CHAPTER

29 Counseling Psychology and Occupational Health Psychology

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Abstract

Given its historical roots in vocational psychology and its current emphases on multiculturalism, positive psychology and social justice, counseling psychology is uniquely poised to contribute to the emerging, interdisciplinary field of occupational health psychology (OHP). Despite a halving of work-related injury rates in recent decades, work remains the sixth leading cause of death in the United States. The goal of OHP is to protect and promote the health of workers and of their families, and to improve the quality of work life. Occupational health psychology has a threefold focus on the work environment, the individual worker, and the interface between work and family. Specific topics that OHP is attempting to address include work-related stress; occupational health disparities related to gender, age, ethnicity or race, work–family interface; increasing intervention effectiveness; improving safety climate; job design; and work organization.

Keywords: Occupational health psychology, work stress, occupational health disparities, burnout, safety climate, work–family interface, person–environment fit

As a field, counseling psychology never seems afraid to take on big challenges. This should not be surprising, given its roots in Frank Parsons' visionary efforts to improve the lives of the huge cohort of recent immigrants to the United States at the turn of the 20th century. In subsequent decades, counseling psychology repeatedly proved itself robust and relevant enough to successfully contribute to addressing emergent social concerns including the Great Depression, the Civil Rights Movement, Women's Liberation and Gay Pride—not to mention the world wars.

The current breadth of counseling psychology applications may be seen in Bingham's (2001) categorization of the field around four core themes: vocational psychology, positive psychology, multicultural psychology, and social justice. Positive psychology, multicultural psychology, and social justice are frequently viewed as more recent structures built upon the foundation of vocational psychology. However, if one looks at the intent of the founders of the field (allowing for differences in terminology), vocational psychology, positive psychology, multicultural psychology, and social justice were all present from the start and were not viewed as separate themes, but as facets of a common goal—the betterment of the individual and society (Eggerth, 2008). For these founders, work was the powerful vehicle by which self-, economic, political, and social empowerments were attained. Indeed, Frank Parsons, the individual considered by most to be the father of vocational psychology, and therefore a "grandfather" of counseling psychology, was very much concerned with all of these topics (Blustein, McWhirter, & Perry, 2005; O'Brien, 2001). Parsons hoped to improve the overall quality of life of poor immigrant workers and their families by more thoughtfully matching workers with jobs. Careful matching of job skills to employment led to job security and therefore financial security, the foundation upon which all else could be built.

Subsequent generations of vocational psychologists developed more sophisticated tools and models to meet the needs of adult workers. Many of the approaches used in the first college counseling centers were adapted from those developed during the Great Depression to facilitate matching unemployed adults with new jobs. In this first generation of counseling centers, vocational psychologists sought to further empower Parsons' immigrant families by facilitating the success of their children at colleges and universities (Williamson, 1939). The need for the military to classify and train millions of new recruits during World War II provided a huge boost to the development of vocational psychology. These newly developed models and methods were further refined in campus settings as returning servicemen took advantage of G.I. Bill benefits and sought college degrees in unprecedented numbers.

Clearly, during these very productive early decades, meeting the needs of adult workers set the agenda for vocational psychologists. These models were then fruitfully adapted for use with students. However, in subsequent decades, the primary emphasis of the field shifted toward meeting the needs of students, with only indirect consideration of adult workers. For many, vocational psychology is now virtually synonymous with career guidance performed in campus settings. Choosing a college major has become the proxy for an actual job or career.

A number of interconnected factors likely led to this shift in emphasis. Prominent among these factors was the postwar economic boom. Unemployment was low and union membership was at all-time highs—adult workers simply did not need the level of assistance they had in prior decades. At the same time, their children, the demographic bulge of the "baby boom," were working their way through the educational system. Sheer numbers, coupled with an economic prosperity that allowed many to be the first in their families to attend college, greatly increased enrollment at colleges and universities. Civil rights advances opened the doors of higher education to yet more students and further swelled enrollment. It is no wonder that vocational psychology focused on successfully assimilating this mass of new students.

Globalization

In the 1980s, the economic phenomena now referred to as *globalization* first began to adversely impact businesses and workers in industrialized countries. As technology and international agreements increasingly rendered distance and borders less relevant, "First World" manufacturing jobs were shifting to less developed countries. Corporations scrambled to maintain a competitive edge through a flurry of mergers and/or downsizings (National Institute for Occupational Safety and Health; NIOSH, 2002). New management models, such as just-in-time production, lean management, multitasking, outsourcing, and an ever-increasing use of contractors or temporary employees, were embraced. Union membership steadily declined. The bonds of loyalty between employer and worker broke down. Workers no longer expected, nor could realistically expect, to work their entire careers for a single employer. Making a virtue out of necessity, workers were encouraged to view themselves as entrepreneurs who moved frequently from job to job on the road to independence and self-sufficiency.

Although these many changes positively benefited corporate bottom lines, they exacted great costs from workers. Many workers found themselves needing to switch employment, if not careers, often at lower incomes, in their forties and fifties—ages that previously were associated with stable employment and peak earning potential. All of these changes were accompanied by stress, both for workers losing or changing jobs and for those retaining employment, but needing to adapt to new contingencies. Citing the results from several surveys, the National Institute for Occupational Safety and Health (NIOSH; 1999) reported that between 26% and 40% of American workers consider themselves to be very stressed at work.

Work-related stress has now become one of the leading occupational health problems in the United States (NIOSH, 2004). In 2001, workers with anxiety, stress, or neurotic disorders lost a median of 25 workdays, as compared to a median of 6 workdays for all other sources of nonfatal occupational injury and illness. Over 42% of workers with anxiety, stress, or neurotic disorders were away from work more than 30 days, as compared to only 22% of workers suffering from all other sources of occupational injury and illnesses. Clearly, on a case-by-case basis, stress-related disorders have the potential to cost businesses far more than other sources of occupational injury and illness. Of course, these statistics do not even touch upon the "ripple effect" of stress-related disorders on family and friends.

Emergence of Occupational Health Psychology

Although its earliest roots can be traced back a century, occupational health psychology (OHP)

largely emerged, as a discipline, in response to the human costs associated with the changes to work organization and structure that were first implemented in the 1980s and continued through the 1990s to the present (Barling & Griffiths, 2003). Professionals in medicine, public health, and behavioral sciences could not help but to take notice of the accumulative costs of work-related stress upon workers and their families. The term *occupational health psychology* was introduced by Raymond, Wood, and Patrick (1990) in their seminal paper arguing for the creation of doctoral-level training programs that integrated health psychology and public health, and which incorporated elements of occupational medicine, nursing, preventative medicine, behavioral medicine, political science, sociology and business.

The goal of OHP is to improve the quality of work life, and to protect and promote the health of workers and of their families (Quick, 1999). Occupational health psychology is interdisciplinary, involving most areas of psychology and drawing upon fields such as public health, sociology, medicine, and industrial engineering. Occupational health psychology is typically characterized as having a threefold focus on the work environment, the individual worker, and the interface between work and family. Interventions and/or research range across all three levels (primary, secondary, and tertiary) of the public health model of prevention. Although work-related stress continues to be of central interest to OHP, the scope of the field has expanded to address a wide range of behavior interactions and consequences related to reducing the number of workers injured or killed and/or increasing worker well-being. Examples of these areas include worker decision processes concerning the use of personal protective equipment (PPE), such as safety glasses and helmets; the managerial decision processes related to providing PPE and other occupational safety and health (OSH) resources; risk perception and risk acceptance; improving the impact of OSH training and occupational health disparities related to gender, age, ethnicity, or race; the impact of work upon family life in an era during which the barriers between work and home are dissolving; safety climate; and safety culture.

Connecting Counseling Psychology and Occupational Health Psychology

Given its roots in addressing the needs of working adults, it would seem that OHP would be a natural fit for counseling psychology. However, counseling psychology as a whole has been slow to perceive the relevance OHP. In 1992, NIOSH partnered with the American Psychological Association (APA) to develop postdoctoral training in OHP. NIOSH has funded (through APA) the development of OHP training programs at 12 universities across the United States. To date, only one of these programs (University of Minnesota) is based within a counseling psychology program. The other programs are affiliated with industrial/organizational, clinical and/or social psychology programs, schools of public health, and schools of medicine.

Exceptional among counseling psychologists, more than a decade ago in her presidential address to the Society of Counseling Psychology, Jo-Ida Hansen (1995) called for counseling psychology to recognize and address the ever-increasing levels of work stress and ever-decreasing levels of job satisfaction experienced by American workers. Hansen made a clear case for the expanding conceptualization of career guidance beyond mere choice of career and into the realm of ongoing work adjustment by addressing topics such as the impact of corporate restructuring on worker well-being, the work–family interface, and the incursion of work upon leisure time through advances in communication technologies. Hansen called for the development of counseling psychology training programs and research agendas to address these and other occupational health issues. She is a founding member of the Society for Occupational Health Psychology, and it is due to her leadership that the University of Minnesota became the only counseling psychology program in the United States to take advantage of APA/NIOSH funding for the development of OHP training programs.

Lawrence Jones (1996) was another early voice for OHP concerns in counseling psychology. Jones argued forcefully that, in an increasingly insecure world of work, career counselors were doing their clients a disservice by only focusing on the "positive" aspects of a given occupation. Jones argued that the "negative" aspects should also be taken into account. For example, a student contemplating medical school should not just be allowed to view it as an opportunity to express interests and skills in science or to meet values related to altruism, social esteem, or income. This same student should be made aware of the risks from exposures to diseases, such as blood-borne pathogens, the very long work hours, high levels of work-related stress, and the attendant toll upon families, including a high divorce rate.

More recently, David Blustein (2006) called for broadening the focus of vocational psychology from matching college students with majors, which presumably lead to related careers, to the entire spectrum of how work impacts individuals and society. He termed to this new perspective the *psychology of work*. Blustein used Maslow's hierarchy of needs as a framework within which to discuss all of the reasons people work. He argues that vocational psychology has focused too much on meeting higher-level needs related to self-actualization and self-expression and has largely ignored the plight of individuals who work to meet basic survival needs—food, shelter, security.

Before further exploring connections between counseling psychology and OHP, let us first explore the scope of OSH problems and delve deeper into the historical roots of OHP.

The Impact of Occupational Safety and Health failures

Despite a nearly 50% decrease in the rate of work-related injuries since the Occupational Safety and Health Act of 1970 was implemented (NIOSH, 2004), working for a living remains the sixth leading cause of death in the United States (Pickle, Mongiole, Jones, & White, 1996). Although the number of work-related mortalities is not nearly as high as the deaths attributable to heart disease, strokes, or lung cancer (first, second, and third leading causes of death, respectively), it is larger than those of "higher-profile" causes of death, such as diabetes (seventh), motor vehicle accidents (eighth), breast cancer (ninth), suicide (tenth), and HIV/AIDS (eleventh), all of which have been the targets of ongoing public health prevention campaigns. NIOSH (2003) estimates that each day (7 days a week/365 days a year) in American workplaces, there are 9,000 disabling injuries and 16 deaths from injuries. An additional 137 people die each day from work-related diseases.

