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Occupational Health Psychology: An Emerging Discipline[1]

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Abstract: There is growing concern that rapidly changing patterns of work organization and employment pose risk for occupational illness and injury. In the present article, we assert that these changes create new needs and opportunities for research and practice by psychologists in the area of work organization and health. We begin with an historical overview of the contribution of psychologists to the occupational safety and health field, and to the study of work organization and health. We then describe new initiatives by the American Psychological Association and national health organizations in the United States and Europe to frame a new field of study—called "occupational health psychology"—that focuses on the topic of work organization and health. We conclude with a discussion of emerging research needs and trends within this field.

Key words: Occupational safety and health, Occupational health psychology, Work Organization, Job Stress, Psychosocial Factors

As described in the preface to the recent Fourth Edition of the Encyclopaedia of Occupational Safety and Health "...occupational illnesses and injuries remain an unnecessary blight on the human landscape" (International Labor Office, 1998, p. v). In the United States (U.S.), an estimated 3.3 million workers are treated for occupational injuries yearly, and over 5000 workers die each year from injuries sustained on the job[1)]. Additionally, an estimated 862,000 workers are afflicted by occupational illness annually, and an estimated 50–60 thousand workers die from occupational illnesses each year[2, 3)]. Putting this loss into perspective, the annual death toll in the U.S. from occupational injury and illness exceeds yearly deaths in the U.S. due to either breast, prostate, or colorectal cancer, AIDS, motor vehicle accidents, or firearms. Economists have calculated the total annual financial costs of occupational injury and illness in the U.S. to be in excess of costs for Alzheimer disease, and on par with costs for cancer, circulatory disease and all musculoskeletal conditions[2)].

The purpose of this paper is to discuss contributions that the discipline of psychology can make to understanding and preventing occupational injury and illness in today's workplace. There has always been some interface between the fields of psychology and occupational health and safety. But with only a few exceptions (e.g., studies in human factors/ergonomics and industrial fatigue) the interface has been limited until recent years. In the last several decades,

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however, numerous developments have helped to define a broader role for psychologists in the occupational safety and health field. For example, the growth of the workplace wellness movement in the 1960s and '70s[4, 5] lead to the involvement of psychologists in the design and delivery of employee assistance, stress management and health promotion (employee fitness, health screening, health education) programs in the workplace. Also, within the occupational safety and health field itself, psychologists were drawn into developing subspecialty areas such as behavioral toxicology[6] and behavioral safety[7, 8]. But, perhaps most important in bringing psychology into the occupational safety and health field, and providing the cornerstone for the emerging area of occupational health psychology (OHP), are several interrelated developments: a) the growth and recognition of stress-related psychological disorders as a costly occupational health problem, b) growing acceptance that psychosocial factors play a role in the etiology of emergent occupational safety and health problems such as upper extremity musculoskeletal disorders, and c) recent and dramatic changes in the organization of work that foster job stress, health and safety problems at work.

In the following sections of this article we describe these developments and their historical antecedents, discuss roles and markets for the science of psychology in the prevention of occupational illness and injury, and describe some important themes for OHP research. We argue that the main promise for psychological research and practice in the occupational health field lies in primary prevention of illness and injury through better understanding and control of organizational risk factors. (By use of the expressions *organizational factors* and *work organization*, we refer to management and supervisory practices, production processes, and their influence on the way work is performed.) This emphasis on primary prevention and work organization is consistent with the perspective by Raymond, Wood, and Patrick[9] who can be credited with first conceptualizing the OHP field. In advocating for the training of psychologists in occupational safety and health, Raymond *et al.*[9] assert that "Beyond the basics of assuring that adequate mechanisms exist to deal with the negative consequences of work stress, the [psychology] profession has a responsibility to take on a more proactive role in advocating and developing healthful environments and policies that will...prevent work stress (p. 1159)."

Some Historical Roots

OHP is embedded in many disciplines and its beginnings can be traced to events early in this century in the fields we currently know as industrial/organizational and human factors psychology. In Great Britain during World War I, for example, the Industrial Fatigue Research Board (later called the Industrial Health Research Board) was organized to investigate fatigue and efficiency in relation to working hours, rest break schedules, and other aspects of job design[10].

