

## chapter 2

# WORKPLACE INTERVENTIONS TO PREVENT STRESS-RELATED ILLNESS: LESSONS FROM RESEARCH AND PRACTICE

*DANIEL C. GANSTER AND LARRY MURPHY*

We have good news and bad news about going to work. First, the good news. After controlling for socioeconomic status and health, people who have paid employment (that is, jobs) report having a significantly higher quality of life (Ruchlin and Morris, 1991). Having a full-time job also is associated with slower declines in perceived health and physical functioning as one approaches old age (Ross and Mirowsky, 1995). These patterns prevail for both men and women. The healthful effects of work are perhaps even more compelling for women, however, who suffer significantly lower rates of preterm delivery when they have full time jobs (Marbury et al., 1984; Saurel-Cubizolles and Kaminski, 1986). In short, work is good for you. If you have a job you are likely to live longer and healthier, be happier, and even have healthier babies. Of course, work usually brings income and that brings better health care and generally a better social environment. But the beneficial effects of paid work hold even after controlling for income. In fact, work provides opportunities for self-fulfillment, meaningful social ties, and independence.

Now the bad news. Your job might be killing you if you picked the wrong occupation. For example, in England the Whitehall studies of thousands of civil servants (for example, Bosma et al., 1998; Marmot et al., 1997) have demonstrated an inverse social gradient in mortality from coronary heart disease (CHD). Those employees in the highest grade (administrators) had age-adjusted CHD rates that were significantly lower than those in the lowest grades (clerical and office support staff). Of all the factors examined, the largest contributors to this social gradient were work characteristics, especially personal control in the workplace. This factor had a larger impact than the standard CHD risk factors.

The evidence from the Whitehall studies is provocative, but there could be factors unrelated to the demands of the occupations but linked to the difference in social status that might explain these occupational differences. Kasl (1984), however, has

noted that occupations roughly equivalent in terms of physical environment and social status often have widely divergent morbidity and mortality rates. For example, professors and others in the teaching fields have mortality rates for arteriosclerotic heart disease that are about one-half the rates of physicians, lawyers, pharmacists, and insurance agents. General practitioners also have much higher disease-related mortality than specialty fields within the medical profession. Kasl (1978) noted that suicide rates for refracting ophthalmologists are roughly *ten times* the rates found among optometrists. The work in these two professions is very similar; the only obvious difference is the higher level of education among the ophthalmologists. These striking differences in occupational mortality and morbidity are not easily explained by differences in income, education, or social class.

Thus, data from large-scale epidemiological research make a good case for the general proposition that something about the demands and conditions of work might cause serious health problems for individual employees. Health risks caused by psychosocial work conditions can harm the corporate bottom-line as well as the employees themselves. Manning et al. (1996) found that work stress and strain and lack of social support at work were predictive of various categories of employee health care costs over a two-year period. In a more recent and larger study, Goetzel and his colleagues (reported in Winslow, 1998) surveyed more than 46,000 workers in large US companies. All respondents had completed questionnaires about their work stress, health habits, and depression, and were assessed for traditional risk factors such as cholesterol, blood pressure, blood glucose, smoking, and body fat. They found that those reporting high job stress and depression had health costs that were 2.5 times higher than those who did not.

With such evidence mounting it is not surprising that employees are filing civil tort suits as well as workers' compensation claims for work stress-related disabilities. In fact, workers' compensation costs are growing faster than regular health care costs. In 1982 workers' compensation costs were \$20 billion, increasing to \$60 billion by 1990 (Bordwin, 1996). One of the reasons for this increase is the growth of claims for so-called "cumulative trauma injuries." These are injuries involving both mental and physical symptoms (such as anxiety, depression, gastrointestinal disorders) that are attributed to the effects of chronic exposures to psychosocial demands in the workplace. These demands can range from requirements to work long hours to mental abuse by co-workers and supervisors.

In short, there are compelling reasons for both researchers and practitioners to understand how work demands might exert such a negative toll and to devise effective prevention and intervention strategies for reducing these potentially costly problems. In this chapter we will briefly review what we know about how a constellation of work and occupational characteristics, generally grouped under the rubric of work stress, might cause mental and physical health problems. We will also review the relatively few empirical studies that have tested ways of reducing stressful demands, or their impact, in the workplace. And although work stress might be suspected of causing job performance deficits and even such problems as workplace violence, the evidence is so scant in these areas as to convince us to focus our attention on the health outcomes as our primary dependent variables of interest. It is for these outcomes that the most convincing theoretical and empirical basis for a

stress effect exists. The far-reaching impacts of mental and physical health problems on quality of life and organizational costs, moreover, make them worthy targets for intervention and prevention even if no other indicators of organizational effectiveness were affected. In keeping with the theme of this book, we will then review the actions that practitioners are taking to reduce the harmful effects of work stress and how these are informed by and might possibly inform the research literature.

## ■ DEFINITIONS AND THEORIES OF JOB STRESS

Stress is a difficult concept to define for it often refers to physiological and psychological reactions of individuals as well as to the environmental conditions that elicit them. Typically, investigators have referred to the situational demands that provoke these responses as "stressors" and the responses themselves as "strains" (Ganster and Schaubroeck, 1991). Stressors generally mean environmental factors that cause the individual to muster a coping response because they pose threat or harm. In the work domain examples of such stressors are high workloads, requirements for working fast and meeting strict deadlines, conflicting demands, and interruptions. Many theorists believe that such stressors are especially harmful when they are uncontrollable, but we will speak more of this later. Other common demands arise from interpersonal interactions with supervisors, co-workers, and customers. Throughout all of these environmental demands runs the idea that the individual interprets them as posing some level of threat or challenge. In the most common paradigm (Lazarus, 1991), this cognitive appraisal of threat or challenge triggers a set of coping responses. Stress might then be described as the process whereby individuals respond to demands from their environment. In many respects this response process is a normal and benign part of life, and in fact some stressors, such as physical exercise, are regarded as promoting health and well being. Problems are seen to arise, though, when exposure to such demands is chronic and elicits a strong enough pattern of responses to strain the individual's physical and mental resources.