Due to underreporting and miscategorizations, it is extremely difficult to estimate the true costs of OSH failures to the United States economy (Schulte, 2005). The most comprehensive study of the burden of occupational injury and disease (Leigh, Markowitz, Fahs, Shin, & Landigan, 1997) is now over a decade old. However, even when unadjusted for inflation, the economic cost remains staggering. Leigh et al. estimated the annual cost (in 1992 dollars) of OSH failures in the United States to be $171 billion, of which injuries cost $145 billion and illnesses $26 billion. In comparison, the cost for all forms of cancer was $171 billion, $164 billion for heart disease, $67 billion for Alzheimer's disease, and $30 billion for HIV/AIDS. It is significant to note that Leigh et al. estimated that 6%–10% of all cancers and 5%–10% of heart disease are likely attributable to occupational causes. These illnesses can take many years to develop prior to medical diagnosis; in some instances, the individual may have long since changed employment and consequently no connection is made between past workplace exposures and current medical conditions. This time lag further complicates efforts to calculate the monetary costs of OSH failures and suggests that the $26 billion estimate for illnesses may be low.

The economic burden of OSH failures is so large for two reasons. One is the sheer number of people involved. Most adults have jobs. The second reason is the enormous impact of disabling injuries and work-related diseases. Disabled workers may be off their jobs for days, weeks, months, or years. Some never return to work. Their injury-related expenses include initial and long-term medical costs, rehabilitation, lost productivity, and in some cases, medical retirements.

Work-related diseases are often the result of toxic exposures and can involve years of convalescence prior to death. Of course, these statistics do not even begin to quantify the nonmonetary costs of OSH failures. For workers, these losses may include well-being, work identity, and family role. For family members, these costs may include adverse impact upon career goals due to the demands of caregiving, increased stress levels, role reassignment within the family, or even the emotional toll of watching a loved one die slowly, and perhaps painfully.

As discussed previously, the number of lost work days for workers with anxiety, stress, and neurotic disorders was, on average, more than four times greater than the number of workdays lost for all nonfatal injuries or illnesses together (NIOSH, 2004). So, although the prevalence of these disorders was low in comparison to other types of illnesses and injuries, on a case-by-case basis, anxiety, stress, and neurotic disorders have the potential to be far more costly than other work-related injuries or illnesses. Goetzel et al. (1998) reported that health care costs were nearly 50% greater for workers who report high levels of stress. Stress also costs businesses in other ways. Atkinson (2004) reported that stress was a contributing factor in 80% of all work-related injuries and in 40% of workplace turnovers. A recent survey of more than 7,600 U.S.

workers found that 78% say they feel burned-out, 46% feel their workload has increased over the past 6 months, and 45% describe their current workload as "heavy" or "too heavy" (Harris Interactive, 2008).

Traditionally, OSH has been viewed as the domain of industrial hygienists, toxicologists, and engineers. Until recently, the only behavioral scientists contributing to OSH were human factors specialists. However, with recognition of the importance of work-related stress and the subsequent emergence of the field of OHP, it is now recognized that all psychologists can play an important role in reducing the incidence and impact of OSH failures.

Historical Roots of Occupational Health Psychology

Barling and Griffiths (2003) suggest that the roots of OHP may be found in efforts to understand and later to remedy the impact of application of Frederick Taylor's management principles on factory workers. Early in the last century, Taylor argued that industrial productivity can be improved by simplifying, compartmentalizing, and standardizing worker tasks. Taylor's approach came to be termed *scientific management*. Taylor advocated the separation of "thinking" about work from the actual "doing" of work. Thinking about work was considered the domain of industrial engineers, who designed processes that were then implemented by managers. Doing the actual work, without thinking, was the role of workers. In its purest form, scientific management aimed to make workers interchangeable, and consideration of the emotional responses of workers was thought to interfere with productivity.

Although scientific management seemed to hold great economic promise, managers quickly realized that its implementation did not guarantee increases in production (Barling & Griffiths, 2003). It did however, tend to lower employee morale and increase the physical and mental health problems of workers. In addition, research guided by Taylor's principles found that, contrary to expectations, workers feelings and perceptions did impact productivity. One early finding is famously known as the *Hawthorne effect*. The Hawthorne effect is typically presented as the principal finding from a series of studies in which researchers varied illumination levels in an effort to determine optimal lighting levels for an assembly line (Gottfredson, 1996). Contrary to expectations, productivity increased with each change in lighting. The Hawthorne effect is frequently presented as a classic illustration of the impact of observation upon research participants. However, what is glossed over in such a presentation of study findings is that at each stage of the study, workers were given feedback on performance and productivity. Parson's (1991) interpreted the Hawthorne results from an operant conditioning perspective and suggested that the feedback served as a consequence that reinforced (motivated) improved performance. Gottfredson concludes that the evidence most strongly supports a long-term learning effect, because in subsequent phases of the study, when manipulation of break periods caused unhappiness among workers, productivity did drop, but at all times remained well above baseline levels.

As a result of many such findings, researchers began to look more closely at the role of worker motivation and satisfaction in productivity and found that many of the same factors associated with physical and mental health (stimulation, variety, task control, autonomy, etc.) are also associated with higher levels of job performance (Barling & Griffiths, 2003). Job design theorists proposed that worker motivation and job satisfaction could be increased through skill use, challenge, and/or recognition. Karasek's (1979) paper describing the relationships between job demands, worker decision making latitude, and job stress has been particularly influential.

Paralleling these American efforts, and indeed, often leading the way, were important research programs in Europe, particularly Britain and the Scandinavian countries (Barling & Griffiths, 2003). In important early work, Trist and Bamforth (1951) found that British coal miners experienced high levels of anxiety, anger, and depression when shifted from autonomous workgroups doing a wide range of interrelated tasks to a mechanized system in which they only performed segmented job tasks, and in which their ability to complete these tasks was contingent on the output of other workgroups.

Bertil Gardell, Lennart Levi, and Töres Theorell were among the most important Scandinavian researchers (Barling & Griffiths, 2003). Gardell and his colleagues at the University of Stockholm investigated the relationship between new technologies, autonomy, participation, and worker mental health, finding that machine-paced work, monotonous work, lack of control, and fragmented and isolated work all had adverse effects upon workers. After having studied with the pioneering stress researcher Hans Selye, Levi returned to Sweden to establish a stress research lab at the Karolinska Institute. Levi and his colleagues conducted foundational work

investigating the relationship between working conditions and physical health, and the psychophysiological mechanisms associated with stressful conditions, and argued for the importance of consideration of psychosocial factors from a more global perspective in connection with worker health. Levi went on to found, and to serve as the first director of, the Institute for Psychosocial Factors and Health. Theorell, a younger colleague of Levi, was a cardiologist interested in the impact of stressful life events on health. Theorell's work laid the solid foundation upon which Karasek and other OHP stress researchers have since built.

American Developments

In the United States, NIOSH has been a leader in researching work-related stress. Although OSH often seems to only concern itself with traumatic injuries and toxic exposures, it is significant that the Occupational Safety and Health Act of 1970 which created NIOSH, specifically recognized the need to investigate the role of "psychological factors" related to OSH. As was mentioned earlier, the term *occupational health psychology* was first introduced by Raymond, Wood, and Patrick (1990) in their seminal paper arguing for the creation of doctoral-level training programs that integrated health psychology and public health, and which incorporated elements of occupational medicine, nursing, preventative medicine, behavioral medicine, political science, sociology, and business. This proposed training was to follow a scientist–practitioner model and would prepare graduates to function in interdisciplinary settings researching and/or remedying occupational health concerns.

Another watershed moment for the emerging field of OHP was the 1990 conference titled *Work and Well-Being: An Agenda for the 1990s* that was cosponsored by NIOSH and the APA (Schneider, Camara, Tetrick, & Stenberg, 1999). The success of the conference led to a second conference, *Work, Stress, and Well-being*, and NIOSH/APA partnership to develop postdoctoral training in OHP, both in 1992. Building upon the success of these initial ventures, NIOSH funded (through APA) the development of OHP training programs at universities across the United States. Twelve university programs have participated in this project, with results ranging from OHP curriculum development to formal graduate minors. The momentum surrounding these activities also led to the founding of the *Journal of Occupational Health Psychology* (published by APA) and the Society for Occupational Health Psychology.

The Current Status of Occupational Health Psychology

As was discussed earlier, the roots of OHP can be traced to investigations of the impact of Taylor management principles on the emotional and physical health of workers. However, in recent decades, the focus of OHP has broadened considerably. As the result of globalization, there have been significant changes in the structure of work in both the United States and Europe. Many manufacturing jobs were lost, and economies shifted toward service jobs. Corporate mergers and downsizing left many workers needing to switch employment, at ages (forties and fifties) that previously were associated with stable employment and peak earning potential (NIOSH, 2002). Companies moved away from making long-term commitments to employees, relying instead upon temporary workers and/or contractors. Correspondingly, there has been an increase in the number of self-employed people. All of these changes were accompanied by stress, both for workers losing or changing jobs and for those retaining employment, but needing to adapt to new contingencies.

In addition to the structural changes discussed above, to remain competitive, many employers significantly changed management systems, supervisory practices, and production processes (NIOSH, 2002). Among these changes were compressed work schedules, flexible work schedules, home-based work, lean management, and an increased reliance on technology. These practices are intended to increase the ability of companies to respond quickly and efficiently to changing production demands without compromising quality. However, following implementation of these practices, employees work longer and harder, and often bear greater responsibility for outcomes, although not always with increased decision-making latitude. Learning new processes and new technologies places increased cognitive demands on workers, leading to stress that has been tied to negative health effects.

Organization of Work

Within OHP, the term *organization of work* is used to denote the interactive network of relationships discussed above. NIOSH (2002) proposed a three-tiered model for the study of the organization of work. The highest level of this "top-down" model is termed the *external context*. The external context includes factors such as economic, legal, political, technological, and demographic forces acting at the national and international level. Examples include

the advent of globalization, the signing of the North American Free Trade Agreement (NAFTA), and the development of high-speed computer networks. The second level of this model is termed the *organizational context.* This level includes the management structures, supervisory practices, production methods, and human resources policies that are typically made in response to changes in the external context. The final level of the model is the *work context.* This includes job characteristics, job demands, and conditions in the workplace.

As a field, it is beyond the power of OHP to have a significant impact upon factors related to the external context. However, the organizational and work contexts are within reach. Consequently, much OHP research has focused upon *organizational practices* (management and production methods and human resources policies), *work processes* (the way jobs are designed and performed), and the impact of these two areas upon worker well-being (work-related stress levels) and occupational injury rates.

Work Stress

After having written at some length about the importance and impact of work-related stress, it is somewhat awkward to now admit how difficult this concept is to fully define and operationalize. Hans Selye (1950), the father of modern stress research defined stress as "the nonspecific response of the body to any demand for change." One might be tempted to view this definition as deceptively simple or so broad as to be meaningless. In a sense it is both and neither. As pointed out by Quick, Quick, Nelson, and Hurrell (1997), the term "stress" is a rubric for a complex series of physiological and psychological reactions. On the physical level, stress involves a cascade of interrelated events including increased heart rate, respiration, and perspiration; elevated blood pressure; release of hormones; and the tightening of large muscle groups. Psychological aspects of stress can include affective responses such as anxiety, fear, anger, or depression, and cognitive symptoms such as inability to concentrate, rumination, or distractibility.

Obviously, this familiar term covers a lot of ground and means many things, often to many different people. Consequently, stress has been operationally defined in different ways by different researchers depending both upon discipline and professional bias. Researchers grounded in the biological sciences tend to define stress in terms of objectively measured physiological markers such as hormone levels, blood pressure, and heart rate. Researchers grounded in the social sciences tend to define it in terms of self-report measures focusing on affect, cognitions, and self-perceptions. These differences in approach would be relatively unimportant if the research findings dovetailed nicely, but unfortunately they do not. Physiological markers of stress do not always correlate significantly with self-report measures of perceived stress.