Antecedents of OHP can also be clearly seen in the work of Mayo[11, 12] and Roethlisberger and Dickson[13], which began in the 1920s and paved the way to the "human relations" school of management. This school of thought held that the increased routinization and deskilling of tasks brought about by the industrial revolution and scientific management principles[14] created a threat to both the worker and the organization by giving insufficient attention to the worker as a whole person, and by reducing the possibilities of finding satisfaction in job tasks. Instead, it was argued that people want to feel useful and important at work and recognized as individuals.

Fueled by works such as those of Eli Chinoy[15] and Arthur Kornhauser[16] on physical and mental health problems among automobile (assembly line) workers, organizational theorists in the 1950s and 1960s became increasingly concerned about the impact of the job and the organization on the employee. These concerns soon became something of an international social movement focusing the interest of management, labor, and governments on the satisfaction and health of the workforce.

Interest in so-called psychosocial aspects of work flourished in the 1970s. In the late 1960s, the U.S. Department of Labor, in collaboration with the National Institute for Occupational Safety and Health (NIOSH), sponsored the Quality of Employment Surveys conducted by the University of Michigan. These national surveys in 1969, 1973, and 1977 provided the first representative data on organizational aspects of working conditions in the U.S., and enabled the first comprehensive studies in the U.S. linking work organization to the safety, health and well-being of workers[17]. Also during the early 1970s, a number of highly influential international conferences on occupational stress were sponsored by groups such as the World Health Organization, the Swedish Work Environment Fund, NIOSH, the International Committee on Occupational Mental Health, and Cornell University's Center for Occupational Mental Health[18].

Other events helped to solidify scientific interest in work organization, stress, and health. In 1971 Elliot Richardson, then Secretary of Health Education and Welfare,

commissioned a task force to examine health, education, and welfare problems from the perspective of the institution of work. The seminal report of this task force[19] reviewed the costs of work, and concluded that workers and society are bearing medical costs that have their genesis in preventable workplace stressors. The redesign of jobs was the keystone to the report, holding the promise of decreasing mental and physical health costs, increasing productivity, and improving the quality of life for millions of Americans.

Parallel forces and research were clearly afoot in Scandinavia during the 1970s, and can be seen in the works of Bertil Gardell[20] and Lennart Levi[21]. One of the most visible products of this line of research is the extensive body of recent studies of job demands and cardiovascular disease[22].

Role of NIOSH and the American Psychological Association

The stage for attention to work organization and health at NIOSH was set by events in the United States Public Health Service over three decades ago. In the 1960s, the Surgeon General of the Public Health Service established the National Advisory Environmental Health Committee to review environmental health (including occupational health) programs of the Public Health Service. In 1965 the Committee's Working Group on Occupational Health issued a report to the Surgeon General that foresaw many of the changes in work organization that are the center of attention in occupational safety and health today, such as the shift to a service economy, growth of information technology and knowledge work, and growth in nonstandard employment such as contractor-supplied labor[23]. The report expressed apprehension that these changes posed new and unexplored threats to worker health, and singled out psychological stress and associated health effects such as coronary heart disease as special concerns: "...millions of American Workers, as a direct result of their occupations, are exposed to health damage...increasingly, from psychological stress (p. 9)."

Similar concerns expressed by industry and labor in the context of Congressional hearings[24] found a sympathetic ear among legislators who framed the Occupational Safety and Health Act of 1970[25]. The Act gave broad recognition to behavioral factors and stress as etiologic agents for occupational disease and injury, and charged NIOSH with the responsibility for investigating these factors (Sections 20a1, 20a4, 20a7; see Cohen & Margolis[26], for further detail). This charge resulted in a vigorous program of job stress research at NIOSH, early products of which included seminal epidemiologic studies of work organization and health, such as the University of Michigan study of job demands and health in 23 occupations[27], and the Cobb and Kasl investigation of health consequences of job loss[28].

