ALAN A. McLEAN, M.D.

ADDISON-WESLEY SERIES ON OCCUPATIONAL STRESS

WORK STRESS

ALAN A. McLEAN, M.D.
IBM Corporation and
Cornell University Medical College

WORK STRESS

ADDISON-WESLEY PUBLISHING COMPANY

Reading, Massachusetts
Menlo Park, California • London
Amsterdam • Don Mills, Ontario • Sydney

This book is the first in the
Addison-Wesley Series on Occupational Stress

Library of Congress Cataloging in Publication Data

McLean, Alan A
Catalyst for change.

(Occupational stress series)
1. Job stress. I. Title. II. Series.
HF5548.85.M3 158.7 78-73370
ISBN 0-201-04592-3

ISBN 0-201-04592-3
BCDEFGHIJK-AL-89876543210

To each of us who copes daily with work stress

FOREWORD

The vast literature concerned with the individual coping with work stress stems from many and diverse disciplines, primarily psychiatry, clinical and social psychology, sociology, cultural anthropology, and occupational and internal medicine, with significant contributions from such widely different fields as behavioral toxicology and personnel and management. While each discipline is concerned with so-called "psychosocial stressors," communication between the several disciplines has generally been the exception rather than the rule. Lawyers, for example, tend to communicate mainly with other lawyers about the issues that concern them. Union leaders tend to communicate most often with other union leaders. Clinical psychologists direct their communications to their colleagues, but use a different language from that used by many of the psychiatrists who are equally concerned. Even social psychologists and industrial sociologists sometimes find it difficult to exchange data. The transfer of useful data from one discipline to another has proven to be very difficult. "Some researchers go about rediscovering the known, with little deference to an existing literature or to determinable frontiers for contemporary research; and what consensus may be possible is *not adequately disseminated for beneficial application beyond home base.*"*

* Robert Rose, editorial, *Journal of Human Stress*, Vol. 3 No. 1, March 1977.

Communication across disciplines is not the only difficulty that students of job-related stress encounter. Transcultural communication is a problem too. Western physiologists, for instance, who are concerned with hormones in the brain, have difficulty communicating with their eastern European colleagues who prefer to speak in terms of "higher nervous function."

There is growing common concern. Theories and practices in each discipline are beginning to cross-pollinate other disciplines and to exert a positive influence toward understanding the stresses of the workplace and workers' reactions.

The many denominators of concern for an employee population under stress form the unifying theme of these volumes. As a field of study, occupational stress is beginning to gel. It is a subject of increasing interest not only to members of unions and management, but also to the health professionals who serve as their consultants. Increasingly, awareness and expertise are being focused on both theoretical and practical problem solving. The findings of social scientists have led to the enactment of legislation in the Scandinavian countries, for instance, where employers are now required, under certain circumstances, to provide meaningful work and appropriate job satisfaction with a minimum of occupational stress.

The authors of these books represent many points of view and a variety of disciplines. Each, however, is interested in the same basic thing—greater job satisfaction and greater productivity for each employee. The books were written independently with only broad guidelines and coordination by the editor. Each is a unique, professional statement summarizing an area closely related to the main theme. Each extracts from that area applications which seem logically based on currently available knowledge.

All of the authors treat, from differing perspectives, three key concepts: stress, stressor, and stress reactions. *Stress* defines a process or a system which includes not only the stressful event and the reaction to it, but all the intervening steps between. The *stressor* is a stressful event or stressful condition that produces a psychological or physical reaction in the individual that is usually unpleasant and sometimes produces symptoms of emotional or physiological disability. The *stress reaction* concerns the consequences of the stimulus provided by a stressor. It is, in other words, the response to a stressor, and it is generally unhealthy. Most often, such reactions may be de-

fined in rather traditional psychological terms, ranging from mild situational anxiety and depression to serious emotional disability.