One reason for this lack of correspondence may be found in the distinction between *eustress* and *distress* (Quick, Quick, Nelson, & Hurrell, 1997). Eustress can be thought of as a healthy or positive stress response. Eustress is experienced when one successfully marshals one's resources to rise to a challenge. Although objectively, from a physiological standpoint, one is experiencing stress, from an affective standpoint one is likely experiencing the thrill of competition or a satisfying sense of accomplishment from rising to the occasion. From a cognitive standpoint, one might be experiencing a period of sharpened focus and enhanced concentration. Distress may be thought of as a negative or unhealthy stress response, with the sort of affective and cognitive experiences more commonly associated with the term "stress." Here, one is far more likely to feel threatened or overwhelmed than challenged. Physiologically, eustress and distress may be manifested similarly, but their subjective psychological experiences are very different.

Quick, Quick, Nelson, and Hurrell (1997) relate eustress and distress to the familiar performance curve of the Yerkes-Dodson Law. Very low and very high levels of stress are associated with low levels of performance. Optimal levels of performance are typically associated with moderate levels of stress. Moderate levels of stress will likely be associated with eustress, whereas high levels of stress will be associated with distress.

Person–Environment Fit

As might be expected for so complex a construct, a number of different theoretical models have been developed to describe work-related stress. One group of theories is *person–environment (P–E) fit* models of stress. Many current P–E fit models, such as the NIOSH stress model, are refinements of a model of job stress originally developed by researchers at the University of Michigan (Landsbergis, Schnall, Scwartz, Warren, & Pickering, 1995). Like the person–environment fit models used in career guidance, these models attempt to characterize salient features in both the work environment and the worker.

Job stress is hypothesized to arise from a mismatch between the skills and abilities of the worker and the pressures and demands of the work environment (Spielberger, Vagg, & Wasala, 2003). Lack of fit can lead to both physical and psychological strain, which in turn can be expected to lead to behavioral consequences such as lowered production, absenteeism, turnover, or health-related problems. Although P–E fit models are praised by some (Landsbergis et al., 1995) for their descriptive richness, others have faulted them for lacking specificity and for failing to distinguish between different types of fit (Spielberger et al., 2003). Vogel and Feldman (2009) state that most P–E fit research has focused on either person–organization fit or person–job fit and has tended to neglect related, but distinct variables such person–vocation fit and person–group fit.

Demand–Control Model

One of the most influential job stress models is Karasek's (1979) *demand–control* model. The demand–control model focuses on the interaction between the psychological demands of a job and the decision latitude (control) that a worker has to meet those demands (Radmacher & Sheridan, 1995). This interaction gives rise to four categories of job strain: *low strain* (low demand and high control), *active* (high demand and high control), *passive* (low demand and low control), and *high strain* (high demand and low control). High-strain jobs are expected to have the most negative health effects, a finding that has been borne out by numerous studies. However, as Theorell (2003) acknowledges, this finding seems to be stronger for cardiovascular problems than for other work-related health problems such as musculoskeletal disorders. Research support has been consistent in finding a main effect for both demand and control, but support for the hypothesized interaction effect is somewhat mixed (Landsbergis et al., 1995; Radmacher & Sheridan, 1995).

Cognitive-Behavioral Models

Lazarus' extension of the *transactional process* model to occupational stress takes into account both the worker's emotional reaction to a given stressor and cognitive appraisal of the level of threat represented by the stressor (Spielberger et al., 2003). By allowing for individual differences in responding to the same stressor, Lazarus' model accounts for why some workers will perceive a given stressor as a challenge and consequently experience eustress when coping with it and others will perceive the same stressor as a threat and experience distress (Quick et al., 1997). Given its grounding in a mainstream cognitive-behavioral therapy approach, Lazarus' model may well offer more guidance for interventions than other models of job stress.

Speilberger's *state-trait process* (STP) model of occupational stress attempts to integrate his widely known state-trait conception of anxiety and anger with Lazarus' transactional process model (Spielberger et al., 2003). The STP model focuses on perceived severity and frequency of occurrence of two major categories of work-related stressors—job pressures and lack of support. Like Lazarus' model, the STP model allows for individual differences in appraisal of threats. If a threat is judged to be severe and occurs frequently, it can be expected to lead to a range of negative behavior and/or health outcomes.

Responsibility for Stress and Coping

Work-related stress can be viewed as either "personal trouble" related to personality characteristics or a "public concern" related to work characteristics and the epidemiology of occupational health (Kenny & Cooper, 2003). How one approaches interventions to manage occupational stress will vary depending on which conceptualization is endorsed. NIOSH (1999) characterizes this dichotomy as *worker characteristics* and *work conditions*. Traditionally, OSH professionals have considered providing a safe work environment to be an obligation employers owe to workers. For work hazards involving the risk of injury or illness from toxic exposures, this seems a fairly straightforward approach. For example, if an employee is working on a potentially dangerous piece of equipment, such as a table saw, the business owner clearly should have safety features such as blade guards in place. In addition, the business owner should provide PPE, such as safety glasses and respirators, as needed. Given this perspective, nearly all responsibility for OSH lies with the company. The worker need only show up for work, use provided PPE, and perform his or her work safely—as they have been trained (by the employer) to do. Placing any other obligation for OSH upon workers risked being labeled "blaming the victim."

However, with an occupational hazard such as work-related stress, in which the research indicates individual worker response plays a key role in outcomes, the lines of responsibility become somewhat blurry. NIOSH (1999) acknowledges the role that individual differences make in responding to workplace stressors, but emphasizes that it is preferable

to address working conditions rather than worker characteristics for the simple reason that research has identified a number of workplace practices that increase the risk for adverse stress reactions for all workers. Examples of these include long work hours, backward rotating work shifts, and a breaking down of barriers between work and home life (Caruso et al., 2006). Addressing these factors alleviates current stress levels and prevents future work stress problems for all workers in that company. Moreover, there is a question regarding the ethics of training a worker to cope with what would otherwise be unreasonable workplace demands. Who benefits most? The worker—for being able to continue on the job? Or, the employer—who can now make greater demands of the worker? Or, is it a "win-win" situation for both? Should workers be asked to change themselves to adapt to work demands that could be remedied in other ways? In particular, should workers be asked to undergo what in other circumstances might be considered psychotherapy to successfully cope with demands at work?

Work Stress Interventions

As indicated in the discussion above, work stress management interventions can be aimed at work conditions or worker characteristics. Ivancevich et al. (1990) identified three potential targets for intervention: the intensity of stressors in the workplace, the employee's appraisal of stressful situations, or the employee's ability to cope with the outcomes.

Following the public health model of prevention, work stress interventions can be classified as primary, secondary, or tertiary (Quick, 1999; Richardson & Rothstein, 2008). *Primary interventions* aim to alter the sources of stress and may include redesigning job roles, increasing individuals' decision-making authority, or organizing coworker support groups. *Secondary interventions* attempt to reduce severity of stress symptoms in the individual before significant health problems arise and may include cognitive-behavioral skills training, meditation, relaxation, deep breathing, exercise, journaling, time management, and goal setting. *Tertiary interventions* treat individuals' existing stress-related mental health conditions via access to mental health professionals, often in the form of free and confidential employee assistance programs.

Reviews of the work stress intervention literature indicate that secondary interventions are the most often used and among these interventions the most effective is cognitive-behavioral (van der Klink, Blonk, Schene, & van Dijk, 2001; Richardson & Rothstein, 2008). Cognitive-behavioral interventions are intended to alter individuals' appraisal of stressful situations and their responses to them by providing education on the role played by one's thoughts and emotions in response to stressful events and teaching skills to modify thoughts and improve coping effectiveness. Another effective intervention is teaching relaxation and meditation techniques. These approaches work by evoking a physiological state that is the opposite of stress. Multimodal interventions that included a mix of cognitive-behavioral, relaxation, and/or organizational interventions were also found to be effective. However, organizational interventions alone were found to be the least effective.

A meta-analysis conducted by van der Klink et al. (2001) found an effect size of 0.68 for cognitive-behavioral interventions, 0.51 for multimodal interventions, 0.35 for relaxation interventions, and 0.08 for organizational interventions. All effect sizes were statistically significant except for organizational interventions. A follow-up meta-analysis conducted by Richardson and Rothstein (2008) found a similar pattern, although somewhat larger effect sizes. The effect size for cognitive-behavioral interventions was 1.164; for relaxation, 0.497; for multimodal, 0.239; and for organizational, it was 0.1444. Once again, all effect sizes were statistically significant except for organizational interventions. Richardson and Rothstein also included a category they labeled "Alternative" that included a "grab bag" of worker interventions (exercise, journaling, and time management) that did not fit well into the other categories. This alternative category fared well, with an effect size of 0.909.

It would seem with findings like these that work stress interventions aimed at worker characteristics, particularly cognitive-behavioral and relaxation/meditation interventions, would be the clear methods of choice. However, the case is far from closed. Semmer (2003), arguing strongly for organizational interventions, points out that effective organizational interventions are far more difficult to conduct because they involve changing a large and complex social system. Individual worker interventions are far less disruptive to the functioning of the company because they do not involve significant organizational changes. Semmer (2003) points out that no matter how successful individual worker interventions may be, they ultimately do nothing to address the primary sources of work stress. It is almost definitional that worker interventions can be secondary prevention at best as the ongoing environmental contributors toward work stress remain unchanged.

Each new worker will need to be "inoculated" against stressful conditions that might otherwise be alleviated by organizational changes. Only by eliminating these organizational sources of work stress can one truly do primary prevention. Moreover, as discussed above, there exists the ethical question of who is more obligated to change—the worker or the employer. Semmer and many others would argue that it is the employer.

Burnout

Burnout is a chronic pattern of negative affective responses associated with reduced job satisfaction, lower job performance, absenteeism, and turnover (Quick et al., 1997). Most burnout research has focused on the "helping professions"—occupations such as physician, nurse, social worker, teacher, and therapist. Miller (1998) cautioned that not only can the *compassion fatigue* of doing challenging psychotherapy produce burnout among mental health providers, but that the stresses inherent to doing therapy, particularly with trauma victims, can sometimes produce posttraumatic stress disorder (PTSD) in the therapist as well.

Maslach (1982) proposed that burnout consists of three dimensions. *Emotional exhaustion* consists of feelings of being depleted of one's emotional resources, emotionally overextended, and drained by interactions with others. *Depersonalization* is a negative, cynical, and detached response to other people at work, in particular toward those seeking one's services. *Reduced personal accomplishment* refers to feelings of reduced professional competence, productivity, and self-efficacy.

Maslach developed a burnout inventory using these three dimensions that is the most widely used instrument for assessing burnout in empirical research (Shirom, 2003). The three dimensions of Maslach's model were identified by conducting factor analyses of burnout symptoms. There is no theoretical rationale for the co-occurrence of these three clusters of symptoms. Consequently, other researchers have challenged this conceptualization of burnout. Some argue that emotional exhaustion is the central characteristic of burnout. Others argue that these three dimensions are really a single factor, not three separate factors. Yet others challenge the notion that reduced professional competency is really a symptom of burnout, but rather a natural consequence of the condition (Schaufeli, Keijers, & Miranda, 1995).

Some researchers conceptualize burnout as being the logical endpoint for individuals working in organizations without stress management programs (Shirom, 2003). Others consider burnout so extreme as to be qualitatively different from common stress reactions. As of yet, researchers looking toward individual personality traits as a predisposing factor for burnout have found no clear patterns. Some question whether it is even meaningful to differentiate burnout from depression (Schonfeld, 1992), considering the high degree of overlap between items found on scales assessing burnout and on those assessing depression.

