

INTRODUCTION

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For several decades, the National Institute for Occupational Safety and Health (NIOSH) has recognized that some workers groups have suffered disproportionate rates of disease, injury, and fatality compared with the population in general. NIOSH prioritized research investigating the causes, impacts, and possible solutions to these disparities in its National Occupational Research Agenda (NORA). The populations most frequently studied were women workers, aging workers, young workers, and workers from particular racial/ethnic backgrounds.

These research efforts yielded a wealth of descriptive information about the individual groups studied. However, it became clear that general methodological approaches for successfully conducting intervention research with majority populations were not well suited to working with many racial/ethnic minority groups. Traditional methodological approaches were particularly ineffective with Latino immigrant workers as they did not account for

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Occupational Health Disparities: Improving the Well-Being of Ethnic and Racial Minority Workers, F. T. L. Leong, D. E. Eggerth, C.-H. Chang, M. A. Flynn, J. K. Ford, and R. O. Martinez (Editors)

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differences such as language, culture, and immigration status. As researchers came to identify better ways to reach these groups, it was recognized that culturally sensitive approaches were not just better practice for these groups but also generated better science and could fruitfully be adapted to other populations as well.

The mission of the NIOSH Occupational Health Equity (OHE) program (formerly the Occupational Health Disparities program) is to “promote research, outreach, and prevention activities that reduce health disparities for workers who are at higher risk for occupational injury and illness as a result of social and economic characteristics historically linked to discrimination or exclusion” (<http://www.cdc.gov/niosh/docs/2016-142/>; NIOSH, 2016). *Health disparities* are differences in disease incidence, mental illness, or morbidity and mortality that are closely linked with social, economic, and/or environmental disadvantage. It is important to note that the NIOSH program envisioned its efforts to eliminate occupational health disparities (OHDs) as aligned with and congruent with the overriding goals of the Healthy People 2020 initiative (U.S. Department of Health and Human Services, 2016): to achieve health equity, eliminate disparities, and improve the health of all groups (<https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities>).

This volume has been produced to address health disparities within a discrete life domain—the workplace—focusing on OHDs experienced by racial and ethnic minorities. Some chapters in this book are the fruit of the NIOSH initiative. All chapters present evidence-based principles of occupational health psychology (OHP) to address numerous sociocultural factors and improve the well-being of minority workers—including Latinos, African Americans, and Asian Americans—in a variety of industries (e.g., farming, food service, transportation, nursing, office work). We hope that this book will serve as both an impetus and a framework for guiding future research, interventions, and policy formulations that will help reduce OHDs among the millions of racial and ethnic minorities that make up our workforce.

AN OVERVIEW OF OCCUPATIONAL HEALTH PSYCHOLOGY

Although the field of OHP is relatively young, its core concern—the well-being of workers—has existed as long as humans have worked for others. OHP is a multidisciplinary field drawing together anthropology, economics, ergonomics, epidemiology, medicine, nursing, psychology, and public health. OHP has implications, both policy and practice, for law, management, public health, and job design. The scholarly roots of OHP can be traced back for more than a century, but it is only in the past few decades that OHP has

emerged and coalesced into a distinct field of activity. Indeed, OHP did not exist as a specialty when most of the authors of this volume were in graduate school.

In many respects, OHP is analogous to family therapy models in which individual family members are always conceptualized within the context of the family system. Interventions are not aimed at individual family members but are intended to reshape the functioning of the entire family system, nudging it toward better health. Similarly, most OHP interventions are intended to change entire organizations or workgroups—to the benefit of individual workers. In part, this stance arises from the philosophic orientation of the larger occupational health community—that well-being is the responsibility of employers, not individual workers. It can also be argued that having one target for change (the work organization) rather than many (the individual workers) represents better economy of effort and also offers greater opportunities for developing interventions that are generalizable across multiple settings. Regardless of the merits of this orientation, it has become clear that such approaches are better suited to larger employers who have greater resources to dedicate to implementing and sustaining such processes. For example, models of safety culture conceptualize it as a top-down emanation reflecting company policies and management decisions that color the remainder of the workplace, including which behaviors are rewarded, and which are discouraged, in the work environment (Zohar, 2003). This model has been most successfully applied to larger companies having a clear, hierarchical structure and a highly skilled and/or unionized workforce. When companies have clear lines of power, their incentive to retain hard-to-replace workers and the need of management to respond to pressure from an organized workforce all combine to facilitate the success of interventions intended to bring about organization change using a top-down approach.