Spurred in part by the dramatic increase in worker compensation claims for job stress in the 1980s, NIOSH subsequently recognized stress-related psychological disorders as a leading occupational health risk[29] and proposed a national prevention strategy to address this growing problem[30]. About the same time, work organization problems and job stress were increasingly implicated in the etiology of other new occupational health concerns (e.g., upper extremity musculoskeletal disorders, workplace violence, and indoor air quality complaints). Buoyed by these developments, the NIOSH program on job stress and work organization took on greater prominence, and served as the platform for initiatives by the American Psychological Association (APA), the major association of psychologists holding doctoral degrees in the United States, and NIOSH to promote the field of OHP.

In the period 1990–1999, NIOSH and the APA launched a series of initiatives to promote the new area of OHP. Four international conferences on work, stress and health were convened; a program to fund post-doctoral training in OHP at major universities was implemented—and superseded by a similar but more expansive program at the graduate level; the *Journal of Occupational Health Psychology*, a scholarly journal which broadly addresses psychological factors as they relate to the cause, prevention and mitigation of occupational health and safety problems, was founded; and NIOSH, together with labor and industry stakeholders, placed the topic of work organization among its highest research priorities[3].

Work and Health Today: Application and Need for OHP

Occupational safety and health professionals are well-equipped to address physical, biological, and chemical hazards in the workplace, and the physical injuries and illnesses which result from exposure to these hazards. But, increasingly, the occupational safety and health community is confronted by hazards and disorders, such as organizational stressors and stress-related illness, that fall outside this framework, challenge the biomedical model, and necessitate expertise in behavioral science for their investigation and resolution.

New and intensified organizational demands in today's work environment

In advanced industrial countries, the last two decades have seen sweeping changes in the nature of work that have been

brought about by economic pressures of globalization and deregulation, by technological innovation, and by the growth of service and knowledge work. Responding to these forces, companies have restructured themselves, becoming flatter and smaller, new management policies such as TQM and self-managed teams have been adopted, and leaner production processes such as "just-in-time" and outsourcing have been implemented. In the United States, for example, one-third of American Management Association firms downsized their workforce in the period 1990–1995[31]. In response to these adjustments by industry, the conditions of work and employment have changed significantly. The demand for skilled or multi-skilled workers has increased with the growth of information technology and leaner, flexible manufacturing processes that require workers to perform multiple tasks. Supervisory conditions have changed with the introduction of teamwork, the evaporation of middle management, and the trend toward flexiplace or "at home" work arrangements (an estimated 15 million workers will be telecomuting by the year 2002 according to the U.S. Department of Transportation[32]). Jobs have become less stable and secure. Data from the International Survey Research Corporation[33] show a doubling (22%–46%) of the percentage of workers with lay-off concerns in the period 1988–1995[2]. Temporary employment has increased 400% since the early 1980s[34, 35], and projections are that a quarter of the workforce could be working in other than full time direct-hire employment arrangements by the year 2020[36]. Also, the number of hours worked per week continues to increase for all occupations. In the period 1985–1993, the percentage of the nonagricultural, salaried workforce that worked "long" hours (in excess of 48 hours weekly) grew 30 percent, to over 21 million workers[37].

These types of changes in the work environment have brought "work organization" to the forefront of concern in occupational health, both in North America and Europe. Complementing the data cited here from the United States, a 1991 Europe-wide study of working conditions found that "The proportion of workers who complain from *organizational constraints* (italics added), which are in particular conducive to stress, is higher than the proportion of workers complaining from physical constraints[38]." Thus far, there has been insufficient research to ascertain the health and safety risks posed by these recent changes in the organization of work. However, trends in occupational illness and injury statistics in the last two decades suggest a pattern of effects that could be plausibly linked to intensified organizational stressors in the workplace.