In a review of the burnout literature, Shirom (2003) points out that, although burnout was initially conceptualized in terms of the helping professions, it is now recognized that individuals in other occupations who suffer from chronic stressors, such as high demand and low social support, can develop burnout. Conceptually, it is now recognized that one could suffer burnout in nonwork life domains such as family and marriage. The terminology used to describe two of the dimensions of burnout has also been modified. Depersonalization is now frequently referred to as *cynicism* and reduced personal accomplishment is referred to as *inefficacy*.

Individual Treatment Approaches

The treatment of burnout has tended to be focused on the affected individual (Le Blanc, Hox, Schaufel, Taris, & Peeters, 2007; Shirom, 2003). In part, this is a reflection of the empirical literature, which has largely focused on burnout as an individual phenomenon rather than attempting to identify organizational practices contributing to its development. No doubt, this also reflects Semmer's (2003) observation regarding the difficulty of conducting organizational interventions. In any event, individual treatment for burnout tends to very closely resemble the cognitive-behavioral approaches used to address other work stress problems and/or depression (Shirom, 2003).

Review of the treatment literature suggests that burnout interventions are most effective in reducing symptoms of emotional exhaustion, but typically have little or no impact on depersonalization or professional efficacy. Van Dierondonck, Garssen, and Visser (2005) suggested that these findings might arise from nearly all interventions being cognitive-behaviorally oriented. Positing that a more holistic therapy model would address a broader range of burnout symptoms, they developed an intervention based upon Assagioli's (1965) psychosynthesis model. The intervention included activities such as meditation, group discussions, guided imagery, and education on relevant aspects of the psychosynthesis

model. In a sample consisting primarily of engineers, the study found both a significant decrease in emotional exhaustion and an increase in professional efficacy. However, depersonalization remained unchanged.

Salmela-Aro, Naatanen, and Nurmi (2004) also tested non–cognitive-behavioral burnout interventions on a sample of workers suffering from severe burnout. Over the course of a year, workers in the treatment condition received 16 group therapy sessions. Half of the workers in the treatment condition participated in psychoanalytically oriented group therapy based upon free association within the groups. Therapeutic interpretations were provided by group facilitators. The remaining workers participated in group therapy based primarily upon psycho-dramatic techniques such as role-playing. Compared to a control group, both treatment groups experienced decreases in their level of burnout, particularly symptoms of emotional exhaustion. However, these differences were not statistically significant.

Shapiro, Astin, Bishop, and Cordova (2005) used a mindfulness-based stress reduction program with a sample of health care providers. Over the course of 8 weeks, participants were taught meditation, yoga, and other techniques intended to raise their awareness of body sensations, thoughts, and emotions. Compared to a control group, study participants experienced significant increases in life satisfaction and self-compassion and decreases in perceived stress. Although the treatment group did experience a reduction in burnout symptoms, it was not statistically significant.

Along more cognitive-behaviorally oriented lines, Van Dierenconck, Schaufeli, and Buunk (1998) tested an intervention that conceptualized burnout in terms of perceived inequity, on the part of the worker, between their efforts and contributions on the job and outcomes such as recognition, status, and/or pay. The intervention encouraged workers to restore their perceptions of equity in one of three ways: by identifying strategies to change either their own contributions and/or to elicit more desired outcomes from the workplace, by changing their perceptions of contributions and/or outcomes to better match, and by leaving the job to pursue a more congruent work situation elsewhere. In a study sample of direct-care professionals working with mentally disabled individuals, this study found a significant effect for the reduction of emotional exhaustion and a moderating effect for social support. However, similar to other studies, it found neither a reduction in depersonalization nor an increase in professional efficacy.

Westman and Eden (1997) explored whether a simple respite from the work environment had an impact on work stress and burnout. They tracked a sample of workers before, during, and after a vacation. As might be expected, these workers reported a reduction in stress and burnout symptoms during their vacations. However, this effect was fleeting as workers had returned to their baseline levels of stress and burnout within 3 weeks after returning to work.

Organizational Treatment Approaches

Semmer (2003) argued that organizational interventions represent primary prevention, as opposed to the secondary, if not tertiary prevention of individual interventions. Consequently, despite the considerable challenges inherent to attempting organizational interventions, from a public health perspective, they clearly remain a more desirable approach. Recent publications in the empirical literature eloquently testify to both the promise and the frustrations of organizational treatment approaches.

Le Blanc et al. (2007) worked with the staffs from 29 oncology wards over a 6-month period. Nine wards were randomly selected to participate in an intervention program consisting of monthly 3-hour training sessions facilitated by program counselors. Training topics included the emergence of unwanted collective behaviors, communication, social support, and emotional investment in one's job. The workers in the treatment condition experienced significantly less emotional exhaustion and less depersonalization than did those in the control condition.

In what might be viewed as a mixed individual/organizational approach, Hatinen, Kinnunen, Pekkonen, and Kalimo (2007) compared traditional intervention with a participatory intervention with a group of female professionals. The traditional treatment intervention consisted primarily of individual and group therapy, and education regarding individual responses to stress, depression, and burnout. In addition, individuals in the traditional treatment intervention participated in a small number of group and individual therapy sessions focusing on work-related factors. The individuals in the participatory intervention received the same treatment package as those in traditional treatment. However, on two occasions, representatives from their workplaces participated in their treatment to identify ways to improve conditions and climate at work. At a 1-year follow-up, individuals in the participatory intervention reported significant improvements in both emotional exhaustion and depersonalization.

Individuals in the traditional treatment reported some improvement, but it was not statistically significant.

On a less hopeful note, Elo, Ervast, Kuosma, and Mattila (2008) reported the findings of an ambitious, 2-year organizational intervention in a public services organization in Finland. Interventions included training on relevant topics for both workers and managers and a series of "work conferences" in which participants discussed work organization factors and strategies for improving the climate in their organization. Despite earlier work finding significant effects for the individual treatment components of this study, no statistically significant results were found for the overall field study.

Burnout and Counseling Psychology

Maslach (2003) characterizes burnout as arising from the chronic stress due to incongruence, or misfit, between worker and job. Given this definition, it is dismaying that most interventions in the literature are aimed not at correcting this incongruence but at helping the worker to better adapt to it. It is also a definition that suggests counseling psychology might hold the key to the most powerful of primary prevention interventions for burnout—a well-informed, thoughtful career choice. Occupational health psychology reminds counseling psychology that a good initial choice of career has an impact on far more than college major. It helps to preserve quality of life many decades later.

Work–Family Balance

The term *work–family balance* refers to the impact that work and family have upon one another. Although work–family balance has been identified as one of three areas of primary interest to OHP (Quick, 1999), it has received far less research attention than the other two areas (the individual worker and the work environment). Among the earliest, and still one of the most common, conceptualizations of the work–family balance is the *spillover effect*—the transfer of reactions to work to other life domains (Kelloway & Barling, 1994). Implicit to most conceptualizations of work–family balance is the notion of a "zero sum" game. Individuals are considered to have finite levels of time and energy, which if used in one life domain are no longer available for use in another (Greenhaus & Parasuraman, 2002).

Frone (2003) suggested that the term *work–family balance*, although widely used in the literature, was not consistently defined nor understood. Although spillover from one domain to the another has always been conceptualized as either positive or negative, the work in this area has focused almost exclusively on negative impact—work demands upon family life or family demands upon work. Aiming at both balance and clarification, Frone proposed a model of work–family balance (see Table 29.1). One dimension is work-to-family/family-to-work. The other is conflict–facilitation. The interaction of these dimensions yields four cells: work-to-family conflict, family-to-work conflict, work-to-family facilitation, and family-to-work facilitation. Conflict represents negative impact and facilitation positive impact. Citing what little facilitation research there is in the literature, Frone states that there is evidence for family-to-work facilitation, but little for work-to-family facilitation.

Sources of Conflict

In the last half century, ever-increasing numbers of women have sought employment and careers (Marshall & Barnett, 1994). The rise in the number of dual-income families has been paralleled by a rise in divorce rates and consequently single-parent families. Both situations leave parents with less time to accomplish necessary domestic tasks and to raise children. Despite significant social, political, and economic advances by women in the last several decades, within the home, tasks still tend to be divided along traditional gender lines. Although research indicates that married men and women

Table 29.1. Dimensions of Work–Family Balance

		Type of Effect	
		Conflict	Facilitation
Direction of Influence	*Work-to-Family Conflict*	Work-to-Family Conflict ↓	Work-to-Family Facilitation ↑
	Family-to-Work Conflict	Family-to-Work Conflict ↓	Family-to-Work Facilitation ↑

From Frone, M.R. (2003). Work–family balance. In J.C. Quick & L.E. Tetrick (Eds.), *Handbook of OHP*, American Psychological Association. Reprinted with permission.

tend to work about the same number of hours per week on domestic activities, the tasks performed by women tend to have significantly lower levels of control than those performed by men. For example, feeding and bathing of children takes place daily at more or less the same times. Mowing the lawn can be put off without significant consequences.

An often overlooked source of stress is eldercare (Jarvik & Small, 1988). Medical advances are keeping individuals with significant physical and/or cognitive impairments alive far longer than in decades past. Their middle-aged children are increasingly called upon to serve as their primary caregiver and/or legal decision maker. Given the famously transient American lifestyle, many children live hundreds if not thousands of miles from their aging parents, adding further complications to an already stressful situation.

It is important to realize that work–family conflict does not only adversely impact the individual employee experiencing the conflict. Tetrick et al. (1994) reported that in a sample of nearly 3,000 respondents, 28% reported that the childcare obligations of coworkers had adversely impacted their own job performance. In addition, the impact of stressful work conditions upon the family is not simply limited to reducing the emotional quality of life of a family. A study by Dompierre and Lavoie (1994) found relationships between work stress and family violence.

Promoting Work–Family Balance

In recent decades, many workplaces have introduced a range of "family-friendly" policies (Marshall & Barnett, 1994; Frone, 2003). These policies include facilitating dependent care (onsite daycare, subsidies for child- or eldercare, referral services), flexible work arrangements (flexible starting and ending times, work-at-home, reduced or compressed work schedules), flexible leave policies (maternity leave, leave to care for sick family members), and employee assistance programs offering an increasing number of services related to family concerns. Although well-intended and costly, there has been little research to support the efficacy of such programs. In a broad survey of workers, Marshall and Barnett (1994) found a fair amount of variability across industries and occupations in terms of family-friendly benefits, but found no relationship between the availability of these benefits and job satisfaction, work conflict, and the mental health of respondents. However, as pointed out by these and other researchers, just having these benefits does not necessarily alleviate stress for workers. One must actually be in immediate need of these family-friendly policies to benefit from them. Consequently, a study by Tetrick et al. (1994) that looked only at parents found that those with childcare difficulties (both male and female) suffered from more frequent and larger losses of productivity than did parents with reliable childcare. In a study based upon Karasek's (1979) demand–control model, Kelloway and Barling (1994) found that simply increasing worker job control did little to ameliorate work–family stress. They concluded that to be effective, work–family interventions needed to be more comprehensive and tailored to individual need.

Occupational Health Disparities

Any differences in disease incidence, mental illness, or morbidity and mortality that exist among specific populations due to work-related causes are termed an *occupational health disparity*. For reasons beyond actual OSH needs, the bulk of research efforts have focused on three groups: women, aging workers, and Hispanic immigrant workers. Clearly, women, aging workers, and Hispanic immigrants are not the only groups worthy of study. Rather, they represent the response in the literature to fairly specific sociopolitical pressures: the success of the women's movement, the aging of the baby boom, and the massive influx of undocumented Hispanic immigrants into the United States in recent decades.

