relationship with lower accidents. Two types of maladjustment were considered. *Personal maladjustment* was based on measures such as distractibility and tension. *Social maladjustment* was based on measures such as safety locus of control. Studies of impulsivity, alcohol use, and drug use showed no significant relationships with accidents. Liao, Arvey, Butler, and Nutting (2001) found psychopathic deviant and conversion hysteria scales of the Minnesota Multiphasic Personality Inventory (MMPI) were associated with a higher frequency of injuries in a prospective study of firefighters. They also found social introversion to be associated with injury rates (Liao et al., 2001, p. 231, for a review of MMPI types). Conversion hysteria was based on patients who exhibited some sensory or motor disorder. Psychopathic deviants were more likely to act on impulse or ignore rules. Finally, locus of control has been identified in some studies as being related to accidents; however, research in this area is inconsistent and inconclusive (see Lawton & Parker, 1998).

A range of demographic factors and job types has been linked to accidents. Adolescents represent the age group with the highest risk for nonfatal accident and injury (Frone, 1998). A concurrent study of adolescents found work injuries were associated with gender, negative affectivity, job tenure, and exposure to physical hazards, excessive workloads, job boredom, poor physical health, and on-the-job substance abuse (Frone, 1998). Liao et al. (2001) found female firefighters experienced more injuries than males, although the reason for this difference was uncertain (Liao et al., 2001). Studies of general mental ability have been contradictory (see Hansen, 1989, for a review). Physical abilities such as strength and flexibility can be valid predictors of performance in hazardous work environments and so might be used to predict safety outcomes (Hogan & Lesser, 1996). Readers are referred to Gebhardt and Baker's Chapter 12 in this volume for more discussion on use of physical abilities tests in selection systems for arduous jobs.

## Predicting Safety Behaviors

Beyond accidents as a criterion, it is important to consider how selection procedures might predict the specific safety behaviors that precede accidents and near misses, or that increase the potential for accidents to occur. Recent meta-analyses have combined studies of behavior and accidents to investigate mediational models of accident causation consistent with Figure 24.2. The meta-analysis by Beus et al. (2015) found that safety behaviors partially mediated the link between personality and work accidents. These authors had hypothesized full mediation, and they speculated partial mediation was found because personality measures also include behavioral descriptors that might not be captured in the measures of safety behavior. Christian et al. (2009) found that safety behavior fully mediated the link between conscientiousness and accidents.

To review the role of safety behavior in more detail, we build on a distinction between safety compliance and safety participation that has been developed in the general area of occupational health and safety (Griffin & Neal, 2000). Most meta-analytic studies have combined different aspects of safety performance into a single performance measure. However, individual studies suggest important distinctions between these aspects of behavior and have elaborated further distinctions that are important in a variety of safety contexts (Curcuruto, Conchie, Mariani, & Violante, 2015). Safety compliance refers to behaviors such as using correct safety procedures and equipment and complying with safety regulation. These behaviors contribute to safety outcomes associated with an employee's core task activities. Safety participation refers to behaviors such as participating in safety meetings, communicating safety issues to others, and suggesting ideas for improving organization. These behaviors support the broader organizational context of safety rather than the safety of the individual or the specific task.

Cognitive and motivational antecedents influence safety compliance and safety participation. Cognitive processes include the knowledge to carry out the tasks, understanding the consequences of actions, and attending to important events (Christian et al., 2009). Motivational



processes describe the willingness to engage in a specific behavior. It is possible that cognitive processes are more important for safety compliance, whereas motivational processes are more important for safety participation (Motowidlo, Borman, & Schmit, 1997). However, there is little empirical evidence for this proposition at this stage, and both cognitive and motivational predictors should be considered for safety compliance and safety participation. We review some of the cognitive and motivational predictors that might be useful for selection of safety compliance and safety participation next.

### Safety Compliance

Behaviors associated with safety compliance include vigilance, perseverance, and accurately following procedures. Tests for vigilance can provide information about the extent to which individuals are able to maintain attention. For example, in critical medical contexts, the ability to maintain vigilant scanning might be an important element of safety behavior (Subramanian, Kumar, & Yauger, 1994). Mindfulness has received a great deal of attention in the workplace and has been proposed to support safe working behaviors. Zhang, Ding, Li, and Wu (2013) found employees with higher levels of trait mindfulness were more likely to show higher levels of awareness and attention and to perform work more safely, particularly when tasks were more complex.