Hans Selye (1976) was among the first to posit that chronic exposures to environmental demands could have a cumulative negative impact on health through a process he described as the General Adaptation Syndrome (GAS). The three-part response of alarm, resistance, and exhaustion, if chronically elicited, could produce wear and tear that eventually leads to illness. This model, which involves the fluctuation of physiological systems in the body to meet demands, can be described as an allostatic load model. In recent years researchers have directed much of their attention to the effects that chronic exposures have on fluctuations in neuroendocrine arousal, as these, and their sequelae, are believed to produce a host of pathological conditions ranging from CHD to cancer. The immune system is also thought to respond to psychosocial stressors (Cohen and Herbert, 1996), suggesting an even more pervasive role for chronic stress in health.

Another route from chronic stress to disease is through the direct impact of stressful exposures on mental distress. Negative emotional states in themselves can be debilitating, with depression thought to be affecting about one-quarter of the population. As noted earlier, depression is also linked to higher employee health care

costs (Winslow, 1998). In addition, negative emotions such as depression, hostility, and anxiety are implicated in the etiology of a variety of physical disorders including CHD and mortality from all causes (Martin et al., 1995). In this perspective chronic stressors elicit negative emotions which in turn trigger allostatic processes, mostly in the neuroendocrine system. Thus, chronic exposures to work demands can generate both mental and physical illness, and both arenas are likely mediated by allostatic responses of the neuroendocrine system, especially in the adrenomedullary and adrenocortical axes (Cohen and Herbert, 1996).

There is theoretical and empirical support for the proposition that chronic exposures to psychosocial stressors can create significant health problems. This support provides a backdrop for investigating stressors in the workplace and determining whether specific demands in that environment can be identified that produce these problems. This goal – identifying specific workplace demands and linking them to ill-health – has guided what is arguably the most multi-disciplinary effort relevant to the organizational sciences. We briefly review this immense body of research with the particular aims of: (1) assessing whether work demands in general play a causal role in the development of mental and physical illness; (2) identifying what specific workplace characteristics might be most important in this regard; and (3) whether interventions in the workplace are effective in reducing these negative effects. Our review is selective, focusing on the most recent studies conducted after the publication of more extensive reviews (Cooper and Marshall, 1976; Ganster and Schaubroeck, 1991).

## ■ DO WORK DEMANDS CAUSE ILLNESS?

Studies linking various work demands to health outcomes roughly comprise two broad categories. Most commonly conducted studies by organizational behavior researchers are field surveys of employees in which characteristics of work and occupations are linked at the individual level of analysis to various measures of psychological and physical well being, as well as job attitudes. Most of these studies rely on the self-reports of the respondents for measures of both work stressors and their putative outcomes (see the review by Ganster and Schaubroeck, 1991), although exceptions to this method are appearing more frequently (Fox et al., 1993; Manning et al., 1996; Schaubroeck et al., 1994; Schaubroeck and Ganster, 1993).

The other broad category of work stress research arises from occupational comparisons of health and mortality by epidemiologists having an interest in identifying population risk factors or populations that are most at risk. The tradition here is to compare occupational groups on various measures of health, including mortality. Occupational variation tends to be measured in either of two ways. One approach utilizes fairly objective occupational classifications (for example, retail salesperson) and relates these to aggregate health data. Normally these data have been compiled by responsible government agencies into registries. Variations in this approach include the imputation of finer-grained job classifications to job titles within occupational categories and the use of occupational coding schemes (for example, the stress temperament code from the *Dictionary of Occupational Titles*, US Department of

Labor, 1977; Adelman, 1987). These various codes or classifications may be related to health outcomes as independent variables. Analyses at this occupational level are somewhat crude because they assign the same job characteristics to all incumbents of an occupation, thus ignoring within-occupation variation among employees. Such occupational-level analyses cannot identify the effects of meaningful variation in job demands across different work settings and different supervisors, and thus they can provide little insight into how jobs can be changed to make them less stressful, short of changing an entire occupation. More recent work by epidemiologists, however, has attempted to measure job demands at the individual level of analysis (Marmot et al., 1997).

Both research traditions have come to be guided by a particularly influential theory of job stress known as the demands-control, or job decision latitude model (Karasek, 1979). In its basic form the model specifies two broad constructs that can vary independently in the work environment. Job *demands* are defined as psychological stressors, such as requirements for working fast and hard, having a great deal to do, not having enough time, and having conflicting demands. It must be stressed that these are psychological demands and not physical ones. Thus a fast and hectic workplace may impose physical requirements that lead to fatigue, but the stress-related outcomes predicted by the model are related to the psychological effects of this workload (for example, the anxiety associated with the need to maintain the workplace and the associated consequences of failing to complete the work). Job *decision latitude* comprises two components: the worker's authority to make decisions on the job (decision authority); and the variety of skills used by the worker on the job (skill discretion). In the epidemiological literature these two components are combined into one measure of decision latitude, whereas the organizational researchers generally discriminate between the two components and focus on the decision authority dimension (control).

The central hypothesis of the model is that "strain," which is a stressful condition that leads to mental and physical health problems, occurs when jobs are simultaneously high in demands and low in control. This hypothesis rests on the reasoning that high demands produce an allostatic response. When there is a constraint on the responses of the worker, as would occur under conditions of low control, the arousal cannot be appropriately channelled into a coping response and thus produces an even larger physiological reaction that persists for a longer time.

The demands-control theory has been subjected to several critical reviews (Fox et al., 1993; Schnall et al., 1994), and the validity of its central hypothesis is still not consistently supported. Whether their effects are additive or interactive is still controversial, but recent evidence in both the organizational and epidemiological research streams make a rather compelling case that job demands and control are causally implicated in the development of mental and physical ill-health. We will examine a few of the recent studies from each of these areas to illustrate this conclusion.

Marmot et al. (1997) used occupational and social class data from a sample of over 7,000 civil servants in the UK and related them to three self-reported indicators of coronary heart disease (angina, chest pain, and doctor-diagnosed ischemia) in a 5.3-year follow-up survey. As with the earlier Whitehall studies (for example,

Marmot et al., 1991), they found that those civil servants working in jobs classified in the lowest of three grade levels (clerical and office support staff) had significantly higher incidence rates than those in the higher grades. They examined this "inverse social gradient" by testing how entering variables such as traditional coronary risk factors and social support affected the occupational differences. A self-report control scale that combined decision authority and skill discretion showed the greatest effect on this gradient, larger than those for height and standard coronary risk factors. They concluded that the psychosocial work environment could explain much of the inverse social gradient in coronary heart disease.