Many frames of reference are represented in this series. A psychoanalyst describes the phenomenon of occupational stress in executives. A sociologist reflects the concern with blue-collar workers. Health-care-delivery systems and the prevention of occupational stress reactions are covered by occupational physicians. Other authors focus on social support systems and on physiological aspects of stress reactions. All the authors are equally concerned with the reduction of unhealthy environmental social stimuli both in the world of work and in the other aspects of life that the world of work affects. In each instance, the authors are concerned with defining issues and with drawing the kinds of conclusions that will suggest constructive solutions.

The legal system, beginning with worker's compensation statutes and more recently augmented by the Occupational Safety and Health Act, deals directly with occupational stress reactions and will be the subject of one of the books in the series. That statute, which created both the Occupational Safety and Health Administration and the National Institute for Occupational Safety and Health, contains a specific directive mandating study of psychologically stressful factors in the work environment. We have seen criteria documents and standards for physical factors in the work environment. We may soon see standards developed to govern acceptable levels of psychological stressors at work such as already exist in Sweden and Norway; another significant area of concern for this series.

At the beginning of this series it is difficult to foresee all the pivotal areas of interest which should be covered. It is even more difficult to predict the authors who will be able and willing to confront the issues as they emerge in the next few years. In a rapidly changing technological, scientific, and legislative world, the challenge will be to bring contemporary knowledge about occupational stress to an audience of intelligent managers who can translate thoughts into constructive action.

Alan A. McLean, M.D.
Editor

INTRODUCTION: PERSPECTIVE

Conceptually this book was born in the backyard sun of summer at Martha's Vineyard many years ago. For some time, I had been trying to find a linkage—a framework—upon which to organize the most important variables related to occupational stress. At that point I needed both to identify the variables and to conceive a way of demonstrating their relationship that would be useful to me and meaningful to others—particularly to the decision makers in work organizations, the people through whom positive change is accomplished in the world of work.

I was familiar with many complex models of the relationship between stressful factors at work and resulting symptoms, of feedback models which included a host of intervening variables, of sophisticated psychological and sociological models, often mind boggling in their complexity. But I sought simplicity, dynamism.

It took very little time in Martha's Vineyard's sun to recognize that stressful events and conditions were key variables in the relationship. It seemed reasonable to me finally to organize these many factors into three major categories: individual vulnerability to stressors, the environment in which that vulnerability is exposed to stressors, and the resulting behavioral symptoms (which may be subtle or complex).

Having decided to use stressors, vulnerability, context, and symptoms as the base, I needed a dynamic schemata that would demonstrate the complex interaction of these variables. The one that

appears to work best is a simple matrix of at times overlapping circles that represent the variables in question.

In this book I establish a frame of reference in the first two chapters and discuss three of the major variables of job stress in the next four chapters. Then, in the concluding three chapters, I treat methods of preventing stress reaction, coping with it when it crops up, and assessing the degree to which stressors on the job can be disturbing.

My personal perspective has been shaped by my years as a physician. It has been quite logical for me to draw heavily on the medical model—a model which requires objectively assessing all relevant evidence, considering a series of alternative possible conclusions, selecting the most logical, confirming the diagnosis, and, finally, instituting a treatment program.

In dealing with occupational stress, one does not evaluate an individual's job status—his or her reaction to an occupational situation—simply on the basis of research studies of *many* test subjects. Nor can one base such an evaluation on averages, norms, means, or medians of groups of persons exposed to seemingly similar events. Rather, at issue is usually a single individual and a single evaluator (physician, psychiatrist, psychologist, manager). Each is accustomed to playing a professional role. Each is influenced by his or her role. Each evaluates a potentially stressful situation according to his or her training, background, and, often, personality makeup.

In one sense, such an assessment becomes a test of perceptiveness. Hopefully, the professional can be objective, encompassing, and honest and render a useful opinion or suggestion in the best interests of both the individual and the organization. This process of diagnosis is often exceedingly complicated, involving a careful evaluation of a single individual at a specific point in time and in a particular job. There are well-established, deeply ingrained, and systematic techniques which have been practiced by generations of clinicians, mainly physicians. It is this complex system of diagnosis and treatment of the individual patient that is the perspective of this volume. And my concern is with the prospective patient—the employee at risk.