Health and safety implications

Coincident with recent organizational changes in the work environment, job stress-related disorders have mushroomed. By 1982 worker compensation claims for psychological disorders due to chronic stress at work had grown to 11% of all occupational illness claims[39].[3] More recent industry data suggest a more expansive and growing problem. Statistics by Northwestern National Life Insurance Company[40] show that stress-related disability comprised 13% of all disability claims they processed in 1990—up from 6% in 1980. Extrapolating from present day data, the best estimate is that approximately 30% of the workforce is working under high levels of perceived stress[41,42]. Data from the United States Bureau of Labor Statistics indicate that stress reactions are presently among the most disabling conditions in the U.S. in terms of lost time, averaging 25 days lost per incident in 1993[43]. It should be clear, however, that growing levels of job stress is a concern that is not unique to the United States. In Japan, for example, the percentage of employees reporting work-related stress gradually increased form nearly 50% in 1982 to over 57% in 1992[44]. Additionally, the U.K. Health and Safety Executive reported an increase in the prevalence of work-related stress, anxiety and depression in Great Britian in the period 1990–1995. In 1995, an estimated half million people in Great Britian reported stress-related ill-health which they believed was caused, or made worse, by work[45].[4]

Increasing job stress is not the only indicator of new and intensified organizational demands at work. Within the last decade, the proportion of work-related musculoskeletal disorders has grown to about 60 percent of all occupational illnesses[46]. Although the mechanisms are not fully established, there is now a substantial literature implicating work organization factors (e.g., highly routine or fragmented work, uncertain job future, time pressure, heavy cognitive demands, reduced social support) in the etiology of these disorders[47–49].[5]

Evidence specifically linking recent work, organizational and employment innovations to illness and injury risk is also beginning to emerge. For example, research indicates that so-called "lean production" practices, which attempt to increase productivity through continuous improvement, improved inventory systems, and elimination of wasted time and motion, may increase injury risk in the automotive industry[51–54]. New employment practices associated with efforts by industry to reduce production costs have also raised concerns. MIT researchers[34] found, for example, that contract workers employed in the petrochemical industry were less

educated and experienced than direct-hire workers, and received less safety and health training than direct hire workers. More recently, non-standard employment has been linked to hazardous work and to illness and injury in separate studies in Europe, Japan and in the U.S. The results of an extensive Europe-wide investigation, reported in 1998, established a link between "precarious" employment (fixed-term contracts and temporary work) and exposure to poor working conditions[55]. Watanabe[56] reported elevated levels of depression among temporary workers in Japan. And in the U.S., Foley[57] demonstrated a tendency toward increased worker compensation claims and lost workdays among temporary workers.

Opportunities and Need for Psychologists

The subject of work organization and associated health and safety risks falls into gaps between the disciplines of occupational health and psychology. Generally speaking, the occupational safety and health field is not well-prepared to deal with organizational stressors at work. For example, NIOSH Educational Resource Centers, which are primary training programs for occupational safety and health practitioners in the United States, do not provide focused instruction in the area of job design or work organization in relation to physical and mental health. The field of psychology, on the other hand, possesses the requisite expertise in work organization, stress, health and mental health. For example, industrial/organizational psychology provides expertise in work organization and job design, and the fields of health psychology, and clinical and counseling psychology, provide expertise on stress, health and mental health. However, none of these disciplinary areas have given substantial attention to occupational health and safety as a relevant concern or area of research and practice[58].

The gap between occupational health and behavioral science has been acknowledged repeatedly by authorities as a subject of concern. Over three decades ago the National Advisory Environmental Health Committee declared an "urgent need" for cross-disciplinary training in occupational health and mental health, and for qualified staff to lend expertise in mental health to epidemiologic study, consultation and training in occupational health[23]. In 1990 Ilgen described a broad array of research and practice opportunities for psychologists (especially for industrial/organizational psychologists who possess a valuable fund of knowledge in job design) in the occupational health field, and expressed concern that the psychology community has taken little notice of these opportunities[58]. Most recently, representatives from 23 national health and behavioral science organizations collaborated in the preparation of a national behavioral science research agenda—the Human Capital Initiative[59]. A cornerstone of this agenda was yet another call for greater attention by psychologists to the changing nature of work, including safety and health risks. The APA-NIOSH effort to promote the area of OHP, particularly to implement university programs and training in OHP, represents the first formal attempt by the psychology community to bring the expertise and resources of psychologists to the occupational safety and health field.