Theorell et al. (1998) examined job demands and control in a case-control study of first myocardial infarction in Stockholm, Sweden. They compared the work histories of 1,047 males aged 45–64, who had been working full time for the last five years and experienced their first myocardial infarction during the study period, with an equal number of referent cases chosen randomly from the study base. Decreases in control (decision latitude inferred from occupational histories) during the preceding ten years significantly increased risk of myocardial infarction after controlling for all standard risk factors, including chest pain and social class. Moreover, self-reported job demands and control similarly predicted myocardial infarction. As with other epidemiological studies, however, Theorell et al. (1998) did not test the interaction between demands and control, but rather formed groups based on combinations of demands and control.

These two recent studies from the epidemiological literature are significant because they probe deeper into occupational differences in disease by testing whether the self-reports of workers regarding job demands and control mediate them. They also attempt to control for other risk factors that might be confounded with the occupational differences. Despite such statistical controls, however, one cannot safely rule out the possibility that other personal characteristics might confound these results. Occupations differ in their typical levels of certain demands and control, but their incumbents are also embedded in a broader social context that could affect health status (Taylor et al., 1997). In non-experimental research involving multiple occupations, eliminating all confounding influences is virtually impossible.

Another inferential challenge for job stress researchers is disentangling the effects of work characteristics, *per se*, and the individual characteristics that individuals bring to the workplace and that might be the primary causes of their health status. People's health is at least partly predictable from stable personality traits (Contrada et al., 1990; Friedman and Booth-Kewley, 1987). Recent data also confirm that there are different distributions of personality traits across occupations and organizations, probably arising from differential attraction, selection, and attrition processes (Schaubroeck et al., 1998). Thus, disentangling the effects of work and personality is difficult to accomplish in occupational comparison studies.

Organizational researchers, however, have worried about the possible confounding effects of personality and have taken steps to control them (Brief et al., 1988; Schaubroeck et al., 1992). Usually this control is statistical with the investigators partialling traits while testing the relationships between job demands and health outcomes. Organizational studies, although they tend to be more modest in scope than the epidemiological studies, sometimes have the advantage of eliminating social

class and personality confounds when studying samples from a single organization. The study by Fox et al. (1993) is a good example.

Fox et al. (1993) wanted to test the job demands-control model by employing objective as well as subjective assessments of job demands and control and relating them to a set of outcomes that included mental and physical symptoms as well as physiological measures. Their sample was of 136 nurses who all worked in the same institutional setting but were distributed across 15 departments. They found that, as predicted by the theory, neuroendocrine arousal (salivary cortisol) and other outcomes were explained by the interaction of workload demands (both objective and subjective) with perceived control. In fact, they discovered that the interaction of these variables predicted carry-over effects after work. Multiple-day measures of systolic and diastolic blood pressure and salivary cortisol taken several hours after work were predicted by the demands-control interactions. These findings are especially significant in that they demonstrate that heightened physiological arousal elicited by work demands can persist after leaving the work environment. It is just such chronically elevated allostatic responses that are believed to be implicated in the onset of health problems. In fact, in a longitudinal follow-up of this sample, Ganster et al. (1999) found that it was this elevated after-work physiological response that predicted the cumulative health care costs of the nurses for the next five years. These analyses controlled for standard risk factors such as age, relative weight, and smoking. One advantage that this study had was that they could confidently rule out social class effects associated with different occupations because all respondents were in the same occupation and socioeconomic status did not vary across the nursing specialties. Any occupational and organizational differences in personality traits were eliminated as well. Despite all respondents being sampled from the same occupation, different nursing specialties impose significantly different levels of workload demands and control, thus providing plenty of variance on the factors of interest.

Taken together, the large-scale multi-occupation studies reported in the epidemiological literature and the smaller-scale but finer-grained research emerging in the organizational literature convince us that characteristics of jobs and the workplace social environment are implicated in the onset and progression of mental and physical health problems. Specific work characteristics, such as workload demands and personal control, are associated with CHD and depression, as well as the more proximal physiological mediators, such as elevated blood pressure and salivary cortisol. Moreover, such findings replicate across very different methodological strategies and across nationalities, and they are not readily explained by confounding factors such as socioeconomic status and personality traits.

### ■ WHAT SPECIFIC WORKPLACE CHARACTERISTICS HAVE THE LARGEST IMPACT ON HEALTH?

Having made a case for an etiologic role of work stress on health, our next question is whether we can identify job characteristics that appear to be important contributors to health problems and are common across a wide range of occupations. From a practical standpoint, we gain little by targeting work life as a threat to health

without being able to pinpoint things that we might change in order to make work healthier.

In some ways generating a list of very specific stressors is futile because occupations, and different work settings within the same occupation, differ widely in the kinds of demands that they impose. In any practical application individuals desiring to intervene would need to conduct a diagnosis that includes some open-ended, or inductive component. We will speak more of this later. There is a large literature in which investigators search for stressors within specific occupations. For example, studies have reported such descriptions for nurses (for example, McGrath et al., 1989), teachers (Blase, 1986; Brenner and Bartell, 1984; Friesen and Sarros, 1989; Mykletun, 1984), caregivers (Chiriboga et al., 1989), occupational therapists (Rogers and Dodson, 1988), paramedics (Grigsby and McKnew, 1988), firemen (Lim et al., 1987), hospice staff (Yancik, 1984), correctional workers (Brodsky, 1982), and South African educational psychologists (Basson, 1988). These represent a small fraction of such studies. Despite the wide diversity of occupations examined and the inductive approach researchers often take, there is a surprising degree of overlap in the stressors that emerge from such studies. In part, this convergence might arise from the fact that many investigators start from similar conceptual perspectives and use similar measures. But much of the emergence of a common core of stressors probably reflects some basic underlying property of demands that make them stressful. In their broad review of "unhealthy environments," Taylor et al. (1997) make a sweeping statement about what features are common across harmful environments. After reviewing the literature about social class, community, family, peer environment, adult social environment, and work, they conclude that unhealthy environments are "those that threaten safety, that undermine the creation of social ties, and that are conflictual, abusive, or violent. A healthy environment, in contrast, provides safety, opportunities for social integration, and the ability to predict and/or control aspects of that environment" (p. 411). That list does quite a good job of describing the underlying properties of most stressors that appear in the work literature.