However, in small business situations, the line between owner/manager and worker is often blurred—particularly in family-operated businesses—and this conceptualization is harder to apply. In work settings employing less-skilled workers, who are easily replaced, there is often less incentive for management to make changes that would retain dissatisfied employees. Compounding this situation, these less skilled workers often have little social franchise and are not unionized. In such situations, there is neither economic nor political pressure for management to make changes to improve the well-being of workers without a corresponding increase in profits. The plight of these worker groups, many of whom are ethnic/racial minorities, falls within the realm of occupational health equity. Although focused on the workplace, occupational health equity is part of the larger intersection between public health and social justice that is referred to as the *social determinants of health*.

The social determinants of health have been defined as the “conditions in which people are born, grow, live, work, and age. . . . These circumstances are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices” (World Health Organization [WHO], 2014). Although often an unintended consequence of social policies, how societies organize themselves affects who gets sick or injured, who receives treatment, who is healthy, and who is not. When these social arrangements contribute to differences in health (e.g., rates of infection and injury, exposure to chronic conditions or risk factors, poorer treatment outcomes) among specific groups, they are often referred to as *health disparities* or *health inequity*.

When viewed within the framework of social determinants of health, it is clear that work must be conceptualized globally—as an integral and interactive part of one’s entire life. The NIOSH Total Worker Health (TWH; NIOSH, 2016) initiative recognizes that both work-related factors and health factors beyond the workplace jointly contribute to the many safety and health problems that impact workers and their families. Traditionally, programs addressing workplace safety were offered in isolation from programs addressing supposedly nonwork “lifestyle” issues (e.g., smoking cessation, weight loss) that are also frequently offered by employers. The TWH approach argues that this separation is artificial and that workers are better served by combining all such efforts into a coordinated and comprehensive well-being program.

As the next section discussing the history of OHP makes clear, this focus on worker well-being was not an initial aim of the scholarly activities that eventually gave rise to the field. Indeed, increasing productivity was the primary aim of these early efforts. Although this discussion can easily be framed in traditional terms of an adversarial relationship between labor and management, each side pursuing conflicting goals, the TWH approach argues that it is more fruitful to conceptualize worker well-being activities as a win-win situation for both workers and employers.

HISTORY OF OCCUPATIONAL HEALTH PSYCHOLOGY

Industrial–organizational psychology in the United States began in the early part of the 20th century with the rise of scientific management, its emphasis on time and motion studies to increase worker efficiency and productivity, and the demands of World War I. Scientific management separated “thinkers” from “doers” in the workplace, leading to the transfer of knowledge of production from workers to “scientific managers.” As a specialty, industrial psychology combined knowledge from experimental and

behavioral psychology and put it at the “service of commerce and industry” (Münsterberg, 1913). The emphasis of industrial psychology was on increasing industrial output by developing rational approaches to the problem of managing workers.

In particular, the focus was on mental testing and motivation. The aim was to use psychological methods to identify personalities that were, by their mental qualities, fit for particular types of work. The specialty would later be applied by the U.S. Army to classify and assign military personnel. The pioneering studies of the Hawthorne plant of Western Electric Company in the late 1920s and early 1930s examined the influences of environmental factors (lighting and other workplace factors) and drew attention to the demand characteristics of research studies and to the influence of the work group in the productivity of its members (Mayo, 1933, 1949; Roethlisberger & Dickson, 1939; Whitehead, 1938). Known as the *Hawthorne effect*, the findings of the study shed light on the importance of the social, psychological, and cultural features of work, as well as the relationship between workplace conditions and worker motivation.

The human relations dimensions of worker productivity gained further momentum through the work of Abraham Maslow, who argued that repressive environments inhibited individuals from self-actualization (Barling & Griffiths, 2011). In other words, psychologically healthy individuals were more likely to be motivated to work (Maslow, 1965) and less likely to be alienated from their productive selves through repressive work environments, as Karl Marx (1867/1976) argued late in the 19th century.