APA-NIOSH training initiative in OHP

We have argued that workers are increasingly exposed to organizational risk factors for illness and injury (i.e., problems resulting from new organizational structures and processes), and that psychologists have an important role to play in the study and prevention of these hazards. Our emphasis on *prevention* of hazards in the organizational *environment* as a key application for psychologists (in contrast to a focus on therapeutic interventions and individual change) is reflected in the NIOSH-proposed definition of OHP: "Occupational health psychology concerns the application of psychology to improving the quality of worklife, and to protecting and promoting the safety, health and well-being of workers." Stated in this fashion, the NIOSH-proposed definition of OHP puts special emphasis on contributions that psychology could make toward primary prevention-first and foremost through *health protection* (reducing exposure to workplace risk factors for illness and injury by improving working conditions) and, secondarily, through *health promotion* (individual-level interventions to equip workers with the knowledge and resources to improve their own health and thereby resist hazards in the work environment).

What is missing, however, is a systematic program of training in psychology to prepare psychologists to understand and influence factors affecting occupational health and safety.

For the primary prevention of organizational hazards, this training needs to go beyond knowledge of individual behavior. It needs to address the processes and structures of work groups and larger organizational units, and the legal, economic and political environments in which organizations and individuals exist[60]. In this regard, topics such as industrial/organizational psychology, organizational behavior, social psychology, and labor-management relations, and occupational safety and health regulation and policy are highly relevant topics for OHP training. OHP training

also needs to expose psychologists to the fields and methods of public and occupational health. In this regard, specific training in epidemiology and survey courses on topics such as environmental health, industrial safety, industrial hygiene, and legal issues such as worker compensation would be useful. These needs and competencies for OHP training were affirmed in an APA survey of over 1,100 professionals in psychology and in the occupational health field. Survey respondents also indicated that training in OHP should be based on the scientist-practitioner model, which emphasizes competency in both research and application.

In 1992 NIOSH entered into a cooperative agreement with the APA to develop university programs addressing these OHP training needs. To help ensure the quickest impact, OHP training under the APA-NIOSH cooperative agreement was supported initially at the postdoctoral level only and targeted principally to industrial/organizational psychologists for immediate application in teaching or professional practice in an organizational context. Because employee assistance programs (EAPs) have such a prominent role in the delivery of mental health services in the U.S. workplace, training was also targeted initially to clinical psychologists to improve their capacity to address work-related mental health problems and to work more effectively in the context of EAPs and occupational health programs.

In the period 1994–1998, three university programs (Wayne State Department of Psychology, Duke University Medical Center, and the Johns Hopkins School of Public Health) served as training sites under the APA-NIOSH cooperative agreement. Program elements essential for selection as an OHP training site included: a) faculty expertise in relevant areas such as work organization and health, job stress, etc., b) interdepartmental linkages which expose behavioral scientists to topics and methods in occupational safety and health, public health, epidemiology, labor studies, etc., and c) opportunities for projects, practica, or internships with industry and labor organizations. Training sites were encouraged to develop a core OHP curriculum addressing the following topics:

- Organizational risk factors (management practices, job content, work roles and responsibilities, social/supervisory environment, etc.) for occupational stress, injury, and illness.
- Health aspects of stressful work, including physical and psychological health, and social and economic costs.
- Organizational interventions (e.g., work redesign) and programs (e.g., EAPs) for reduction of occupational stress, illness and injury.
- Research methods and practices in public/occupational health and epidemiology.

In 1998, training under the APA-NIOSH cooperative agreement was redirected to the graduate level in support of new course work, minor or major degree programs, or certificates in OHP in departments of psychology. Based on the same criteria for selection of postdoctoral training sites, three new universities (Kansas State University, University of Minnesota, and Bowling Green State University) have been competitively selected as inaugural recipients of funding for support of graduate-level training in OHP. Subsequently, Bowling Green State University has established a graduate minor in OHP as part of their existing industrial/organizational and clinical psychology programs, and Kansas State University has developed a "concentration" of courses and practica in OHP that would be offered to students in multiple psychology graduate programs (e.g., industrial/organizational, human factors).

Other training programs in OHP (Europe)

Graduate and post-graduate training programs in work organization and health have been founded also in the Netherlands, Sweden, and England. These programs are all reasonably similar in content, focusing principally on organizational risk factors for stress, illness, and injury, and primary prevention through work redesign.[6] Programs differ, however, in target groups and whether the training is graduate or postgraduate in nature.