The most commonly studied stressors in the work stress field include: (1) role stressors, such as role conflict and ambiguity; (2) workload stressors, such as work overload, tight deadlines, too many hours, and a fast and hectic pace; (3) job insecurity; (4) stressful interpersonal interactions and lack of social support; and (5) lack of control. As one can see, these stressors fit under the Taylor et al. (1997) formulation pretty well. In terms of being linked to mental and physical health outcomes, the workload stressors, lack of social support, and lack of control enjoy the broadest empirical support, from both the work and the non-work literature. How these general characteristics are manifested in a particular work situation can vary greatly, however.

Control is a particularly important characteristic because evidence regarding its impact on health and well being pervades both the epidemiological and the psychological literatures. Moreover, it is a complex construct whose meaning is often unclear and which seems to vary from setting to setting. For example, lack of control might be a serious issue for many employees of the US postal service and primarily be a function of a machine-paced technology (Hurrell, 1985). In a nursing environment, low control might arise mostly from the way that the organization delineates

the roles and discretion of nurses in dealing with their patients and with doctors (Fox et al., 1993; Molleman and Van Kippenberg, 1995). These two examples arise from the machine pacing and work design literatures, respectively, but they represent the same underlying basis of stress. The epidemiologists (for example, Theorell et al., 1998) interpret control to mean "job decision latitude," a construct that subsumes both personal discretion and job skill level. To an organizational psychologist this construct resembles job complexity, which combines autonomy as well as skill variety and task identity. Researchers in the organizational behavior tradition, in contrast, have tended toward a narrower conception of control in which it means having the ability to influence one's job environment in significant ways so as to affect the outcomes one experiences (Ganster and Fusilier, 1989).

Although "control over outcomes" might be the critical element, it cannot be assumed that the behavioral control measures that organizational researchers have used have always captured this dimension. A closely related construct, but one that has seldom appeared in the work stress literature, is Bandura's (1997) concept of self-efficacy. Wood and Bandura (1989) defined self-efficacy as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (p. 408). Self-efficacy thus can be classified as a belief in one's ability to cope, and that means being able to achieve desired outcomes. The fact that behavioral control measures might not always capture this outcome control could explain the frequent failure of researchers to find a significant interaction between control and demand as predicted by the demands-control model (Karasek, 1979). Schaubroeck and Merritt (1997) recently posed this very hypothesis. Specifically, they hypothesized that job control would buffer the negative health effects of high job demands only for those employees who had high job self-efficacy, and might even exacerbate the effects of demands for those who did not. In two different samples they found this to be the case, with diastolic blood pressure as the outcome. Schaubroeck and Merritt's (1996) conclusions stressed the importance of providing both job control and self-efficacy when designing interventions to reduce the negative health effects of stress. We believe that this is good advice and underscores the importance of designing job stress interventions from a comprehensive perspective that considers how employees will deploy augmented control to achieve outcomes desirable for both themselves and the organization. Often this will mean combining a job redesign intervention with training targeted at increasing job self-efficacy (Gist and Mitchell, 1992, discuss ways to accomplish this).

Similarly, role conflict might arise from incompatible demands from different role senders within the organization (such as, supervisors and co-workers), from outside the organization (for example, citizens and courts for police officers, or conflicting work-family demands), or from a poorly engineered job. Thus, while the work stress literature provides some guidance about the general factors that are important for stress and health, every job environment needs its own careful diagnosis. This diagnosis needs to identify the most salient aspects of the work setting and feasible ways that they can be changed. Any change efforts also need to consider what training is necessary for preparing employees to profit from changes in the work. In the next section we reinforce this theme by illustrating the ways that researchers have attempted to change the work setting.

## ■ WHAT DO WE KNOW ABOUT INTERVENING IN STRESSFUL WORK ENVIRONMENTS?

Interventions aimed at changing organizational structures, job design, leadership practices, and many other aspects of work settings occur every day. Some of these are reported in the research literature, but rarely do they examine stress-related outcomes or mental and physical health. There are only a handful of studies that we know of that actually tested an intervention designed to reduce the negative effects of work stress by changing some aspect of the work situation. We will discuss these as a way of illustrating approaches that can be taken and also to gauge how effective such interventions might be.

One of the early field experiments in work stress was not really an intervention designed to make a work setting less stressful, but it is worth noting because it provides one of the rare examples of experimentally testing the impact of a specific work stressor. Timio and Gentili (1976) manipulated the payment methods for 16 confectioners in a repeated measures design. Half the workers started on a piece-rate payment schedule then cycled to a daily pay schedule and then cycled back to a piece-rate schedule, each cycle lasting for four days. The other half of the sample performed under a daily pay/piece-rate/daily pay sequence. Cumulative daily measures of adrenaline, noradrenaline, and 11-hydroxycorticosteroids showed a very large effect for the piece-rate payment method, with levels of adrenaline, for example, being two to three times higher when working on piece-rate. Timio and Gentili (1976) noted that the exertion levels of the workers were identical during each phase of the study, leading them to conclude that the effects reflected a "corresponding augmentation in stress and distress" (p. 264). An experiment by Timio et al., (1979) also showed that neuroendocrine responses are affected by working on an assembly line. But assembly line work entails a number of characteristics (such as forced pacing, repetitiveness, monotony, lack of social interaction), making it harder to pinpoint the exact nature of the stressor than in the Timio and Gentili (1976) experiment. The Timio and Gentili (1976) study raises several interesting questions. For example, how did the workers cognitively appraise the different payment schemes? Did the piece-rate payment system lower their sense of personal control? Did they perceive the piece-rate system as a threat to their pay or job security? We don't know the answers to these questions, but the results do illustrate how changing just one aspect of the work setting (albeit an important one) can trigger a large stress response. Of course, we also do not know how persistent the allostatic reactions to the payment plan would have been over time. On the one hand, they might have exacted a cumulative toll on health over an extended exposure. On the other hand, the workers might have eventually adapted to their changed pay system with a concomitant reduction in their physiological reactivity.