Persevering with safety compliance requires maintenance of effort over time. Conscientiousness is a predictor of effort that has been validated for general job performance and linked to accident outcomes (Barrick & Mount, 1991; Clarke & Robertson, 2005). Conscientiousness should play an important role in sustaining safety compliance. From a different perspective, distractibility or neuroticism can reduce an individual's ability to maintain consistent effort over time (Hansen, 1989).

Avoiding errors and mistakes is important for safety compliance. Errors of execution and action (e.g., slips, lapses, trips) and procedural mistakes are more likely to arise from attention failures. Several cognitive processes have been linked to attention failures and the situational awareness required for scanning and responding to the work environment (Carretta, Perry, & Ree, 1996). Cognitive failure (Simpson, Wadsworth, Moss, & Smith, 2005) and safety consciousness (Westaby & Lee, 2003) describe the way individuals pay attention to the safety requirements of the work environment, and selection activities can assess the degree to which individuals are able to demonstrate these capacities. On the other hand, knowledge-based mistakes occur when an individual lacks the appropriate information to perform correctly. For these types of mistakes, safety knowledge is likely to be a more important predictor (Hofmann et al., 1995).

Finally, it is important to consider deliberate noncompliance with safety requirements. Integrity tests have shown validity for predicting organizationally counterproductive behaviors such as rule-breaking and dishonesty (Casillas, Robbins, McKinniss, Postlethwaite, & Oh, 2009).

### Safety Participation

The behaviors that make up safety participation have received less attention than safety compliance behaviors in terms of personnel selection. Participation supports the overall safety context and includes behaviors such as encouraging the safety of others, contributing to safety initiatives, and proactively supporting change in safety practices. By definition, these behaviors often go beyond individual core task requirements and may be discretionary in some jobs. Standard job analysis practices that focus on individual task performance are therefore less likely to articulate the behaviors that are important for safety participation.

Selection for these behaviors requires consideration of the broader context and its constraints. For example, Yuan, Li, and Lin (2014) found that dispositional core self-evaluation, a personality trait involving a sense of efficacy and control (Judge, Locke, & Durham, 1997), moderated the negative impact of work stress on safety behavior. The ability to communicate

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safety concerns with others and encourage safety compliance of team members might be critical where teams work in high-risk environments. Validity evidence from personality testing suggests that extraversion can predict performance in jobs requiring social interaction (Barrick & Mount, 1991). To date, research has focused on contextual factors that motivate these behaviors, such as leadership (Barling, Loughlin, & Kelloway, 2002) and job conditions (Probst & Brubaker, 2001). Organizations that can articulate the nature of safety participation in their specific context will be better able to identify potential individual predictors of these activities.

## Summary of Safety

In summary, our review suggests that selection can play a part in a safer work environment, but its role is complex. Many of the attributes required are trainable or are strongly influenced by the organizational environment. Methodological limitations, such as the use of concurrent designs, reduce the ability of many safety studies to inform selection systems. However, an equally important concern is the degree to which theory is used to explain the behaviors that constitute the criterion domain of work safety. There is now a growing body of theory and evidence linking individual differences in factors such as agreeableness to safety outcomes such as accidents, via specific safety-related behaviors. There is also good evidence about the way organizational factors, such as training and safety climate, might modify these links. Further theoretical development about the way individual differences contribute to safety outcomes within different organizational systems will enhance the role that can be played by selection procedures.

## CONCLUSIONS

In the three sections of this chapter, we have examined correlates of employee health, work stress, and safety. On the basis of the literature, there appear to be consistent findings that workplace factors can enhance the health and safety of employees. Also, some relatively stable individual characteristics have been found to be related to stress, resilience, safety compliance, and safety participation. Unfortunately, the empirical literature has not generally considered workplace factors and individual characteristics jointly to evaluate potential interactions between person characteristics and environmental factors or the relative contribution of each in predicting health, stress, and safety. Many of the theoretical perspectives relative to occupational safety and health including stress have not specifically taken an interactional perspective and tend to focus on situational factors or personal characteristics.

Although there is support for the effects of some relatively stable individual characteristics that might be useful for selection purposes in creating and maintaining a healthy workforce and a healthy work environment, the current empirical evidence is not strong, and there are potential legal ramifications in using some of these characteristics in selection systems. It is possible that given certain contexts, selection based on individual characteristics may have utility. However, the literature as a whole appears to currently favor workplace interventions as more effective compared with selection.

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