In 1994, a consortium of institutes in the Netherlands (Netherlands Institute for Working Conditions, TNO Prevention and Health, and the Inter-Academic Foundation for Courses in Organizational Science) established a new program of post-graduate specialty study in work organization for occupational safety and health professionals. This program was developed in direct response to a new Dutch Federal mandate that providers of occupational health services in the Netherlands must have expertise in work organization (in addition to industrial hygiene, medicine, and safety) in order to receive State certification. Graduates from a variety of disciplines (not only psychology) relevant to occupational health are eligible for this one-year program of study that leads to a Masters degree in "Work and Organization."

Westlander describes a one-year program of training in work organization in Sweden that, similar to the Dutch program, is targeted to providers of occupational health services[61]. However, unlike the Dutch program, training is geared mainly to behavioral scientists. Westlander refers

to these individuals as "occupational health psychologists" or "occupational health service psychologists." This program began in 1983–1984 and was conducted under the auspices of the former (Swedish) National Institute for Occupational Health.[7]

Most recently, Nottingham University (U.K.) has founded an MSc degree program in "Occupational Health Psychology." This program differs from both Dutch and Swedish OHP training programs, which are designed for health professionals with field experience who seek supplementary training in OHP. At Nottingham, students with undergraduate degrees in psychology enter the OHP training program as part of their graduate-level specialization in psychology. The Nottingham OHP program has grown steadily since its inception in 1995[62] and attracts students from several European Union (EU) and non-EU countries. Many graduates of this one-year program enter directly into consultancy work in occupational health or organizational development.

The market for OHP

Roles for OHP-trained psychologists exist in the workplace, the health care environment, and in occupational safety and health research settings. There is a need for OHP-trained industrial/organizational psychologists to assist management teams in the diagnosis and remediation of organizational conditions that pose risk for health and safety, and to provide direction to organizational change processes to prevent such risks from arising in the first place. In a survey of attendees of the 1992 APA-NIOSH conference, *Stress in the 1990's: A Changing Workforce in a Changing Workplace*, industrial/organizational psychology was overwhelmingly ranked as the most productive field for OHP training.

There is need also for OHP-trained clinical and counseling psychologists to work in EAP, occupational health, or community health programs, improving the ability of these programs to detect and respond to job stress and related disorders of occupational origin. And there is need for OHP-trained industrial/organizational, health, social, experimental and other psychologists to collaborate in epidemiologic studies in occupational safety and health, lending expertise in psychometrics and in the design and interpretation of psychosocial aspects of these studies.

These various roles for OHP psychologists, however, presently have only limited visibility in the marketplace—probably due to the formative status of the OHP field. Still, the growing international interest in OHP and OHP training suggests that a significant, albeit latent, market for occupational health psychologists exists. In the first year (1994) of the APA-NIOSH postdoctoral training program in OHP, four fellow applications were received. But by 1997 over 100 fellow application packages were requested by prospective candidates, and formal applications were received from 25 candidates. In the first transition year to graduate level training, fully 17 U.S. universities responded by submitting applications for development of graduate-level curricula in OHP. Spin-off effects are occurring at other U.S. universities—for example, a graduate training program with a clinical OHP focus has developed independently at the Uniformed Health Services University[63]. Especially relevant to the market for OHP, Duke University has received funding from the private sector to sustain their postdoctoral OHP training program for clinical psychologists.

A similar training demand is evident in Europe. T. Cox reports[64] that 10 good applications are received for each position available in the Nottingham OHP training program, and that this ratio is increasing. According to Westlander[61], applications for occupational health service courses in Sweden have fallen in general since political changes in 1993 reduced State subsidies for training of occupational health providers. However, in this new environment where occupational health training is more subject to market demands, applications for training in OHP remain unchanged at a level that is still double the number of available positions.