Another major influence in the development of OHP was the work of Arthur Kornhauser, who started his applied career focusing on the development of trade tests for the U.S. Army during World War I (Zickar, 2003). He viewed the use of tests as a useful approach to help people find fitting employment and for management to select good employees. By 1930, however, he began to critique industrial psychology for being obligated to management, arguing that selection procedures and training programs were evaluated with regard to efficiency and without regard for worker satisfaction. He then began to study “worker feelings,” including job satisfaction, boredom, and the fullness of life within modern industry (Kornhauser, 1930).

Because of the close relationship between industrial psychology and management, a focus on the issues of concern to labor was minimal (Gordon & Burt, 1981). Indeed, labor unions regarded industrial psychology with distrust and suspicion. Consequently, concerns for the health and safety of workers took two separate paths: one in which labor unions were directly concerned with the hazards of the workplace, and the other—that of industrial psychology—giving indirect attention to these issues in the pursuit of increased worker productivity. As industrial psychology continued to integrate studies from

different fields and subfields, including medicine and clinical psychology, it gave increased attention to the dimensions of the workplace and their role in generating stress and depression among workers. By the beginning of the second half of the 20th century, an emerging interdisciplinary subfield had begun to take form within a broadening overlap among other emergent subfields, including industrial psychology, management, public health, preventive medicine, industrial engineering, industrial medicine, and nursing (Macik-Frey, Quick, & Nelson, 2007).

By the 1950s, the field of public health had begun to include occupational and environmental health, within the context of an organization, as topics across a broadening range of disorders and health risks (Macik-Frey et al., 2007). Many studies within this period focused on stress and productivity, and as the human relations school continued to influence the emerging subfield of occupational health psychology, more and more attention was given to the influences of work environments on the physical and psychological aspects of employees. By the 1970s, many studies were underway on the psychosocial aspects of work, and with the passage of the Occupational Safety and Health Act of 1970 (OSH Act), several institutional mechanisms were implemented to “assure safe and healthful working conditions for working men and women,” including the Occupational Safety and Health Administration (OSHA), NIOSH, and the independent Occupational Safety and Health Review Commission.

Leading up to the passage of the OSH Act was the collaboration set in motion in 1969 between the Employment Standards Administration of the U.S. Department of Labor and the Institute for Social Research—the Social Environment and Mental Health and the Organizational Behavior programs at The University of Michigan. This collaboration was based on a series of Quality of Employment Surveys conducted between 1969 and 1977 and variously supported over time by the U.S. Department of Labor, NIOSH, and other federal agencies. The surveys were conducted to meet the need for reliable data on the varying conditions of employment and the behaviors, attitudes, and problems associated with employment among employed adults. There was also an interest in the general changes occurring in society that related to work and in developing the technological capacity for monitoring such changes (Quinn & Staines, 1979).

In 1971, the secretary of health, education, and welfare commissioned a task force to examine health, education, and welfare issues in relation to employment (Sauter & Hurrell, 1999). The seminal report, *Work in America*, highlighted (a) the general dissatisfaction with jobs among workers; (b) the psychosocial aspects of worker health; (c) the physical and mental health costs of jobs; (d) the recommendation that work be redesigned to allow workers to participate in decision-making processes affecting their lives; (e) worker

self-renewal programs that allow for additional education and training and for worker mobility; and (f) the role of federal policy in relation to the creation of jobs, manpower, and welfare to improve the quality of working life in America (O'Toole & Members of the Special Task Force to the Secretary of Health, Education, and Welfare, 1972).

With these studies came a surge of further research on occupational stress and its effects on worker productivity and health. During the 1980s, studies sought to identify work-related psychological injuries, distress, and disorders among the top 10 occupational health risks by NIOSH (Quick et al., 1997). At the same time, management studies continued to focus on the organizational dimensions of occupational health and safety, including the coining and use of the concepts *safety climate* and *safety performance* (Macik-Frey et al., 2007). By 1990 the term *occupational health psychology* had been coined by Raymond, Wood, and Patrick (1990), and NIOSH put forth its national strategy to prevent work-related psychological disorders (Sauter, Murphy, & Hurrell, 1990), acknowledging that there was not an adequate national surveillance system to assess the scope of the psychological health disorders. Following this there was an emphasis on the development of surveillance systems that could lead to early identification of health problems within populations, identification of health risk factors, and development of intervention and treatment approaches to prevent disorders and improve health (Macik-Frey et al., 2007).