Other groups also suffer occupational health disparities, but have not received nearly as much attention. For example, despite being barred from the most hazardous jobs by law, young workers (19 and younger), particularly male, are killed on the job at rates twice those of adults (NIOSH, 2004). African Americans comprise 9.8% of the American workforce, but suffer 11.9% of work-related nonfatal injuries and illnesses and have a fatality rate (1.4 per 100,000) significantly higher than the population average (1.0). Asians are sometimes referred to as the "model minority" because so many achieve a higher degree of success than the population average. However, this characterization ignores the 1.5 million undocumented Asian immigrants in the United States (Passel, 2006). Many of these immigrants work in low-paying jobs and are socially marginalized because they speak Cantonese, not Mandarin, the dialect of the educated classes in Chinese societies (Fujishiro et al., 2009). Although the OSH literature is beginning to address the needs of young workers, it is sparse for African American workers and there is almost nothing concerning Asian immigrant workers.

It is important to recognize that occupational health disparities are not just an American concern. Within the European Union, most legal barriers to the flow of workers from one country to another have been eliminated. Some European Union countries have also experienced an influx of undocumented workers. The large influx non-native workers—both documented and unauthorized—has left many European Union countries struggling to overcome the barriers of language, culture, and legal status that can leave immigrant workers vulnerable to exploitation. An example is Ireland, with a population of less than 5 million, but with the same proportion of non-native workers as the United States (Beggs, Mangan, Concagh, & Pollock, 2005). Whereas the United States has been challenged to simply meet the needs of Spanish-speaking immigrants, Ireland must attempt to overcome barriers of language and culture for a dozen nationalities.

Women Workers

In the decades following World War II, ever-increasing numbers of women have sought employment and careers (Stellman & Mailman, 1999). The successes of the women's movement in the 1960s and 1970s further increased the number of women working. Barriers were broken down, and women entered occupations that previously had been closed to them and began to regularly rise to heights in organizational leadership seldom previously attained.

Unfortunately, these hard-fought advances did not come without ongoing costs. Quick et al. (1997) reported research from a number of studies indicating that work-related stress takes a significant toll among female managers. As a group, female managers smoked more, and took more tranquilizers, antidepressants, and sleeping pills than did their male counterparts. The rise in dual-income families have left parents struggling to balance the often conflicting demands of work and family. The great workplace gains of the past several decades have not been matched by a significant shift in traditional family roles. Women still bear the responsibility of the majority of childrearing, cooking, cleaning, and laundry (Marshall & Barnett, 1994). Research indicates that married men and women tend to work about the same number of hours per week on domestic activities. However, the tasks performed by women tend to have significantly lower levels of control than those performed by men. This can be expected to lead to higher levels of stress and more work–family conflicts.

Violence Against Women Workers

Although it would cause dismay, it would likely not greatly surprise most to learn that roughly 50% of women can expect to be sexually harassed at some point in their work or academic lives (Bell, Cycyota, & Quick, 2002). However, most would be surprised that homicide was the leading cause of death on the job among women, accounting for roughly 40% of all work-related fatalities (NIOSH, 1995). Hoskins (2005) reports that female homicide victims are far more likely to have been killed by a family member than are male victims. Domestic violence spills over into the workplace in less lethal ways as well. Three-quarters of battered women report having been harassed at work by their batterer (Friedman, Tucker, Neville, & Imperial, 1996). In addition, 20% reported having been late for work because of the interference of their partners, and more than half reported missing an average of 3 workdays a month because of injuries, emotional responses, or appointments with physicians and/or lawyers. More than half reported having lost a job as a direct result of domestic violence. Nicoletti and Spooner (1996) report that domestic violence and stalking violence now account for more workplace injuries and deaths than violence committed by disgruntled or ex-employees.

Equipment and Exposures

As women continue to move into fields traditionally dominated by men, OSH professionals are faced with re-evaluating longstanding recommendations and practices. For example, exposure to some workplace toxins at levels thought to be safe for men are known to be hazardous for a developing fetus (Messing & de Grosbois, 2001). Safety professionals and business owners are faced with either trying to reduce exposure levels even further or banning women of child-bearing years from working in certain work settings. In fields such as construction and manufacturing, women find that most of the PPE is manufactured in sizes appropriate for men and is too large for them to use (NIOSH, 1999; Ontario Women's Directorate and the Industrial Accident Prevention Association, 2006). In addition, tools and equipment are also sized for men, making it difficult or even hazardous for many women to use them.

Musculoskeletal Disorders

Musculoskeletal disorders (MSDs), ranging from repetitive strain to back injuries, were the leading source of nonfatal, work-related health problems for

women (Hoskins, 2005). Women are much more likely to develop MSDs than men (Stellman & Mailman, 1999). In part, this may be due to the nature of the work of traditionally female-dominated fields. For example, in nursing, back injuries occur at very high rates due to activities such as lifting and positioning patients (Trinkoff, Lipscomb, Geiger-Brown, & Brady, 2002). Clerical work is notorious for high rates of repetitive strain injuries. However, as pointed out by Stellman and Mailman (1999), women working in nonclerical fields, such as assembly and retail trade, actually suffer from higher rates of repetitive strain injuries. They suggest that a major factor in this counterintuitive finding is, as discussed above, that women frequently have to use tools and equipment sized for men. The awkward and/or stressful positions women must put themselves in to perform job tasks using inappropriately sized tools or equipment significantly elevates their risks of developing MSDs.

Aging Workers

The workforce in many industrialized countries is aging (Wegman, 1999). In part, this shift simply reflects the demographics of the baby boom. Other factors are in play as well. With advances in medical science, people are healthy and fit later in life, and some choose to continue working past the age at which they are eligible for retirement benefits. However, due to economic downturns, retirement accounts have suffered and companies have defaulted on employee pension plans. Consequently, many are working due to economic necessity. In the United States, the eligibility age for Social Security retirement benefits has been incrementally raised, so that many current workers need to work until they are nearly 70 to receive full benefits. Much of Western Europe has experienced declining birthrates since World War II. There are simply not enough replacement workers being born. Consequently, there is great interest in keeping older workers healthy and satisfied enough to remain working (Barling & Griffiths, 2003). In some European countries, such as Finland, this has been a major factor in the development of OHP.

It is interesting to note how quickly 65 became enshrined as the typical retirement age. Wegman (1999) points out that prior to World War II, most people died while still in their fifties. People simply worked as long as they were able. However, following the war, with lifespans increasing dramatically, governments, in a sense, defined old age by setting the age for most retirement benefits at 65 in an effort to encourage older workers to retire, thereby opening positions for younger workers and reducing unemployment. This somewhat arbitrary line of demarcation is reflected in much of the literature regarding aging workers and because of its reification through widespread practice, it goes unquestioned.

Arbitrary definitions aside, there are some significant differences between aging workers and their younger colleagues. Kisner and Pratt (1997) found that the workplace fatality rate for workers 65 and older was 2.6 times that of workers aged 16–64 (14.1 per 100,000 vs. 5.4). Significant gender differences were found for older workers. Men 65 and over had a fatality rate nearly ten times that of women 65 and over (22.1 per 100,000 vs. 2.3). This compares to a rate of 9.0 per 100,000 for men aged 16–64 and 0.7 per 100,000 for women aged 16–64. For older men, the most prevalent cause of death was accidents involving machines, followed by motor vehicle accidents, falls, and homicides. For older women, the most prevalent causes of death were homicide and motor vehicle accidents. By far, the most dangerous industry area for older workers was agriculture/forestry/fishing, with fatality rates six times higher than the next highest industry category (transportation/communications/public utilities).

It is widely recognized that older workers are affected by age-related declines in strength and endurance and consequently are less robust physically than their younger colleagues (Wegam & McGee, 2004). However, as Wegman (1999) points out, these physical declines may not be as occupationally relevant as one might suppose. These are declines in maximum performance, and even physically demanding jobs tend to only require submaximal effort.

Wegman divided jobs in four broad categories: age-enhanced, age-neutral, age-counteracted, and age-impaired. Age-enhanced jobs involve knowledge-based decision making without time pressures. Given that older workers can bring the wisdom of decades to a job, Wegman argues that they can outperform younger workers in such activities. Age-neutral jobs involve relatively undemanding tasks and are not expected to be impacted significantly by age. Age-counteracted jobs involve skilled manual work. Here, any decrements in physical capacity can be expected to be counteracted by the enhanced skills and expertise acquired from years performing the job. Age-impaired jobs involve continuous high-pace data processing and are the only category in which older workers can be expected to suffer age-related deficits in job performance.

Accommodating Older Workers

Although the overall job performance for older workers is the same, if not better, in most categories of work as compared to younger workers (Wegman, 1999), there are some age-related factors that can have an impact on job performance, but which can be easily addressed in most workplaces (Wegman & McGee, 2004). Most of these factors are environmental. Aging diminishes the sensitivity of the eyes, so older workers may benefit from higher levels of lighting in work areas than needed by younger workers. Older workers also tend to be far more sensitive to extremes of temperature than younger workers. If environmental modifications cannot be easily made, managers might consider assigning older employees to tasks that avoid extremes of temperature. Older workers may also be less tolerant of background noise than younger workers. This can make it more difficult for them to hear important auditory signals. If minimizing background noise levels cannot be accomplished, managers might consider using different or redundant signal channels. For example, instead of using an auditory tone, substitute a warning light or better yet, use both. Research indicates that older workers are less able to adapt to shift work than younger workers. However, they tend to wake earlier than younger workers and perform better in morning hours (Wegman, 1999). Consequently, managers should attempt to assign older workers early morning hours and day shifts, avoiding evening and night shifts. In those instances in which retired individuals return to work out of economic need, they frequently find themselves working in low-level service industry jobs, often with colleagues and managers who are many years younger. If older workers are subjected to stereotypes about the elderly or disrespect due the unskilled nature of their current employment, they will likely begin to suffer from unacceptable levels of work-related stress. Organizational interventions addressing attitudes toward older workers could help to alleviate such situations.

Hispanic Immigrant Workers

Currently, over 42 million persons of Hispanic descent are living in the United States, approximately half of whom are foreign-born (U.S. Census Bureau 2005, 2006). Hispanics recently became the largest minority group in the United States. It is estimated that by 2050, 15% of the American workforce will be Hispanic. It is estimated that 12 million of these Hispanics are in the country unauthorized (Passel, 2006). Areas of the United States, such as the Southeast and the Midwest, that have not traditionally been destinations for Hispanic immigrant workers have experienced explosive growth in the size of their Hispanic communities since the early 1990s (Passel, 2005). In addition to political issues and legal consequences related to their undocumented status, Hispanic immigrants in these "new settlement areas" are further socially marginalized and subject to exploitation due to lack of a Spanish-speaking public and/or social services infrastructure (Passel, Capps, & Fix, 2002).

The Hispanic population in the United States represents many unique challenges for OSH. Trainers are challenged by barriers of both language and culture (O'Connor, 2003). Regulatory officers are challenged by distrust on the part of the many undocumented Hispanic immigrant workers for any government official. These problems are compounded because Hispanic immigrant workers tend to be employed in the least desirable, poorest paid, and most dangerous occupations, so that they are at increased risk to suffer from negative health consequences (Dong & Platner, 2004; Loh & Richardson, 2004; Richardson, Ruser, & Saurez, 2003).

The popular perception of undocumented Hispanic immigrants is that most work in agriculture or as day laborers. This is far from reality. Approximately 4% work in agriculture (Passel, 2006) and less than 1% of Hispanic immigrants work as day laborers (Valenzuela, Theodore, Melendez, & Gonzalez, 2006). The remainder work for companies ranging in size from small businesses to international corporations. Almost a third work in service industries (e.g., cleaning & food preparation), nearly a fifth work in construction or mining, and 15% work in manufacturing, installation and repair (Passel, 2006).