Nevertheless, this is not a book about psychiatric illness as a reaction to job stress. The fact that I have used a few such case illustrations should not mislead the reader. Extreme reactions are sometimes part of a stress reaction and have been included for that reason. But my main focus is on the essentially healthy person reacting to the daily events and conditions of his or her work.

ACKNOWLEDGMENTS

In the two years gestation of the Occupational Stress series and this, the introductory volume, dozens of colleagues and friends made valuable suggestions, offered constructive criticism, and worked over all or parts of the manuscript. While I assume total responsibility for the contents of this volume, I would like to acknowledge particularly the work of other series authors: Lennart Levi, Leonard Moss, Arthur Shostak, and Leon Warshaw. Since a project like this is perforce a family affair, my thanks and special affection go to my wife, Jan, my sons, Dick and Bob, and to both my parents, Elizabeth and Winfield, each of whom in a uniquely special way contributed significantly. Others deserving of more than passing gratitude include David Bertelli, Roger Brach, Pat Carrington and Barrie Greiff. The editorial efforts of Norman Stanton, Charles T. Peers, Jr., and Barbara Pendergast at Addison-Wesley added immeasurably to the quality of the final product. Besides that, they were fun to work with! Finally the enormous contributions of two wonderfully competent and patient secretaries, Eleanor Kirchmer and Dorothy Diamond, helped make the writing task stimulating rather than stressful.

Westport, Connecticut A.A.M.
February 1979

CONTENTS

1

THE STRESS OF WORK

Work occupies a major part of most of our lives, in terms of both time spent and importance. It contains the *potential* for many forms of gratification and challenge—and harm. It is not surprising that a great many of us at times find work life stressful. Indeed, stress at work is so commonplace that we tend to accept it as part of the necessary frustration of daily living. The abrasive boss, the boredom and monotony of an assembly operation, the new processes that demand skills we do not seem to have, the threat of job loss: Many stressors are simply annoying; a few lead to serious disability; some actually cause death. This chapter includes examples of a variety of such cases, and I will comment briefly on each to introduce the more severe forms of stress reaction.

Consider a personal example. Several years ago I was returning to my then home in Lexington, Kentucky, from a New York business trip. The plane descended to the Lexington airport but a few feet off the runway, with a roar of seemingly urgent acceleration and a surge of power, it pulled up sharply. We circled the field several times. I could clearly see my family waiting below. In a few minutes there was a terse announcement from the pilot, "The landing gear won't go down!" The two stewardesses disappeared into the cockpit. For the next hour and a half there was no further communication from the flight deck and no sign of the stewardesses. We approached Louisville and circled the field innumerable times with several passes just a few

hundred feet above the tower. We could see the fire apparatus lined up along the runway. No further word from the flight deck; no sign of the stewardesses; no response to the many stewardess call buttons which were alight. The seat belt sign and no smoking sign had remained on since prior to the approach in Lexington. The level of fear and apprehension in the cabin was heightened further as we made a final approach to the runway with one engine sputtering. The landing was uneventful.

In questioning the captain afterwards, I was told that an indicator light had malfunctioned and that it had been necessary to obtain visual verification that the nose wheel was in place before attempting a landing. I asked him why he had not informed the passengers and why the stewardesses had remained up front with him. He seemed perplexed and nonplussed that this behavior would be upsetting; it had not occurred to him that passengers had any need or right to know what was going on, what his plans were, and what their degree of jeopardy might be.

In times of stress, management must *be* there. The presence of authority figures who are available both to answer questions and to *lead* is essential. Great assurance and reassurance can be drawn from the simple presence of those in command. Dependency needs in times of stress are heightened and a demonstration that one's superior cares and recognizes the impact of stress on the employee under his or her s ision will reap incalculable rewards.