Jackson (1983) was one of the first to report a stress reduction intervention in the organizational literature. She assigned employees of a hospital outpatient facility either to a participation or no-intervention control group. Self-report measures confirmed that employees in the participation condition experienced a greater amount of control over work-related matters. The intervention produced lower levels of

self-reported emotional strain at a six-month post-test and a nine-month follow-up. What is enlightening about this study is how significant the effect was of such a seemingly low-key intervention. The participation program consisted of training in the nominal group technique and weekly staff meetings to discuss departmental activities. In this case, there is evidence that the intervention augmented the respondents' sense of control in the workplace, which might very well be the key mediator for its effects on their emotional strain. The broader participation in decision-making literature certainly does not make a strong case for the efficacy of participative interventions in general (Ganster and Fusilier, 1989). Thus, we are reluctant to generalize Jackson's findings to the extent of recommending participation programs as a general strategy for alleviating stress in the workplace. But such interventions might indeed have a significant impact if they truly change the control perceptions of employees in areas that affect their work lives. Once again, a careful diagnosis of the target setting must guide the choice of such an intervention.

Schaubroeck et al. (1993) evaluated a two-stage intervention program that attempted to reduce high levels of role ambiguity. The target population was a group of middle managers and their subordinates in the business services division of a large university. The responsibilities of this division consisted of all purchasing and inventory management for the university, including food services. A new director had recently been appointed and the division was undergoing what turned out to be the penultimate reorganization in a series that started several years earlier. Their last reorganization occurred soon after the study was completed. The reorganizations had created considerable turbulence regarding individual roles and relationships among the various departments within the division. Reported stress levels were very high and many employees reported psychosomatic disorders and frequent sick days, with most being attributed to conditions at work. In a two-and-a-half-year study we conducted two surveys, had countless meetings with staff and managers, and finally implemented a role clarification intervention that began with charting the responsibilities of the managers and their departments and ended with individual role negotiation sessions between each manager and his or her subordinates. We randomly assigned groups of subordinates to treatment and wait-control conditions and evaluated employee stress symptoms several months after implementation. Although the intervention significantly reduced employee perceptions of role ambiguity, it seemed to have little impact on employee health symptoms or sick days.

### ■ HOW HAS RESEARCH INFORMED STRESS INTERVENTION PRACTICE?

In light of the vast amount of research on job stress, one might expect significant parallels with respect to the nature and scope of stress interventions. However, a review of the stress intervention literature reveals some surprising results (see Murphy, 1996 for details). First, most interventions focus on changing the worker, not the work environment. Usually called "stress management training," these interventions are prescriptive, individual-oriented, relaxation-based techniques, such as progressive muscle relaxation and cognitive-behavioral skills training. Most of these intervention

techniques were derived from clinical and counseling psychology, where they are routinely used in the treatment of anxiety and psychosomatic disorders. Training sessions usually last an hour or more and are offered on a weekly basis. They ranged from a few days of training to many weeks, and small group formats were most common.

Second, the design of stress interventions has been guided less by *job* stress theory than stress theory in general. Thus, interventions typically deal with stress from a generic perspective (for example, nature and sources of stress, effects of stress on health, the benefits of relaxation, and so on) and could just as easily have been designed without any reference to the workplace. Indeed, the workplace seems incidental to the content of the intervention; it simply provides a convenient vehicle for administering the intervention.

Nearly 90 percent of the studies used reliable and valid outcome measures, in the form of a physiological/biochemical measure or a validated self-report measure. Over half (60 percent) of the studies included some type of post-training follow-up assessment, but very few extended the follow-up to a full year post-training. Of the studies that used control/comparison groups, over half reported significant effects on outcome measures for the control groups as well as the trained groups, and in many studies, the authors noted that *non-specific factors* clearly contributed to the obtained results. The issue here is whether the outcomes are due to specific elements of the training or to factors such as sitting in a comfortable chair and receiving time off from work to participate in training.

### ■ WHAT IS THE IMPACT OF STRESS MANAGEMENT TRAINING?

Stress management is often associated with positive and consistent improvements on measures of psychological function like anxiety. Workers report fewer symptoms after stress management training than control/comparison groups, and often report fewer somatic complaints. Stress management does not produce improvements in job/organization-relevant outcomes, such as absenteeism or job satisfaction. This is not surprising since the interventions did not focus on changing job-related sources of stress. The effects of stress management on physiological outcomes like blood pressure are equivocal; some studies report positive effects but others find no effects.

Although only three studies assessed biochemical changes after training (such as catecholamines), all three reported rather impressive results. Similarly, all three studies which measured health-care costs reported significant post-training results. In light of the equivocal effects of stress management interventions on blood pressure and the lack of effects on job/organizational measures, these findings take on added significance and warrant special attention in future studies.

### ■ WHY IS STRESS MANAGEMENT MORE COMMON THAN JOB/ORGANIZATIONAL CHANGE APPROACHES?

A number of reasons can be offered to explain why practitioners prefer stress management interventions to job redesign/organizational change. First, the prevailing

attitude about job stress within a company has a strong influence on whether any such activities will exist, and on what type of activities are offered. For example, the prevalent belief that stress is not a work-related problem but a personal one leads many companies to focus on helping workers cope with stress instead of efforts to reduce job stressors.

Second, the health promotion movement in the early 1980s strongly influenced the type and prevalence of stress intervention activities. Stress management is one of the most often requested health promotion programs by workers (McGuinnis, 1993). These programs are prescriptive, involve little disruption of organization structure and function, can be tailored to the needs of individual workers, and are easy to evaluate. Job/organizational change interventions, on the other hand, require a careful assessment of the sources of stress before an intervention can be designed, and require greater commitment to change on the part of management.

Third, stress management interventions directly address the idiosyncratic nature of stress more so than job redesign/organizational change interventions. One of the major themes emerging from stress research has been the important role of individual perceptions or appraisals of situations or events. The maxim "one person's meat is another person's poison" aptly captures this concept. From a practitioner point of view, this concept is difficult to integrate into many job/organizational change interventions. How does one design an organizational intervention when stress is largely a matter of individual perceptions? How can one insure that stress will be reduced for all workers under study? To what extent could the intervention reduce stress for some workers but increase stress for others? How will this all play out when one performs a bottom-line, cost/benefit analysis? Of course, this is not a dilemma for individual-based interventions because the focus is on the individual, not the job or the organization. So, stress management represents a less risky and less costly choice for practitioners.