Over the past decade and a half, NIOSH has collaborated with the American Psychological Association (APA) in launching a series of initiatives to promote the new field of OHP. These include graduate training programs in OHP; a series of international conferences on work, stress, and health; establishment of the Society for Occupational Health Psychology (SOHP); and the founding of the *Journal of Occupational Health Psychology*. Over the years, the journal has published articles across a broad range of the topics, including burnout, work–family issues, violence, safety, job insecurity, substance abuse, leadership, aging, workaholism, positive organizational behavior, and more. As the range of studies broadens, new topics signal scholarly shifts in the specialty, with positive health and positive psychology gaining recent attention (Macik-Frey et al., 2007). More recently, the topic of OHDs has gained increased attention, and in 2011 NIOSH held a national conference on Eliminating Health and Safety Disparities at Work. At the same time, changes at the macro level have also affected the conditions and organizational context of work. These include technology and globalization, both of which have had major impacts on work in the 21st century, both within the workplace and within the broader economic environment.

Globalization has brought recognition to the notion of a global workforce and the need to protect the health, safety, and welfare of its members. At the same time, economic restructuring has resulted in flatter companies,

leaner production processes, and new management policies. These changes provide numerous new dimensions of work life to study. However, it is important to keep in mind that globalization is not the result of objective evolutionary processes (Paul & O'Brien, 2006). Rather, it is the result of deliberate policies and practices based on the ideology of free-market fundamentalism better known as *neoliberalism*. Although OHP recognizes legislation as an important factor in worker health and safety, it does not have a salient focus on policies and legislation. As a consequence, it tends to accept the changing context of firms and corporations as given and tends to study its effects rather than considering the possibility of changing the policies that are influencing the nature and context of work today—that is, recognizing the trajectory of a society based on free-market fundamentalist policies, which tend to run against the mission of occupational health organizations. It may be that the study of occupational health must be broadened to include sociological and political theory to expand its influence on the improvement of worker health and safety conditions. Indeed, perhaps occupational health can be viewed as the nexus by which the distribution of power in society and its influence on the work lives of employed adults can be examined and ultimately altered.

RECENT DEVELOPMENTS IN OHDS AMONG RACIAL AND ETHNIC MINORITIES

The nature and extent of OHDs among racial and ethnic minorities can be better explained by describing several recent developments that have provided the context for the current volume.

Healthy People 2000

From a federal government perspective, the current focus on health disparities research can be traced back to the national Healthy People 2000 initiative. In his update, Koh (2010) pointed out that the initiative was launched by the U.S. Department of Health and Human Services in 1979. It was based on a systematic approach to health improvement at the national level and identified baseline data and 10-year targets by monitoring outcomes and evaluating the effects across the country. In addition, it also included multiple iterations during the last 4 decades.

In their overview of Healthy People 2000, Mason and McGinnis (1990) noted that the aims of the initiative were

to increase the span of healthy life and reduce the disparities in health status experienced by different groups of Americans through the prevention of disease and disability. . . . Health promotion, health protec-

tion, and preventive services are employed as three broad approaches to improving the health status of the population. . . . In addition, objectives are established for improved surveillance and data systems, and a cross listing is provided for the objectives according to the age groups that are targeted. (p. 441)

Mason and McGinnis (1990) noted a mixed picture with regard to the outcomes being evaluated within the initiative. For example, although death rates declined for three of the leading causes of death among Americans (i.e., heart disease, stroke, and motor vehicle crashes), many of the gains in the 1980s were not shared by certain population groups. The national monitoring discovered that certain high-risk groups were bearing a disproportionate share of disease, disability, and premature death compared with the general population. It was this pattern of findings that gave rise to the attention to health disparities among different groups in the country. Specifically, Mason and McGinnis (1990) observed that

health disparities between the poor and those with higher incomes are almost universal for all dimensions of health. Those disparities may be summarized by the finding that people with low incomes may have death rates twice that of people with adequate incomes. Poverty reduces a person's prospects for long life by increasing the chances of infant death, chronic disease, and traumatic death. For the coming decade, perhaps no challenge is more compelling than that of equal opportunity for good health. (p. 443)

From their review of the status of the Healthy People 2000 initiative, Mason and McGinnis (1990) concluded that special attention was needed to reduce and eventually eliminate these health disparities in death, disease, and disability rates experienced by these groups compared with the general population. Thus, the nation's attention was directed to the health disparities uncovered by the Healthy People initiative.