Fatal Injury Rates

Between 1996 and 2000, the number of foreign-born workers in the United States grew 22%, but the fatal injury rate for these workers increased by 43% (Loh & Richardson, 2004). During this same period, the overall injury rate for all U.S. workers declined by 5%. In 2001, the fatality rate for all U.S. workers decreased to a low of 4.3 per 100,000 workers. However, the fatality rate for foreign-born workers increased to a high of 5.7 per 100,000 workers. In 2000, 51.6% of all foreign-born workers in the United States were from Latin American countries (Loh & Richardson, 2004). However, they suffered 61.2% of fatal work-related injuries. This disparity does not appear to be directly related

to being Hispanic. Richardson, Ruser, and Suarez (2003) reported that, between 1995 and 2000, the fatal work injury rate for all workers in the United States was 4.6 per 100,000 workers. This compares to a rate of 4.5 per 100,000 for native-born Hispanics and 6.1 per 100,000 for foreign-born Hispanics. Most of this disparity in fatal injury rates arises from injuries to Mexican-born workers (Loh & Richardson, 2004). Mexicans account for 27.3% of all foreign-born workers in the United States, but suffer 42.1% of all fatal work-related injuries.

Nonfatal Injuries and Illnesses

Between 1998 and 2000, Hispanic men had the highest overall relative risk (1.51 per 100,000) of nonfatal occupational injuries and illnesses (Richardson et al., 2003). This compares to a relative risk of 1.07 per 100,000 for white, non-Hispanic men and of 1.40 for black, non-Hispanic men. Although Hispanic women were not at greater risk (1.0 per 100,000) when compared to all working women (1.0 per 100,000), they were at greater risk when compared to white, non-Hispanic women (0.76 per 100,000). However, Hispanic women were at slightly lower risk than black, non-Hispanic women (1.06 per 100,000).

Safety Culture and Safety Climate

In the OHP literature, the concept of *safety climate* is frequently, but incorrectly, used interchangeably with the related, but distinct, concept of *safety culture* (Zohar, 2003). Safety culture is defined as the embodiment of the values, beliefs, and underlying assumptions of an organization about safety (Flin, Mearns, O'Connor, & Bryden, 2000). Defined thusly, safety culture is simply one facet of *organizational culture*. Quick et al. (1997) consider organizational culture as a "top-down" emanation of the values and practices promoted by the top leaders of an organization.

In contrast, safety climate is considered to be "an emergent property, characterizing groups of individuals" (Zohar, 2003, p. 124) and has been defined as the shared perceptions regarding safety policies, procedures, and practices among groups of workers. Zohar (1980) was the first to introduce the concept of safety climate. He proposed there were eight dimensions to safety climate: perceived importance of safety training, perceived management attitudes toward safety, perceived effects of safe conduct on promotion, perceived level of risk in the workplace, perceived effects of work pace on safety, perceived status of the safety officer, perceived effects of safe conduct on social status, and perceived status of the safety committee.

Safety climate is essentially a workgroup's consensus on how seriously management takes and how consistently management enforces safe work practices. A workplace that holds employees to a high standard of safety conduct during periods of normal production, but which orders workers to "cut corners" in terms of safety in order to meet production goals during periods of high demand is likely to have a poor safety climate even though the "crunch periods" may only constitute a very small percentage of total production time over the course of a year (Zohar, 2003). Workers in this situation realize that safety is considered optional depending upon the immediate needs of management. On the other hand, if a company refuses to compromise safety standards during periods of high demand, it will likely have a very good safety climate as workers here realize that here indeed, "Safety comes first." Workers in a good safety climate are more likely to use proper safety equipment, even when not closely supervised. They are more likely to monitor coworkers' safety behaviors and to assist them in performing safely. These workers will bring previously unidentified workplace hazards to the attention of management and will sometimes propose even safer ways of doing a hazardous task. In short, these workers are actively invested in thinking about, maintaining, and improving workplace safety. Workers in organizations with poor safety climates can be expected to perform few or none of these behaviors.

The "Structure" of Safety Climate

In the decades since Zohar first introduced the concept of safety climate, researchers have found varying degrees of support for his eight proposed dimensions (Neal & Griffin, 2004). Some researchers have identified as few as two or three dimensions, whereas others have found an intermediate number of dimensions. The number of dimensions found by a given study seems to arise from an interaction between study instrumentation, sample characteristics, and the statistical procedures used to analyze the data. It is of fundamental importance to recognize that the research does not call into question the existence or importance of safety climate. It merely argues over how its constituent parts are clustered.

Based upon a review of the literature and their own research, Neal and Griffin (2004) proposed a comprehensive, hierarchical model that can be used

to characterize safety climate. In many respects, this model reconciles previous contradictory findings regarding the number of dimensions. This model contains two broad dimensions, which can be thought of as higher-order factors. These dimensions each have a number of component elements or lower-order factors. One dimension is organizational policies and procedures and has three component elements: perceived management commitment to safety, human resource practices (which impact safety), and perceived quality of existing safety systems. The other dimension is local work conditions and practices, which has five component elements: perceived supervisor support (for safety), internal group processes (communication and cohesion), perceived quality of communications between the workgroup and others regarding safety, perceptions of risk magnitude for work tasks, and work pressure (at the expense of safety).

Microclimates

It is important to recognize that safety climate may not be homogenous throughout an organization. Neal and Griffin (2004) suggest that, in some organizations, there may be more than one safety climate depending upon the worker groups being considered. Some work groups may be isolated from others in the organization due to location or the differing nature of their work tasks (i.e., factory line workers as compared to factory office workers). The safety climates of these smaller groups are sometimes referred to as *safety microclimates*. For example, given the barriers of language and culture experienced by most Hispanic immigrant workers working in the United States, these workers likely have their own safety microclimate within the larger organizations that employ them.

Counseling Psychology and Safety Climate

At first glance, the concepts of organizational culture and safety climate seem relatively distant from counseling psychology. However, if one views them as representing a cataloging of salient aspects of a given work environment, then connections can quickly be made among organizational culture, safety climate, and the rich vocational psychology heritage of person–environment fit models. Vogel and Feldman (2009) remind us that person–environment fit is a generic term given meaning from specific comparisons: person–organization fit, person–vocation fit, person–job fit, and person–group fit. Currently, in counseling psychology most applications of P–E fit are used to predict person–vocation fit. However, one of counseling psychology's earliest efforts to characterize environments was at the level of person–organization fit. The *environmental assessment technique* (EAT; Astin & Holland, 1961; Astin 1962, 1963a,b, 1965a,b, 1968) classified environments in terms of size, average intelligence of inhabitants, and a census of Holland vocational personality types in the environment. The EAT was successfully used to categorize university settings and to differentially predict student performance in these settings. Counseling psychologists must move beyond viewing the work-related interests and activities characterized by Holland's six vocational types (Holland, 1997) and/or the occupational reinforcers and work values of the theory of work adjustment (Dawis & Lofquist, 1984) as representing the whole of the work environment, but rather as facets of a greater whole.

Counselor Psychologists As Agents of Change

Counseling psychologists, who have been trained to "save the world one person at a time," usually do not receive any training in organizational interventions and may feel somewhat at a loss regarding how to develop and implement interventions on the organizational level. Although counseling psychologists working in isolation would find it difficult to shift the culture of an organization, as part of an interdisciplinary team, they can play a key role in facilitating change. However, even when working on the level of the individual worker, counseling psychology can help to initiate a "ripple effect" that has the potential to impact on the broader organization in a manner analogous to the positive impact of therapy upon the individual benefiting family and friends. For example, addressing the needs of an individual with substance abuse issues or an anxiety disorder undoubtedly also serves the needs of the family and support system. Similarly, assisting an individual worker in developing better safety and health practices also indirectly affects the safety climate of that individual's coworkers. Safety culture and climate measures are group-level indicators that arise from the actions of groups of individuals. Consequently, the safety culture of the organization can be affected by the work of counseling psychologists with individual workers.

Occupational Safety and Health Interventions

It has long been accepted in the OSH community that it is better to eliminate a hazard than it is to attempt to control it (Smith, Karsh, Carayon, &

Conway, 2003). If a hazard cannot be entirely eliminated, then access to it should be blocked. If a hazard can be neither eliminated entirely nor access to it blocked, then employees should be warned of the hazard and trained to avoid it. In the case of toxic substances or potentially dangerous machinery, the elimination or blocking of access has typically fallen within the realm of *engineering controls*. As its name implies, this approach tends to be guided by engineers, and it attempts to achieve goals through redesign of manufacturing processes and/or machinery. For example, a process may be redesigned to no longer require the use of a hazardous substance or to use a nontoxic or less toxic substitute. A machine may be redesigned so that a formerly dangerous part (e.g., saw blade) can no longer be reached by a worker. Common sense alone dictates that in those instances where engineering controls can be practically implemented, they are preferable to relying upon the impact of warnings and training upon the workers. However, despite tremendous reductions in work-related injuries and mortalities since the adoption of the Occupational Safety and Health Act of 1970 (NIOSH, 2004), work remains the sixth leading cause of death in the United States (Pickle et al., 1996).

Clearly, much more remains to be done. If these safety efforts cannot be fully accomplished through engineering controls, then one must rely upon OSH interventions with workers—a realm in which behavioral scientists should have far more to offer than engineers. However, even the implementation of engineering controls is not without room for behavioral sciences. After all, the managers who make decisions about whether to devote resources to implementing these controls are subject to the same influences upon their decision-making processes as other humans. Examination of this decision-making process clearly falls within the realm of OHP. Among the most common worker OSH interventions are training and behavior-based safety programs.

Occupational Safety and Health Training

Colligan and Cohen (2004) argue that learning new information is a process that occurs so frequently, and often so effortlessly, we tend to take its efficacy for granted. However, if one looks at the massive public health information campaigns concerning smoking, safe sex, exercise, and driving while intoxicated, one must conclude that information alone is not the answer. In their comprehensive review of the OSH training literature, Cohen and Colligan (1998) concluded that OSH training can indeed have a significant impact, but cautioned that training does not occur in a vacuum, and it alone will not result in a safer workplace. Counseling psychology can make significant contributions to improving workplace health and safety by helping both managers and workers better understand and overcome the challenges inherent to any attempt to change human behavior—in the workplace or elsewhere.

Training Factors

In broad terms, the factors impacting the effectiveness of training may be divided into three categories: the training model, the work context that the worker returns to, and the individual worker. Colligan and Cohen (2004) point out that two of the most obviously important variables impacting training effectiveness—frequency and duration of training—are also among the least studied. Many companies base their training schedules on Occupational Safety and Health Administration regulations and/or insurance carrier minimum requirements. In many instances, this consists of an initial training when starting a new job, followed by annual refresher training. Colligan and Cohen report, as might be expected, the literature indicates more frequent and lengthier training is more effective. However, there is little in the literature to guide optimal frequencies or length of training. As might be expected, more complex functions that are seldom performed deteriorate more quickly than those requiring simple manual operations. This suggests that those complex functions that are critical to emergency response, but only performed during an emergency, should be practiced far more frequently than those that are not. For example, respirator usage, which requires not only a proper device fit, but correct selection of appropriate filters, should be practiced more frequently than less complex behaviors, such as evacuating a building during a fire drill.

Colligan and Cohen (2004) suggested the more interactive and "hands-on," the more effective training will be. Support for this contention is found in the recent meta-analysis of OSH training effectiveness conducted by Burke et al. (2006). Burke et al. found that training effectiveness was related to the *level of engagement* of the training. Low-engagement training consists of activities such as lecture or film presentations that are not followed by any discussion. Medium-engagement might consist of a lecture followed by an interactive discussion of content. High-engagement training typically has "hands-on" opportunities and allows for a high degree of interaction between participants and instructors.