Fourth, there are more nationally representative data about the prevalence of stress symptoms (such as depression and anxiety) than stressful job characteristics, and so it is easier to justify stress management than organizational change strategies. The last nationwide study of the quality of work life was conducted in 1977 (Quinn and Staines, 1979), so there is little in the way of current surveillance data on stressful characteristics of work. In the same way, although many companies routinely conduct employee surveys as part of their Human Resource (HR) function, and provide feedback to managers and employees on the results, such surveys rarely contain questions on job stressors. This occurs in part because of the lack of knowledge of job stress among human resource personnel, and in part because job stress is not viewed as an appropriate HR issue. Stress is more often handled by medical staff. Ideas for addressing job stress through collaboration between medical and HR departments can be found in Murphy (1995).

Finally, the research literature offers few demonstrations of effective organizational change interventions. Unlike stress management, one cannot "prescribe" an organizational intervention without first conducting an assessment to determine the main sources of stress in the organization. Although many authors routinely advocate job and organizational change interventions to reduce stressors at work, there is little scientific evidence that such interventions will produce sizable reductions

in stress symptoms. Indeed, a careful, honest review of this literature leads to the conclusion that organizational interventions produce small or insignificant effects on symptoms like distress or anxiety (Briner and Reynolds, 1999).

It doesn't make sense for practitioners to exert the substantial time, effort, and resources required to design, implement, and evaluate job/organizational change strategies when the odds of achieving significant reductions in stress symptoms are low or non-existent. It is far easier simply to install a stress management program and demonstrate small but significant reductions in stress symptoms. Moreover, workers usually respond to stress management training in a very positive way: they appreciate the attention, and find the training useful in understanding stress and developing stress coping strategies.

### ■ WHAT WOULD CONSTITUTE AN IDEAL STRESS INTERVENTION?

Based on the available evidence, an ideal intervention would have the following characteristics:

1. Be comprehensive and attend to individual and organizational factors. Teaching workers stress-management skills is necessary and serves a useful purpose, but it deals with only part of the problem. The workplace can be a source of important stressors that can be identified and targeted for change.
2. Include an assessment of stressors in the work environment in order to understand the stress-health dynamics. A job stress assessment need not be a major undertaking; an initial assessment could take the form of informal discussions with workers. Opening a channel of communication with employees serves to legitimize stress as a topic for discussion and is a good way to obtain valuable information about job stressors and employee reactions. Group discussions and questionnaire surveys can be used later to pinpoint common areas of stress and to measure the prevalence of the problem.
3. Include workers in the design and evaluation of the intervention. There is sufficient research attesting to the importance of worker involvement in organizational change efforts, and to the importance of the process (that is, *how* the intervention is done) as well as the content of such interventions. In most stress intervention studies, consultants make all the decisions regarding program design, assessment tools, interventions, and evaluation protocols. It is recommended that worker groups (for example, joint labor-management committees) be positioned at the center of the decision-making process, and stress intervention experts relocated to the periphery. Increasing worker participation and involvement in stress interventions will shift some of the emphasis to the process, without ignoring either the content or outcomes of training. Reynolds and Shapiro (1991) have made a convincing case for examining process variables as well as outcome variables in stress intervention research.
4. Be designed and evaluated within the context of a well-defined conceptual model. A conceptual model is useful for defining the stressors, the short- and

long-term consequences of stress, key intervening variables, and the nature of relationships among stressors, outcomes, and intervening variables. Once a model is specified, it guides the choice of which stressors to measure, the targeting of intervention strategies, and decisions on how to implement the intervention and evaluate its effectiveness. A number of authors have proposed conceptual models for stress intervention, but these models remain underutilized by practitioners (Ivancevich et al., 1990; Newman and Beehr, 1979; Stoner and Fry, 1983).

### ■ WHAT TYPES OF INFORMATION DO PRACTITIONERS NEED FROM RESEARCHERS?

Practitioners need a good deal more information from the research community to support the design of stress interventions. As noted earlier, there is a need for nationally representative data on job risk factors for worker ill-health. Today's workplace is being shaped by a global economy and heightened competition, resulting in substantial changes in the nature of work, employment practices and the composition of the workforce. New forms of work organization such as lean production and contingent work are becoming commonplace, but their health and safety effects have not been examined. Presently, there exists no national effort to monitor changes in work organization and resultant health and safety consequences. Data collected in national surveys of job stress could be used to identify high risk work practices and suggest interventions to protect and improve worker health and safety. This type of information would provide practitioners with a solid foundation for pursuing the design of job and organizational change programs. In its absence, practitioners will continue to design interventions which address the symptoms, but not the causes of job stress.

Another critical need is for authoritative guidelines on job and organization design to guide the development of stress interventions. These guidelines should be based on a composite of research evidence, not one or two studies, and be applicable to most if not all work organizations. Guidelines developed for the ergonomic interventions provide an example of what is needed (Cohen et al., 1997). The National Institute for Occupational Safety and Health (NIOSH) has offered some general guidelines for reducing work stress (see, for example, Sauter et al., 1990) but more specifics are needed to be more useful to practitioners.

Finally, demonstrations of the efficacy of specific job and organizational change strategies plus cost-benefit calculations are sorely needed. Without better evidence that such interventions will produce notable changes, there is little inducement for practitioners to shift their focus from managing stress to job stressor reduction.

### REFERENCES

- Adelman, P. K. 1987: Occupational complexity, control, and personal income: Their relation to psychological well being in men and women. *Journal of Applied Psychology*, 72, 529-37.
- Bandura, A. 1997: *Self-efficacy: The exercise of control*, New York: W.H. Freeman.