The Institute of Medicine's *Unequal Treatment* Report

A concomitant of the U.S. history with regard to racial and ethnic minorities is the inequities experienced by these groups in the nation's health system. Whereas research on such racial and ethnic differences in access to and quality of health care has a long history, critical attention to the problem was catalyzed by the national report *Unequal Treatment* (Institute of Medicine, 2003). In some sense this report was the culmination of the undeniable pattern of health disparities among racial and ethnic minorities uncovered by the national monitoring undertaken in the Healthy People initiative. *Unequal Treatment* stimulated greater attention to the topic and galvanized

the country's scientific community's attention to this problem. One example of this development is the transition of the National Center on Minority Health and Health Disparities to the National Institute on Minority Health and Health Disparities in 2010. The promotion of the center to that of an institute represents the recognition by National Institutes of Health of the increasing importance of minority health disparities and provides a more central structure for addressing this national challenge.

The abstract from *Unequal Treatment* (Institute of Medicine, 2003) provides an excellent summary of the health disparities identified in the study:

Racial and ethnic minorities tend to receive a lower quality of healthcare than non-minorities, even when access-related factors, such as patients' insurance status and income, are controlled. The sources of these disparities are complex, are rooted in historic and contemporary inequities, and involve many participants at several levels, including health systems, their administrative and bureaucratic processes, utilization managers, healthcare professionals, and patients. Consistent with the charge, the study committee focused part of its analysis on the clinical encounter itself and found evidence that stereotyping, biases, and uncertainty on the part of health care providers can all contribute to unequal treatment. The conditions in which many clinical encounters take place—characterized by high time pressure, cognitive complexity, and pressures for cost containment—may enhance the likelihood that these processes will result in care poorly matched to minority patients' needs. Minorities may experience a range of other barriers to accessing care, even when insured at the same level as Whites, including barriers of language, geography, and cultural familiarity. Further, financial and institutional arrangements of health systems, as well as the legal, regulatory, and policy environment in which they operate, may have disparate and negative effects on minorities' ability to attain quality care. (p. 1)

Since the publication of *Unequal Treatment*, the scientific literature has grown exponentially. For example, a search of PsycINFO for the decade before the release of the Institute of Medicine report for research on "health disparities" yielded 5,244 entries (1999–2009). Using the same search term in PsycINFO for just the last 4 years yielded over 8,573 entries (2010–2014). This translates to an average of 524 articles per year before *Unequal Treatment* and an average of 2,143 articles per year afterward, a 400% increase.

In 2014, Smedley and Myers (2014) provided an updated review of the research progress with regard to health disparities in a special issue of the *Journal of Social Issues*. As represented by the articles in that special issue, health disparities continue to remain a major problem for racial and ethnic minorities. Indeed, in their guest editors' introduction to the issue, Smedley and Myers (2014) pointed to the mechanisms of racism and discrimination as

key factors in the health status of people of color. They had organized the special issue as an attempt to connect research on racism and how it “operates at the interpersonal, internalized, institutional, and structural levels” (Smedley & Myers, 2014, p. 382) to maintain these health disparities and concluded that policy strategies are needed to mitigate the racism—health relationship underlying this national problem.