OHP Research Needs and Trends

The massive changes in the organization of work and employment relations that have occurred recently question the extent to which our knowledge gained on these topics during more tranquil times might be still be relevant and sufficient[65]. Some of the occupational safety and health issues to which we might turn our attention today call for a new research agenda (e.g., the need for more research on the causes, effects and prevention of workplace violence), while others call for a redirection of the research focus (e.g., the need to expand occupational safety and health research to include family health and functioning). In the discussion to follow, we examine some of these unexplored and underdeveloped research directions.

Downsizing and health

To date, there has been some focus on the financial consequences for organizations that have experienced downsizing. Whether based on between group analyses

comparing organizations that downsize and those that don't[66], or large-scale within-group analyses of organizations experiencing changes in employment[67], the financial consequences of changes in employment relations or in the organization of work are not necessarily positive. Because such productivity effects are probably mediated by employee attitudes[68], questions should be asked about the attitudinal and health-related consequences within companies that experience massive employment changes. There is a need for increased research that focuses directly on employee attitudes (e.g., trust in management, loyalty) and health (both physical and psychological) in organizations that downsize because of the potential for serious negative effects[69].

This would lead to two other research questions. First, there are considerable variations in the reasons for such employment changes, as well as differences in the way these changes are implemented. Both these factors influence how the employment changes are experienced by workers. Studies show that one characteristic that is critical in moderating any effects of employment changes on employee health is the extent to which employees' perceive some ability to exert control in the workplace[70]. Other factors (e.g., the way in which the downsizing is implemented, the support mechanisms in place) that ameliorate any negative effects should also be addressed.

Second, there are published suggestions for interventions on how to deal with the so-called "survivors" of such downsizing[71]. What is called for now are studies which explicitly examine specific interventions. The results from such research could be critical in promoting an empirically based preventive approach to occupational health psychology.

Consistent with the general understanding regarding downsizings and mergers and acquisitions, namely that the process by which they are implemented is at least as important as whether they occur or not, one research issue that begs attention is the role of leadership in promoting employee well-being and health during these periods of change. There are some data suggesting a relationship of leaders' behaviors to employee stress[72], and even to their own stress during times of downsizing[73]. Several questions emerge. First, what leadership behaviors are associated with lower stress levels among employees? Second, do leaders who protect their employees from organizational stressors suffer unduly themselves? Third, if perceived control is a major buffer against work stress, do leaders increase their own stress levels by giving control to their subordinates? Fourth, we know that leaders can be trained to enhance employee loyalty and financial performance[74]. Can we explicitly train leaders to behave in ways that enhance their employees' well being? Fifth, to what extent does the fact that managers are traditionally poorly trained in occupational health and safety issues make their jobs more stressful for them[75]. Presumably, limited knowledge about the appropriate management of occupational safety could create additional uncertainty during downsizing, or place managers at risk of violating safe procedures or regulations, or the provisions of collective bargaining agreements during these periods.

Long hours of work

As already noted, one of the more significant changes to the new employment relationship has been the dramatic increase in hours spent working. Yet meta-analytic findings suggest that working long hours only exerts moderate effects on ill-health[76]. Nonetheless, concern about the deleterious effects of working long hours remains, and future research should investigate this issue further. On the one hand, it is possible that workload is indeed less important as a stressor than is a lack of control, as indicated by Karasek and Theorell's[22] job strain model. On the other hand, research to date has invariably focused on the effects of chronic work overload. What might be more prevalent within the new employment relationship, however, are acute periods of work overload, and there are some initial data to support this notion[77, 78]. Because of the importance of work overload within the new employment relationship, this issue should be investigated further.

Work and family

One consistent finding over the past two decades has been that work affects family functioning[79]. As the organization of work changes, we need to address any collateral effects on family functioning. Recent studies have shown that when children perceive their parents to be insecure in their jobs, their beliefs about work are negatively affected[80], their motivation to work hard decreases and their cynicism about work increases[81], and their beliefs about fairness at work are negatively influenced[82].

Consistent with these findings, several additional questions are raised. First, the current organization of work has affected more than job insecurity. Issues of felt trust at work, and chronic and acute episodes of work overload also loom large. What is required is a comprehensive study that assesses all aspects of the perceived employment relationship, and not just job insecurity, on children.

Second, to date studies on the effects of the new employment relationship have focused on any negative

effects on adolescents. Future research ought to focus on the effects of relationship satisfaction and functioning, as well as any effects on younger children.