- Basson, C. 1988: Potential sources of work-related stress for the educational psychologist in the Republic of South Africa. *School Psychology International*, 9, 203-11.
- Blase, J. 1986: A qualitative analysis of sources of teacher stress: Consequences for performance. *American Educational Research Journal*, 23, 13-40.
- Bordwin, M. 1996: Overwork: The cause of your next workers' comp claim? *Management Review*, 85, 3-50.
- Bosma, H., Peter, R., Siegrist, J., and Marmot, M. 1998: Two alternative job stress models and the risk of coronary heart disease. *American Journal of Public Health*, 88, 68-74.
- Brenner, S., and Bartell, R. 1984: The teacher stress process: A cross-cultural analysis. *Journal of Occupational Behaviour*, 5, 183-95.
- Brief, A. P., Burke, M. J., George, J. M., Robinson, B. S., and Webster, J. 1988: Should negative affectivity remain an unmeasured variable in the study of job stress? *Journal of Applied Psychology*, 73, 193-8.
- Briner, R. B., and Reynolds, S. 1999: The costs, benefits, and limitations of organizational level stress interventions. *Journal of Organizational Behavior*, 20, 647-64.
- Brodsky, C. 1982: Work stress in correctional institutions. *Journal of Prison and Jail Health*, 2, 74-102.
- Chiriboga, D., Weiler, P., and Nielsen, K. 1989: The stress of caregivers. Special issue: Aging and family caregivers. *Journal of Applied Social Sciences*, 13, 118-41.
- Cohen, A., Gjessing, C. C., Finc, L. J., Bernard, B. P., and McGlothlin, J. D. 1997: *Elements of ergonomics programs*, Washington, DC: Department of Health and Human Services, Publication No. 97-117.
- Cohen, S., and Herbert, T. 1996: Health psychology: Psychological factors and physical disease from the perspective of human psychoneuroimmunology. *Annual Review of Psychology*, 47, 113-42.
- Contrada, R. J., Leventhal, H., and O'Leary, A. 1990: Personality and health. In L. A. Pervin (ed.), *Handbook of personality: Theory and research*, New York: Guilford Press, 638-69.
- Cooper, C. L., and Marshall, J. 1976: Occupational sources of stress: A review of the literature relating to coronary heart disease and mental ill health. *Journal of Occupational Psychology*, 49, 11-28.
- Fox, M., Dwyer, D., and Ganster, D. 1993: Effects of stressful demands and control on physiological and attitudinal outcomes in a hospital setting. *Academy of Management Journal*, 36, 289-318.
- Friedman, H. S., and Booth-Kewley, S. 1987: The "disease-prone personality:" A meta-analytic review of the construct. *American Psychologist*, 42, 539-55.
- Friesen, D., and Sarros, J. 1989: Sources of burnout among educators. *Journal of Organizational Behavior*, 10, 179-88.
- Ganster, D. C., Fox, M., and Dwyer, D. 1999: Explaining employee health care costs: A prospective examination of stressful job demands, personal control, and physiological reactivity.
- Ganster, D. C., and Fusilier, M. R. 1989: Control in the workplace. In C. L. Cooper and I. Robertson (eds.), *International review of industrial and organizational psychology*, London: Wiley, 235-80.
- Ganster, D. C., and Schaubroeck, J. 1991: Work stress and employee health. *Journal of Management*, 17, 235-71.
- Gist, M. E., and Mitchell, T. R. 1992: Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17, 183-211.
- Grigsby, D., and McKnew, M. 1988: Work-stress burnout among paramedics. *Psychological Reports*, 63, 55-64.

- Hurrell, J. J., Jr. 1985: Machine-paced work and the Type A behavior pattern. *Journal of Occupational Psychology*, 58, 15-25.
- Ivancevich, J. M., Matteson, M. T., Freedman, S. M., and Phillips, J. S. 1990: Worksite stress management interventions. *American Psychologist*, 45, 252-61.
- Jackson, S. E. 1983: Participation in decision making as a strategy for reducing job-related strain. *Journal of Applied Psychology*, 68, 3-19.
- Karasek, R. 1979: Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285-306.
- Kasl, S. V. 1978: Epidemiological contributions to the study of work stress. In C. L. Cooper and R. Payne (eds.), *Stress at work*, Chichester: Wiley, 3-48.
- Kasl, S. V. 1984: Stress and health. In L. Breslow, J. E. Fielding, and L. B. Lane (eds.), *Annual review of public health*, 5, 319-42.
- Lazarus, R. 1991: Psychological stress in the workplace. *Journal of Social Behavior and Personality*, 6 (7), 1-13.
- Lim, C., Ong, C., and Phoon, W. 1987: Work stress of firemen as measured by heart rate and catecholamines. *Journal of Human Ergology*, 16, 209-18.
- Manning, M. R., Jackson, C. N., and Fusilier, M. R. 1996: Occupational stress, social support, and the costs of health care. *Academy of Management Journal*, 39, 738-50.
- Marbury, M. C., Linn, S., Monson, R. R., et al. 1984: Work and pregnancy. *Journal of Occupational Medicine*, 26, 415-21.
- Marmot, M., Bosma, H., Hemingway, H., Brunner, E., and Stansfield, S. 1997: Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *The Lancet*, 350 (9073), 235-9.
- Marmot, M., Davey Smith, G., Stansfield, S., et al. 1991: Health inequalities among British civil servants: The Whitehall II study. *The Lancet*, 337, 1387-93.
- Martin, L. R., Friedman, H. S., Tucker, J. S., Schwartz, J. E., Criqui, M. H., et al. 1995: An archival prospective study of mental health and longevity. *Health Psychology*, 14, 381-7.
- McGrath, A., Reid, N., and Boore, J. 1989: Occupational stress in nursing. *International Journal of Nursing Studies*, 26, 343-58.
- McGuinnis, J. 1993: 1992 survey of worksite health promotion activities: summary. *American Journal of Health Promotion*, 7, 452-64.
- Molleman, E., and Van Kippenberg, A. 1995: Work redesign and the balance of control within a nursing context. *Human Relations*, 48, 795-814.
- Murphy, L. R. 1995: Managing job stress: An employee assistance/human resource management partnership. *Personnel Review*, 24, 41-50.
- Murphy, L. R. 1996: Stress management in work settings: A critical review of the research literature. *American Journal of Health Promotion*, 11, 112-35.
- Mykletun, R. 1984: Teacher stress: Perceived and objective sources, and quality of life. *Scandinavian Journal of Educational Research*, 28, 17-45.
- Newman, J. D., and Beehr, T. 1979: Personal and organizational strategies for handling job stress: A review of research and opinion. *Personnel Psychology*, 32, 1-43.
- Quinn, R. P., and Staines, G. L. 1979: *The 1977 quality of employment survey: descriptive statistics, with comparison data from the 1969-70 and the 1972-73 survey*, Ann Arbor, MI: Survey Research Center.
- Reynolds, S., and Shapiro, D. A. 1991: Stress reduction in transition: Conceptual problems in the design, implementation, and evaluation of worksite stress management interventions. *Human Relations*, 44, 717-33.
- Rogers, J., and Dodson, S. 1988: Burnout in occupational therapists. *American Journal of Occupational Therapy*, 42, 787-92.