OHD According to NIOSH

NIOSH’s program on OHDs (NIOSH, 2012) recognized that both general and occupational health disparities have a disproportionate impact on racial and ethnic minorities and those with lower socioeconomic status:

As the workforce becomes more diverse, it has also become clear that there are disparities in the burden of disease, disability, and death experienced by certain population groups, including low-income workers and racial/ethnic minorities. The public health research community has conducted many excellent studies which document the growing disparities in rates of health outcomes such as cardiovascular disease, cancer, and mental health, as well as in the access to and quality of care. Although not as well researched, current statistics indicate that disparities also exist in the rates of occupational illnesses and injuries. Occupational hazards are known to be distributed differentially; workers with specific biologic, social, and/or economic characteristics are more likely to have increased risks of work-related diseases and injuries. Therefore, one of the priority areas established by the National Occupational Research Agenda (NORA) in 1996 was improving research to define the nature and magnitude of risks experienced by these special populations and to develop appropriate intervention and communication strategies. (NIOSH, 2012)

METHODOLOGICAL CONCERNS IN OHD RESEARCH

Research in OHD, much like cross-cultural and cross-national research in any other topic areas, faces particular challenges. The first challenge is *measurement equivalence*, which refers to the extent to which instruments or scales maintain their meaning and calibration across samples with different cultural or national backgrounds (Sanchez, Spector, & Cooper, 2006). Measurement equivalence is of particular importance when the instrument is based on self-reports. For example, researchers may compare burnout symptoms assessed by a set of self-reported questionnaire items across different racial or ethnic groups. These scales are often developed and validated in the mainstream (e.g., racial or ethnic majorities) samples, with minimum attention paid to establishing the measurement equivalence when they are applied

to samples with different cultural backgrounds (Stewart & Nápoles-Springer, 2003). As such, diverse group members' (e.g., racial or ethnic minorities) scores on these scales may reflect not only their true scores on the construct that the scale intends to assess (e.g., burnout) but also their potential biases, rendering the comparison between groups difficult to interpret.

Moreover, when conducting research on OHDs, researchers often have to adapt the established scales or interview protocols from its original language (e.g., English) to the native language because the target population (e.g., immigrants) may not be sufficiently fluent in English. In this case, researchers typically use the translation-back-translation procedure (Brislin, 1980), such that the items are first translated into the target language (e.g., Mandarin) by the first translator and then are translated back to their original language (e.g., English) by a second, independent translator. The back-translated items are compared with the original items so that discrepancies can be identified and resolved. Although the translation-back-translation procedure can result in a version of the scale in an alternative language that is similar in meaning compared with its original version, some researchers have questioned the extent to which this procedure can produce precise matches in connotative meaning between versions of the same scale (e.g., Chang & Spector, 2011). In particular, Chang and Spector (2011) discussed the possibility that while an item may appear to have the same meaning across two languages, its relative standing on the construct it intends to measure may be different across two languages. For example, English-speaking participants may interpret an item as reflecting a mild symptom of burnout, whereas Mandarin-speaking participants may interpret the same item as indicative of a more severe symptom of burnout. In this case, participants' responses to the same item, although seemingly equivalent, may actually reflect their different standings on the construct of burnout.

In addition to a rigorous translation-back-translation procedure, measurement equivalence may be statistically established (Nye & Drasgow, 2011). Two approaches are often used to test the measurement equivalence. The first approach uses the differential item functioning analysis within the item-response theory framework to assess whether individuals with the same standing on a variable but from different groups assessed by the scale have the equal observed scores. This approach allows researchers to determine whether items behave differently across different samples (Chang & Spector, 2011; Nye & Drasgow, 2011). A second approach is the confirmatory factor analysis to compare the mean and covariance structure. This approach allows researchers to compare the factor structure of a set of items and may establish equivalence based on a set of more stringent (e.g., equivalent means and covariance) versus relaxed (e.g., similar factor structure with nonequivalent loadings) criteria (Vandenberg & Lance, 2000). The confirmatory factor analysis also

allows researchers to examine the equivalence of multiple scales at the same time (Chang & Spector, 2011). Both approaches can be useful in evaluating measurement equivalence for OHDs research that involves comparing multiple groups with different backgrounds.

Finally, even objective records (e.g., occupational fatality or injury rates) or assessment (e.g., objective socioeconomic status) may have measurement equivalence concerns (Stewart & Nápoles-Springer, 2003). For example, Braveman, Cubbin, Marchi, Egerter, and Chavez (2001) found that different objective indicators of socioeconomic status, such as education level and income, were interpreted differently across racial and ethnic groups. They cautioned researchers interested in health disparities to select the appropriate measure of socioeconomic status that is based on clear conceptual justification.