Work Environment

Unfortunately, no matter how much is learned in training, the safety recommendations can only be practiced to the extent that the work setting allows or endorses a given practice (Colligan & Cohen, 2004). In some settings, the proper PPE is not provided. In others, the actual physical layout of the facility will not allow proper practices to be implemented. An example of this would be a warehouse shipping facility that was so arranged that ergonomically recommended lifting and carrying practices could not be used. Perhaps the most important factor influencing actual implementation of safety practices on the job is management support or safety climate. As discussed earlier, the workers in a company that consistently requires safe work practices, without compromise during periods of high production demand, are more likely to use proper safety equipment, even when not closely supervised and will identify ways to improve safety of their own initiative (Zohar, 2003). In contrast, a company that compromises safe work practices during periods of high demand will tend to have workers who are less likely to follow safe work practices even during periods of normal work load.

The Worker

Another important factor related to compliance with training recommendations is worker motivation (Colligan & Cohen, 2004). A worker who knows the correct practice may simply choose not to do it. Campbell, McCloy, Oppler, and Sager (1993) characterized the difference between knowledge and motivation as "can do" versus "will do." Worker motivation at the individual level has received little attention in the OSH literature. In part, this reflects the traditional OSH bias against approaches that have the potential to "blame the victim"—after all, poor motivation could easily be characterized as a character flaw. However, it does seem clear from the discussion above that improving a company's safety climate would be an excellent way to improve worker motivation. Referring back to the core components of counseling psychology, there is clearly a role for positive psychology here. Focusing on identifying the critical positive health and safety behaviors and providing contingencies to increase and maintain those critical behaviors is the primary aim of behavior-based safety processes and should be the lens through which worker motivation challenges are viewed.

Behavior-based Safety

Behavior-based safety processes are one widely used approach to maintain recommended safety behaviors following training. These programs usually consist of an initial safety training that is then followed by implementation of a monitoring system (Geller, 2001). A safe practices monitoring system typically consists of systematic observation and recording of the targeted behaviors (e.g., proper use of PPE), followed by feedback to workers regarding the frequency or percentage of safe versus at-risk behaviors observed. These programs may also include goal setting, commitment strategies, and/or incentives to encourage participation.

Critics of behavior-based safety programs claim the widespread use of incentives has the potential to turn OSH into a "numbers game," in which the number of observations completed and percentage of safe behavior are manipulated so that individuals and/or work groups will achieve program goals—at least on paper—and thereby qualify for an award (Geller, 2001). In response to these criticisms, Geller (2005) developed an approach he dubbed *people-based safety*. This approach melds aspects of behavior-based safety programs with a focus on individual worker feelings and thoughts regarding safety and a strong management commitment to a safe workplace. In many respects, Geller's people-based safety approach is intended as a mechanism by which an organization can positively transform its safety climate.

Transforming the safety climate in a given work environment requires not only increasing critical health and safety behaviors, but also influencing the attitudes of workers to hold safety as a *value*, and not just a temporary *priority*. Geller's (2005) people-based safety approach directly targets workers' thoughts about safety, so that attitude change and behavior change are impacted simultaneously, rather than one following from the other. This is analogous to cognitive-behavioral therapy for the organization. Counselors can support these kinds of group-level intervention processes by providing additional targeted intervention for individuals who are less responsive than their coworkers.

Health Promotion Interventions

For decades, many European public health agencies have been taking advantage of the "captive audience" provided by the workplace and using it as a forum for broader public health initiatives, such as weight loss and smoking cessation. However, it is only in the last decade, in response to increasing health care costs, that this strategy has been implemented in American workplaces. NIOSH (2009) has launched the WorkLife Initiative (WLI). The WLI views the

division of health concerns into "at home" or "at work" as being artificial and inefficient. The WLI seeks to improve overall work health through better work-based programs, policies, practices, and benefits.

Weight Control and Physical Fitness

One of the most common health concerns addressed by work-based health promotion programs is weight control. Similar to the success of occupational safety training initiatives, most research supports the positive effect of worksite physical activity programs for increasing physical activity and reducing musculoskeletal disorders (Proper et al., 2003). A differentiation is made between physical activity and exercise. Physical activity refers broadly to bodily movement produced by contraction of skeletal muscles, which substantially increases energy expenditure. Exercise refers to a subset of physical activity that is planned, structured, and includes repetitive bodily movement done to improve or maintain components of physical fitness (Pratt, 1999). Physical activity refers to any sort of moderate level of continuous movement (e.g., walking, bowling, playing Nintendo Wii©), whereas exercise refers specifically to aerobic activity in which one engages in moderate- to high-intensity activity with sustained increases in heart rate and respiration (e.g., running, swimming, cardio-boxing).

Although most recommendations for worksite interventions suggest increasing physical activity along with improving diet through education and nutrition counseling, research shows significant reductions in overweight and obesity conditions and increases in fitness are realized only when interventions include a high dose level of some type of aerobic exercise (Church, Earnest, Skinner, & Blair, 2007). This is not to say that physical activity is ineffective in low and moderate doses, but rather that there is a dose–response relationship that can be characterized as "Even a little is good; more may be better!" (Lee, 2007, p. 2139).

Disease Prevention

Exercise and nutrition interventions may also be applied in work settings for disease prevention outcomes. Worksite health interventions may be targeted for specific types of disease, including cancer, diabetes, and cardiovascular disease. Many of these efforts can be characterized as "lifestyle change" interventions, as they tend to require participants to not only change their behavior at work, but also at home and with family.

Cardiovascular disease is of particular concern in the realm of disease prevention as it remains the number one cause of death in the United States (National Center for Health Statistics, 2007). The most effective work-based cardiovascular disease prevention interventions address multiple factors (i.e., controlling hypertension, reducing cholesterol, managing stress, quitting smoking) rather than focusing solely on reducing one targeted risk factor, as these interventions allow different employees to benefit from the program in different ways (Pelletier, 2005). A review of multifactorial cardiovascular intervention programs also found providing opportunities for individualized cardiovascular risk reduction counseling for high-risk employees to be a critical component of successful interventions, as well as gradually increasing dose–response relative to risk (Pelletier, 2005).

A Framework for Occupational Health Psychology

Clearly, OHP is a field that is interested in many topics: the individual worker, the work organization, job design, work stress, person–environment fit, gender, aging, racial/ethnic group differences, social climate, prevention, remediation, learning, motivation, compliance, and the work–family interface. In part, this list reflects the interests of the many disciplines involved in OHP, but to a greater extent this list reflects just how cross-cutting work is.

In an effort to better frame OHP, Quick (1999) proposed an organizational matrix for OHP. This framework crosses the public health levels of prevention—primary, secondary, and tertiary—with the three primary emphasis areas of OHP—work environment, individual worker, and the work–family interface. The crossing of levels of prevention with areas of interest in this model yields nine cells, each of which represents a different set of challenges and solutions (see Table 29.2).

In public health, *primary prevention* refers to activities intended to prevent problems from ever occurring (Quick, 1999). *Secondary prevention* refers to activities intended to remedy problems after they have already occurred, but are not yet at the level of crisis. *Tertiary prevention* is somewhat of a misnomer as it refers to activities intended to control the damage of problems that have reached the point of crisis. In Quick's model, the *work environment* refers to virtually everything on the job other than the individual worker. For example, this broad category includes the job tasks, the equipment used, the physical environment, supervision received,

Table 29.2. An Intervention Framework for Occupational Health Psychology

Level of Prevention	Workplace	Individual	Work–family Interface
Primary	job design or redesign, organizational culture	time management, learned optimism	flexi-time, flexi-place, daycare, elder care
Secondary	social supports, team building	physical fitness, relaxation training	family leave policies, family support systems
Tertiary	task revision, EAP	psychotherapy, education, career counseling	health insurance, family counseling

From Quick, J.C. (1999). Occupational health psychology: The convergence of health and clinical psychology with public health and preventative medicine in an organizational context. *Professional Psychology: Research and Practice*, 30, 123–128. American Psychological Association. Reprinted with permission.

company policies, and corporate decision making. The *individual* refers to everything a given worker brings to a job—work history, education, skills, attitudes, habits, expectations, and motivations. The *work–family interface* refers to the overlapping of life domains, in this case work and family. This dynamic construct recognizes that, not only does work impact family life in ways such as mandatory overtime, shift work, business travel, the carrying home of work-related stress—but that family needs and events impact work. Examples include the availability of child or elder care, dual-career households, and the chronic illness of a family member.

Finding Common Ground

Quick (1999) predicates this model on two principles: individual health and organizational health are interdependent, and organizational leaders have responsibility for individual and organizational health. Given that, in many companies, there is a history of conflict between management and workers, the first challenge for an occupational health psychologist may be to help management and workers find common ground upon which to ease into the cooperation implied by these principles.

Indeed, it has long been conventional wisdom that an inherent tension exists between meeting the needs of the organization and meeting the needs of workers. This is reflected in the traditional emphases of the two disciplines working in the area of vocational psychology. Industrial/organizational psychologists have typically approached problems from the perspective of the company. Counseling psychologists have focused on the needs of the individual. In OHP, this division is recognized, but is not viewed from an "either/or" perspective; rather, the needs of both parties are considered so intertwined that both require attention for any solution to achieve long-term success. Quick (1999) suggests that one important way to build a bridge between management and workers is to use P–E fit models.

By definition, P–E fit models describe the work environment and individuals using shared dimensions and attempt to identify optimal matches between the two—typically viewed as being of benefit to both. However, in practice, most applications have followed the division of interests discussed above. For example, industrial/organizational psychologists might use Holland types for selection purposes, without consideration of the needs of the individual. Similarly, counseling psychologists use the same Holland types to guide students toward college majors without consideration of the larger context in which they will spend their working years. Even in isolation, both approaches have proven useful enough to become nearly ubiquitous in their respective settings. However, OHP challenges and inspires us to consider how much more powerful P–E fit models could be if used to simultaneously meet the needs of both work environments and workers.

The Theory of Work Adjustment

Perhaps the P–E fit model best positioned for use in OHP is the *theory of work adjustment* (TWA; Dawis, 2004; Dawis & Lofquist, 1984). Hesketh and Griffin (2005) observed that few theories are comprehensive enough to be applied to career choice, selection, training, and organizational interventions. The TWA accomplishes this by placing equal emphasis on satisfying the worker and the workplace and by using symmetrical processes to describe both.

The TWA views work as an interactive and reciprocal process between the individual and the work environment (Dawis, 2004; Dawis & Lofquist, 1984). In simplest terms, the individual may be viewed as

fulfilling the labor requirements of the work environment, in exchange for which the work environment fulfills a wide range of financial, social, and psychological needs for the individual. The TWA provides a framework within which to predict the outcomes of the match between individual and work environment and to describe the ongoing process of interaction (work adjustment) between worker and work environment.

In his review of P–E fit models, Tinsley (2000) opined that TWA had accumulated the most evidence of validity of all P–E fit models and that its instrumentation was an exemplar of psychometric rigor. The NIOSH job stress model that conceptualizes job stress as arising from a mismatch between job demands and/or rewards with worker skills and/or needs was directly influenced by TWA (Lawrence R. Murphy, personal communication). In addition, the core variables of the TWA prediction model were adopted by the *Occupational Information Network* (*O*NET*), the United States Department of Labor's online database that is the successor to the *Dictionary of Occupational Titles*. The O*NET database is being increasingly used by OHP researchers to define important work-related variables. Interested readers should refer to Larson (2011, Chapter 6, this volume) for a more thorough discussion of P–E fit models and TWA.