Third, for some individuals, the new employment relationship means enhanced or enriched work (i.e., those with "re-skilled" work). We need to ask what the possible effects might be. In a sample of blue-collar and supervisory employees, for example, Crouter[83] showed that enhancing participation in decision making exerted negative effects on family functioning. Spouses who now enjoyed more autonomy at work expected a similar increase at home; when this was in conflict with established family norms, stress increased.

Last, feelings of violated trust and decreased commitments from one's organizations sometimes characterize the new employment relationship. Because of data showing the negative personal effects of feelings of violated trust and commitment in romantic and interpersonal relationships, research needs to ask whether there are similar negative effects in organizations.

Violence and counterproductive outcomes

Recent studies suggest that changes in the organization of work may have unique consequences, such as increases in workplace violence[84–87] and other counterproductive workplace behaviors[88]. Because of the apparent increase in frequency and severity of these behaviors, additional research is needed to further delineate the extent to which workplace violence and counterproductive behaviors are influenced by changing employment relations and the reorganization of work.

Conclusions

In 1990, Ilgen asserted that "...psychologists in general and industrial/organizational psychologists in particular are well prepared to respond to the need to address health at work," but lamented that they have tended to "...sit on the sidelines..." instead of responding to this need (p. 282)[58]. An obstacle that has stood in the way of contributions by psychologists to occupational safety and health is the absence of formal mechanisms within psychology to orient and prepare behavioral scientists for work in the occupational safety and health arena. Presently, behavioral scientists are more likely to find a scholastic pathway to the safety and health field through departments of industrial engineering or business and management than through psychology departments. It is unlikely this situation will change unless formal programs of study in behavioral science develop that are allied with the occupational safety and health field and can serve as a magnet and vehicle for training and applications of psychologists in this field. It is this rationale that underlies the efforts of NIOSH and APA to formalize and promote a new disciplinary area of training and research in OHP.

Recognizing the unprecedented changes in the organization of work and conditions of employment during the last decade, we argue that efforts to research and prevent environmental stressors within this realm should be the principal territory for OHP. We make this argument based mainly on need; i.e., there are few data addressing in any depth suspected risks posed by the changing work environment. This approach, however, is also motivated by our interest in drawing psychology closer to public and occupational health, and ensuring the prosperity of the OHP field. In complementary articles, Winet[89] and Leviton[90] express concern that theoretical and practical approaches to disease prevention in health psychology are focused too narrowly on individual-level variables and interventions, to the neglect of environmental influences. From a public or occupational health perspective, which is more closely aligned with environmental or population-wide interventions, individual-level interventions are often resisted based on perceptions they are weak, laborious, or victim blaming. Failing a broader vision of health and safety at work that encompasses environmental determinants, it is unlikely that OHP will thrive or have much of an influence on research, policy or practice in occupational health.

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Footnotes

[1] This article expands upon and updates a paper which appeared previously in Professional Psychology: Research and Practice.

[2] This information is provided by International Survey Research, a leading global opinion research firm headquartered in Chicago with offices worldwide.

[3] Within worker compensation systems, stress-related psychological disorders are usually classified as occupational "illnesses," not injuries. To avoid over-interpretation of the 11% figure, it should be noted that, as a class, occupational illnesses are outnumbered by occupational injuries by a ratio of about 10:1.

[4] The HSE suggests that the increase in reported stress in 1995 may be due to methodological differences between the 1990 and 1995 surveys, or to increased awareness of occupational stress by the population in 1995.

[5] What is unclear is whether the relationship between work organization factors such as excessive repetition and musculoskeletal outcomes results principally from a direct mechanistic influence of task demands on biomechanical strain, or whether psychological factors (e.g., stress-related muscle tension or perceptual factors) contribute substantially to this relationship. See Sauter and Swanson[50] for a further discussion of this issue.

[6] The Dutch program also has a major module on occupational rehabilitation.

[7] Westlander indicates that this program has continued with direct Federal funding since reorganization of the National Institute of Occupational Health into the National Institute of Working Life, but does not describe the sponsoring organization.