A second methodological challenge in research on OHDs is sample equivalence. *Sample equivalence* refers to the extent to which the samples involved in a health disparity comparison study are different in only the factor that is presumably resulting in the disparity (e.g., gender, race, ethnicity; Sanchez et al., 2006). Sample equivalence is important because it helps rule out potential confounding variables that may explain the observed differences in occupational health and safety indicators between the groups. For example, researchers may collect data from U.S.-born versus foreign-born farm workers to compare their exposure risk to chemicals used in pesticides. Although these two groups may appear to be equivalent in their occupation, there may be other differences between them (e.g., educational background, English fluency) that may contribute to the differential exposure risk for the two groups. These confounding variables add to the difficulty in interpreting the results.

Because it is not always possible to have case-controlled or matched samples to ensure sample equivalence, one way that researchers can address the sample equivalence challenge is by including additional measures of potential confounding variables in their study. These variables can then be empirically tested and controlled in the analysis to help establish the statistical equivalence between the samples (Chang & Spector, 2011). This approach relies on researchers to accurately anticipate the potential confounding variables and to carefully plan for their assessment. Alternatively, Chang and Spector (2011) argued that replication of the findings across multiple samples and study sites may be another way to help rule out some confounding variables.

Finally, a third methodological concern for research on OHDs is the assessment of the specific factors that may explain the disparity between groups. Although the first step for research on OHDs is to establish the existence of disparities between groups, extending beyond the initial step to identify the mechanisms underlying these disparities can represent some

methodological challenges. This is in part because the root cause of OHDs may be complex and reflect multilevel processes that have dynamic and reciprocal effects on each other and on disparities. Thus, researchers need to design and use measures that can capture these processes to better understand the factors contributing to OHDs (Chang & Spector, 2011).

OVERVIEW OF THIS BOOK

Through its OHE program, NIOSH has sought to examine how some worker groups suffer disproportionate rates of disease, injury, and fatality compared with the population in general. This volume, based on a conference grant from NIOSH, is an extension of those efforts. Specifically, we organized the Michigan State University (MSU) Symposium on Multicultural Psychology, which generated this volume, to provide a review of the current state of the field and to formulate research needs and identify directions for future research and interventions to address OHDs. This volume follows the organization structure of the conference and therefore has been organized into three tracks of policy, research, and interventions. This tripartite organization is important because these three dimensions are interrelated and inform each other. Leading experts in these three areas were invited to present at the MSU Symposium and then prepare a more in-depth exposition of the ideas and issues presented at the conference.

All too frequently in the public health literature, occupational safety and health is treated as a bottom-up phenomenon. Injuries, fatalities, and efforts at their reduction are often conceptualized as factors, usually in terms of dollars and cents, impacting the overall economy. In Chapter 1, Martinez makes a strong argument that decisions made at the highest levels contribute significantly to the health inequities experienced by workers. Martinez draws clear connections between global economic policy and the significant OHD experienced by Latino workers, particularly immigrants, in the United States. Clearly, it is time to recognize that just as mandating implementation of health and safety measures in the workplace can impact economic bottom lines, policies aimed at the broader economy can lead to unintended hardship and tragedy in the workplace.

Moure-Eraso and Brunette argue in Chapter 2 that employment conditions are an important factor influencing the health of Latino workers. They hold that employment conditions are one of the nine social determinants of health identified by the WHO Commission on Social Determinants of Health. Employment conditions, however, are influenced by broader structural and community factors such as labor markets, social discrimination, work organizations, government regulatory agencies, educational systems,

population characteristics, and linkages between the provision of health services and employment. These factors impact the conditions of employment and the levels of risk of exposure to hazards, and consequently they impact the health of Latino workers. Moure-Eraso and Brunette provide a demographic overview of OHDs experienced by Latinos, including fatal occupational rates for native- and foreign-born Latino workers. They apply the WHO Social Determinants Framework of Employment Conditions and Health to Latino workers, which includes structural, individual social status, and intermediate factors (employment conditions), and they identify critical structural and intermediate intervention points.