Counseling Psychology and Occupational Health Psychology

Even with the benefit of Quick's organizational framework and powerful P–E fit models such as TWA, the sprawling field of OHP still is far from unified and seamless. Of the disciplines most actively involved in OHP, none can come close to addressing all the cells of Quick's matrix. Indeed, most can claim expertise in only one or two and relevance to few more. However, counseling psychology, which has been minimally involved in OHP to date, arguably has the potential to provide expertise and relevant input to nearly all the cells in Quick's matrix.

At the primary intervention level, starting with the workplace, counseling psychology does not have the ergonomic expertise to assist in the physical aspects of job design. However, counseling psychology could certainly contribute to the psychological aspects of job design. For example, simple application of Holland types would guide the sort of primary activities that were assigned to a position. By clustering activities that were of the same or adjacent Holland types, one has the potential to eliminate sources of job dissatisfaction and work stress. At the secondary prevention level for the workplace, counseling psychologists would surely have the background to contribute to the fostering of social support networks within a work setting. At the tertiary level of prevention, the general counseling background every counseling psychologist receives would certainly be congruent with employee assistance programs, and any skills useful for initial job design would also be applicable to job redesign.

Let us now look at the individual. At the primary prevention level, counseling psychology, which prides itself on having practiced positive psychology before it was ever labeled as such, could surely teach learned optimism. Also, what could be a better primary prevention measure at the individual level for job dissatisfaction and work stress than appropriate initial choice of career? At the secondary level of prevention, relaxation training and cognitive-behavior interventions for work stress are clearly within the potential scope of practice of counseling psychologists. Finally, at the tertiary level of prevention, psychotherapy, education, and counseling for career change are already common practice among counseling psychologists.

The primary prevention level of the work–family interface may initially appear to be in the realm of managerial policy setting. However, counseling psychology could provide input to the process. Similar input could also be provided at the secondary level regarding the development of family-friendly policies for the workplace. Finally, at the tertiary level, one finds family counseling, as another area in which many counseling psychologists are already practicing.

Recent Developments in Counseling Psychology

One might get the impression that many counseling psychologists have already been working in the field of OHP—but did not realize they were doing so. Imagine the impact they could have if their efforts were coordinated! A recent special section in *American Psychologist* (see 2008, vol. 63, no. 4) on work and career written by several of the most prominent counseling psychologists currently active in the field seems to have initiated just such a call.

Citing findings from the positive, vocational, multicultural, and clinical psychology literatures, Blustein (2008) argued strongly for the centrality of work to well-being and called for breaking down artificial barriers between vocational psychology

and other areas of psychology. Blustein identified OHP as being congruent with both the historical and current goals of vocational psychology and the psychology of work. He suggested that a conscious and purposeful linkage of these three "would yield a powerfully compelling scholarly and public policy agenda" (Blustein, 2008, p. 236).

Arguing along similar lines, Fouad and Bynner (2008) suggest that vocational psychology has focused primarily on the transition from school to work and has tended to turn a blind eye to the many transitions workers experience in the remainder of their working lives. Some of these transitions are voluntary and are largely associated with positive outcomes. Examples include advancement within one's field through promotion or accepting a new job that offers greater benefits and satisfactions. Other transitions are involuntary and associated with significant stress. Examples of stressful transitions include the loss of employment due to corporate downsizing, merger, or closure. Fouad and Bynner state that it is not possible to separate the impact of work transitions from other life domains. For example, the financial security (or lack thereof) of one's job impacts decisions such as marriage, having children, and purchasing a home. Work-related stress clearly impacts one's functioning as a life partner and/or a parent. Even "positive" transitions are likely to generate stress for both the individual and their family. For example, an exciting new job may require moving to another city, uprooting children from school, and initiating a job search for a working spouse. Although Fouad and Bynner discuss these concerns without reference to OHP, clearly these are all topics that have long been of interest to OHP.

In a third paper, Fassinger (2008) explored the interconnections between the core counseling psychology themes of vocational psychology, multiculturalism, and social justice within Blustein's (2006) psychology of work framework. The implications of Fassinger's paper are a powerful argument that the barriers separating the study of work from the remainder of life are not only arbitrary, but counterproductive. Ultimately, Fassinger concluded her paper with a call for action that pushes counseling psychology toward issues (occupational health disparities, organization of work, and work–family interface) that are of central interest to OHP.

Future Directions

At the beginning of this chapter, Bingham's (2001) categorization of counseling psychology into the four core areas of vocational psychology, positive psychology, multicultural psychology, and social justice was discussed. If this is an apt characterization, then counseling psychology and OHP share considerable overlap. Vocational psychology has relevance to better understanding the psychological aspects of job design and redesign, the work–family interface, work stress, and person–environment fit models. However, to be most useful, it will need to be the vocational psychology of the working class, not just the college educated. It will need to be the vocational psychology of adult workers, not just college undergraduates. It will need to be the vocational psychology that sees work not just as an opportunity for self-expression, but as an essential tool for survival, advancement, and empowerment.

Positive psychology, the study of well-being, has clear implications for guiding the development of organizational culture, work stress prevention programs and interventions, and family-friendly policies. It will be a positive psychology that identifies commonalities in high-functioning organizations and develops methods to implement these practices in less functional settings. It will be a positive psychology that embraces that most powerful of primary prevention interventions for work stress—a well-informed, thoughtful career choice.

Multiculturalism can assist organizations to engender policies and an organizational culture that truly embraces diversity and views it as an advantage in a competitive, increasingly global world of business. Multiculturalism can also contribute much to better understanding and then eliminating occupational health disparities. It will need to be a multiculturalism that places less emphasis on cataloging discrimination and victimization, and more on achieving and maintaining social, economic, and political power.

Social justice is, in many respects, a paradox. On one hand, it is the most ephemeral of these core values and at the same time the most concrete in its final impact. It is far easier to recognize its absence than its presence. However, it provides counseling psychology and OHP with a powerful moral compass pointing us toward the question of why simply working for a living, something we all have to do to survive—barring being born to wealth or winning the lottery—should remain a leading cause of injury and death. Social justice can be the force that does not ask why employers are hiring undocumented immigrants, but why these immigrants are killed and injured at two to three times the rate of American-born workers. Social justice can help us to explore

the ethical issues related to choosing between the immense resources required to change work organizations to stress workers less versus the far more modest resources needed to train workers to better cope with higher levels of stress.

Conclusion

A Return to Our Roots

In many respects, the counseling psychology described above represents a return to the roots of our field, a field that viewed vocational psychology, positive psychology, multicultural psychology, and social justice not as four separate themes, but inseparably interconnected and intertwined. This was a counseling psychology that viewed the workplace, for better or worse, as the venue in which social betterment, economic advantage, and political empowerment were obtained.

It is just this vision from our past that is OHP's future. As a field, OHP has matured enough that it is no longer merely cataloguing the adverse impact of organizational practices upon worker health and well-being. It is increasingly interested in developing both interventions to remedy current problems and best-practices guidelines that organizations can use to prevent problems from ever occurring. In both the United States and the European Union, occupational health psychologists have recognized the importance of the work–life interface and of alleviating occupational health disparities. With both globalization and advances in technologies rendering distances and borders less relevant, OHP will become of increasingly relevance to the remainder of the world as well, in part, to help developing countries to learn to avoid repeating our mistakes and in part, to remedy mistakes already made in the course of their rapid industrialization.

The fit between counseling psychology and OHP is so obvious that there is no doubt that some counseling psychologists will play a leading role in OHP. The question is whether as a field, counseling psychology recognizes and embraces OHP as being of the same intellectual and moral lineage and "become(s) not just part of the mainstream, but *the* mainstream of this movement toward the science and application of occupational health" (Hansen, 1995, p. 137).

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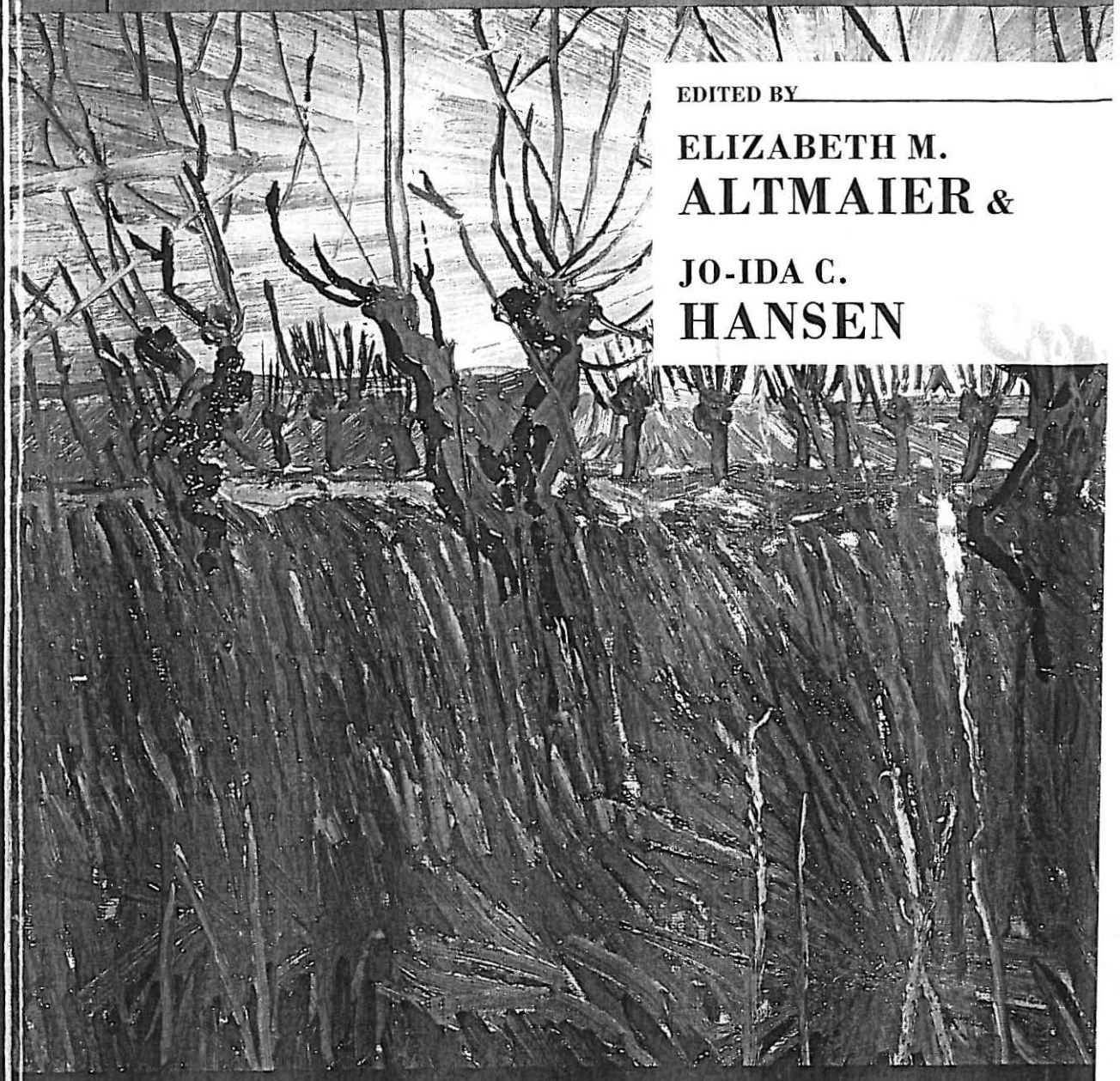

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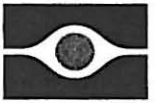

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