- Ross, C. E., and Mirowsky, J. 1995: Does employment affect health? *Journal of Health and Social Behavior*, 36, 230-43.
- Ruchlin, H. S., and Morris, J. N. 1991: Impact of work on the quality of life in community-residing young elderly. *American Journal of Public Health*, 81, 498-500.
- Sjarel-Cubizolles, M. J., and Kaminski, M. 1986: Work in pregnancy: Its evolving relationship with perinatal outcome (a review). *Social Science and Medicine*, 22, 431-42.
- Sauter, S. L., Murphy, L. R., and Hurrell, J. J., Jr. 1990: A national strategy for the prevention of work-related psychological disorders. *American Psychologist*, 45, 1146-58.
- Schaubroeck, J., and Ganster, D. C. 1993: Chronic demands and responsivity to challenge. *Journal of Applied Psychology*, 78, 73-85.
- Schaubroeck, J., Ganster, D. C., and Fox, M. L. 1992: Dispositional affect and work-related stress. *Journal of Applied Psychology*, 77, 322-35.
- Schaubroeck, J., Ganster, D. C., and Jones, J. 1998: Organization and occupation influences in the attraction-selection-attrition process. *Journal of Applied Psychology*, 83, 869-91.
- Schaubroeck, J., Ganster, D. C., and Kemmerer, B. E. 1994: Job complexity, Type A behavior, and cardiovascular disorder: A prospective study. *Academy of Management Journal*, 37, 426-39.
- Schaubroeck, J., Ganster, D. C., Sime, W., and Dittman, D. 1993: A field experiment testing supervisory role clarification. *Personnel Psychology*, 46, 1-25.
- Schaubroeck, J., and Merritt, D. 1997: Divergent effects of job control on coping with work stressors: The key role of self-efficacy. *Academy of Management Journal*, 40, 738-54.
- Schnall, P. L., Landsbergis, P. A., and Baker, D. 1994: Job strain and cardiovascular disease. *Annual Review of Public Health*, 15, 381-411.
- Selye, H. 1976: *The stress of life*, 2nd edn., New York: McGraw-Hill.
- Stoner, C. R., and Fry, F. L. 1983: Developing a corporate policy for managing stress. *Personnel*, May/June, 66-76.
- Taylor, S. E., Repetti, R. L., and Seeman, T. 1997: Health psychology: What is an unhealthy environment and how does it get under the skin? *Annual Review of Psychology*, 48, 411-47.
- Theorell, T., Tsutsumi, A., Hallquist, J., Reuterwall, C., et al. 1998: Decision latitude, job strain, and myocardial infarction: A study of working men in Stockholm. *American Journal of Public Health*, 88, 382-8.
- Timio, M., and Gentili, S. 1976: Adrenosympathetic overactivity under conditions of work stress. *British Journal of Preventive and Social Medicine*, 30, 262-5.
- Timio, M., Gentili, S., and Pede, S. 1979: Free adrenaline and noradrenaline excretion related to occupational stress. *British Heart Journal*, 42, 471-4.
- US Department of Labor 1977: *Dictionary of Occupational Titles*, Employment and Training Administration, US Employment Service (4th edn.).
- Winslow, R. 1998: Big study shows workers under stress likely to have higher health-care costs. *Wall Street Journal*, October 16, B4.
- Wood, R., and Bandura, A. 1989: Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology*, 56, 407-15.
- Yancik, R. 1984: Sources of work stress for hospice staff. *Journal of Psychosocial Oncology*, 2, 21-31.

# Industrial and Organizational Psychology

## Linking Theory with Practice

Edited by

Cary L. Cooper

*University of Manchester Institute of Science & Technology, UK*

Edwin A. Locke

*University of Maryland, USA*

Copyright © Blackwell Publishers Ltd 2000  
Editorial matter and organization copyright © Cary L. Cooper and Edwin A. Locke 2000

First published 2000

2 4 6 8 10 9 7 5 3 1

Blackwell Publishers Ltd  
108 Cowley Road  
Oxford OX4 1JF  
UK

Blackwell Publishers Inc.  
350 Main Street  
Malden, Massachusetts 02148  
USA

All rights reserved. Except for the quotation of short passages for the purposes of criticism and review, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

Except in the United States of America, this book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold, hired out, or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

*British Library Cataloguing in Publication Data*

A CIP catalogue record for this book is available from the  
British Library.

*Library of Congress Cataloging-in-Publication Data has been applied for*

0-631-20991-3 (hbk)  
0-631-20992-1 (pbk)

Typeset in 10 on 12 pt Galliard  
by Graphicraft Limited, Hong Kong  
Printed in Great Britain by T.J. International Ltd., Padstow, Cornwall

This book is printed on acid-free paper

CLEVELAND PUBLIC LIBRARY



A0009158933227

This book brings together the foremost industrial and organizational psychologists and leading practitioners to explore contemporary themes confronting organizations today. Examining the relationship between theory and practice, they show how one enriches the other. For each chapter, the academic author focuses on theory and research, and the practitioner-based author on how this is applied in real work situations.

*Industrial and Organizational Psychology* will be of interest to students, academics, and practitioners in occupational psychology, and managers concerned about the human resource. It provides a comprehensive overview of what is practically relevant stemming from the science of industrial and organizational psychology, in what context it is or is not appropriate, and what needs to be done in the future.

GARY L. COOPER is Professor of Organizational Psychology and Pro-Vice Chancellor at the Manchester School of Management (UMIST). He has written or edited over 80 books, and is co-editor of the *Blackwell Encyclopedia of Management*. Professor Cooper is a Fellow of the British Psychological Society, Royal Society of Arts, Royal Society of Medicine, Royal Society of Health, and of both the American and British Academy of Management.

EDWIN A. LOCKE is Dean's Professor of Leadership and Motivation at the University of Maryland at College Park. He has published numerous books and articles and is a Fellow of the American Psychological Association, the American Psychological Society, and the Academy of Management.

*Cover design by Design Deluxe, Bath*  
*Printed in Great Britain*

Visit our website at  
<http://www.blackwellpublishers.co.uk>

**B** BLACKWELL  
Business

ISBN 0-631-20992-1



9 780631 209928

90000 >