In Chapter 3, Tetrick discusses how OHDs are largely driven by social status associated with the occupations and, therefore, reflect the general health disparities in the society. Racial and ethnic minorities are more likely to be employed in occupations with lower pay and prestige and higher risks of exposure to chemical, physical, and biological hazards. This tendency is similar across males and females. Although workers of these low-status occupations tend to suffer higher rates of occupational illnesses and injuries, Tetrick discusses additional mechanisms through which social status as reflected by occupation may have implications for employees' health and well-being. In particular, employees in these low-status occupations may perceive that they have low social status and restricted access to health care and experience more unfairness and stress associated with their low income. These psychological factors may mediate the effects of occupation status on workers' health.

Chapter 4 by Arcury and Quandt details the process and progress of a multiyear, multiphasic intervention intended to reduce the exposure of Latino immigrant agricultural workers and their families to insecticides. The discussion of the participatory action approach used by this project could serve as a primer for both scholarship and fieldwork for researchers new to this area. Arcury and Quandt remind us that true application of this approach requires engaging community partners as true equals and a willingness to commit professionally to the long-term well-being of a community that risks economic and political backlash through participation in research. However, if one is willing to shoulder these burdens, the rewards are great. Professionally, one is offered the rare opportunity to see research efforts translate directly into improving the well-being of a community, and as success breeds success, one is naturally led to the next research topic *ad infinitum*.

According to Chapter 5 by Roberts, stress is an internationally recognized health and safety risk factor and has become increasingly visible in the field of occupational disease as research supports the link between occupational stress and problems in health and safety. It contributes to a number of outcomes that threaten organizational success, and stress-related health and safety problems result in considerable losses to industry. An extensive

literature indicates that a variety of stressors that are associated with the way jobs are designed, along with other working conditions, contribute to problems in health and safety. It is particularly crucial for stress interventions to be developed for African Americans, who—along with other minority groups—have disparities that reflect inequalities in many aspects of life and are differentially exposed to race-related stressors. African Americans may be more likely than other groups to contend with racial/ethnic discrimination in the workplace.

Chapter 6 by Leong, Chang, and Mak provides a brief history and a demographic overview of Asian Americans with an emphasis on socioeconomic status and OHDs. It presents a process-oriented model for organizing the literature on OHDs and Asian Americans that includes risk/hazards (environmental and individual), human exposure and internal dose factors (bio-physiological, psychological, and behavioral), and health effect outcomes (disparities in symptoms and costs associated with occupational injuries and illnesses). The chapter concludes with sets of research and policy recommendations for addressing the OHDs experienced by Asian Americans.

In Chapter 7, Quandt and Arcury provide key insights into the development of safety training programs for low-wage immigrant workers in manual occupations. First they highlight the need for effective training programs as one way to address OHDs. They summarize the characteristics of effective training programs in general using examples from studies conducted with immigrant workers. They discuss the need for tailoring materials for the target audience and review the characteristics of immigrant workers that shape their training needs. They present a framework for using OSH research to develop training program and provide a detailed example from their own research using the model to create a training program on pesticide safety. They end the chapter with a discussion of procedures for developing effective training activities and materials that can be used in training programs for immigrant workers and provide some final thoughts on research to practice.

Chapter 8 by Kossek and her colleagues focuses on interventions that change the organization of work to reduce work–family conflict and therefore influence employee and family health. Organizational job and demographic population groups often covary in ways that shape work–family and job demands, which creates workplace structures and cultures that systematically influence employee well-being on and off the job. The chapter discusses the content and customization of the Work, Family, and Health Network (WFHN) intervention, which is a large-scale randomized field control work–family and health study. Kossek and her colleagues review the intervention in depth and highlight key findings. They also delineate implications for future research and policy.

Finally, the Afterword by Chang, Ford, and Martinez provides a comprehensive review of OHDs that synthesizes key points presented throughout

the book. It identifies common themes and recommends new directions for research, best practices for implementing interventions, and the implications of policy as they relate to addressing OHDs among racial and ethnic minorities.

The purpose of this volume is to provide a review of the major challenges of OHDs experienced by racial and ethnic minorities in this country. These challenges are discussed from the perspectives of research, practice, and policy, with the goal of empowering those three communities in their efforts to reduce the current set of OHD within our increasingly diverse country.

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