The following case illustrates even better the impact of stressors. I first heard about this case more than twenty-five years ago from a colleague who was studying the operation of a paper-manufacturing plant. The circumstances are tragic, but the case is a perfect example of vulnerability to occupational stress reaction. The patient, a paper cutter about sixty years old who had a long history of successful experience in a large manufacturing plant, began complaining of headaches. He consulted his private physician and the plant's physician and both confirmed that he had developed moderately severe high blood pressure. His knowledge of this condition increased his vulnerability and made him more anxious. Then one day, he fainted just after getting out of bed in the morning. This worried him further. Both his physician and the doctor at the plant advised that he seek an early retirement since there was increased likelihood that he might experience an accident on the job. A very favorable pension plan was arranged. Nonetheless he had great misgivings. His friends were

almost exclusively his coworkers. His job was the major part of his life. With a great deal of ambivalence, much hesitation, and considerable anxiety, he accepted his company's offer even though he felt he would be lost without work. His last day on the job came. During the three final hours at his machine, despite all safeguards, he cut off his right hand. This was his first accident on the job.

The relationship between major vulnerability—such as the paper cutter's despair at losing his job—and accidents is clear: This accident was a symptom and a consequence of stress. Yet even in this case, which stemmed from such an obvious psychological foundation, it was almost impossible to predict such an outcome. No one could have predicted the failure of carefully designed safeguards against such an accident. But one *can* recognize that almost any engineering devices designed to prevent accidents can be bested by those who are intimately aware of their workings. With twenty-twenty hindsight, the paper cutter *should* have been removed from his job immediately once the decision had been made that he was a potential threat to himself or others. A desk job for the last few weeks at work may not have guaranteed against an accident, but it would have reduced the potential. Often we fail to act when someone's vulnerability soars and a potentially hazardous environment remains unchanged.

Stress reactions of a symptomatic nature are not always as transient or readily attributable to temporary insecurity. Symptoms could be produced as well by an overwhelming stressor or by the rapid modification of a supporting context.

STRESS AND WORK

There has been a tremendous amount of research into the so-called stress of work, particularly that associated with what we may think of as the psychosocial aspects of work. This information is scattered and uneven and has not been assembled in a useful way for the person who most needs to understand it—the executive responsible for the operations of work organizations, the individual who may be held accountable for stressful work environments.

The research shows the relationship between stressors on the job and physical and emotional changes in individuals. Perhaps the most compelling studies demonstrate that psychological stressors produce altered measurements of various bodily chemicals, hormones, and organic functions as well as altered levels of anxiety. And this happens

both in real-life work situations and in the laboratory. We also know that changes at work bring about needs to adjust which, in turn, stimulate reactions, some of which may be unhealthy.

Responses to stressful situations at work have been measured by psychological self-ratings, performance appraisals, and biochemical tests as well as the usual clinical studies of employees presenting symptoms. In a series of such studies, Lennart Levi (Head of the World Health Organization Research Center on Psychosocial Factors and Health) and Bertil Gardell (Associate Professor of Work Psychology at the University of Stockholm) have demonstrated the manner in which stimuli at work affect physical reactions in a potentially damaging manner.

In an experiment lasting seventy-five hours, Levi studied thirty-two senior military officers who alternated between three-hour sessions on an electronic shooting range and performing military staff work. Such a regimen of both psychomotor and intellectual tasks is present in many civilian occupations as well. No relaxation or sleep was allowed, nor were stimulants, smoking, or walking. Although the emotional reactions thus provoked were of only moderate intensity, significant biochemical changes in components of the blood were found to occur at the end of the test period indicating increased anxiety (Levi, 1974).

A study by Gardell illustrates the adverse effects on workers of poor design of the work process. The subjects of his study included one risk group and two age-matched control groups. The members of risk group were skilled workers completing a series of operations within a time period of less than ten seconds. The workers could not talk to their colleagues because of the noise and the need for constant attention, nor could they leave their operating area without special permission. The control group had greater variety, freedom, and self-control in performing their jobs.

The group at risk reported that they had much higher job dissatisfaction and anxiety; they also had higher levels of boredom, "mental strain," and social isolation. In addition, they had a general tendency toward more sick leave and complaints, and they expressed the feeling that their ill health was due to the constraints of their jobs.

At the conclusion of a work shift, studies of adrenaline secretion demonstrated a high level of arousal in the risk group, which suggests that it took several hours of relaxation after work before normal bodily levels were reached (Gardell, 1975).