Health Promotion in the Working World

Edited by
Federal Centre for
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in Collaboration with the
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Regional Office for Europe

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Editing by Annette Kaplun and Eberhard Wenzel

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Federal Centre for Health Education
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World Health Organisation
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List of Contributors

Dr. Jo Eirik Asvall
Regional Office for Europe, World Health Organization, 8, Scherfigsvej, DK-2100 Copenhagen

Prof. Bernhard Badura
Technische Universität Berlin, Fachbereich 2, Institut für Soziologie, Dovestr. 1, D-1000 Berlin (West) 12

Prof. Lamberto Brizziarelli
Centro sperimentale per l'educazione sanitaria, Universita degli studi di Perugia, Via del Giochetto, I-61000 Perugia 3

Prof. Carly L. Cooper
Professor of Organisational Psychology, Department of Management Sciences, The University of Manchester Institute of Science and Technology, P.B.Box 88, Manchester M60 10D

Dr. Rosmarie Erben
Referatsleiterin Auslandsbeziehungen, Bundeszentrale für gesundheitliche Aufklärung (BZgA), Ostmerheimer Str. 200, D-5000 Köln 91

Prof. Michael Frese
Universität München, Institut für Psychologie, Widenmayerstr. 46a, D-8000 München 22

Dr. Ralph Grossmann
Interuniversitäres Forschungsinstitut für Fernstudien der österreichischen Universitäten Scharitzer Str. 10, A-4020 Linz

Prof. Hartmut Ising
Direktor des Fachbereichs Lärm, Institut für Wasser-, Boden- und Lufthygiene, Bundesgesundheitsamt, Thielallee 88-92, D-1000 Berlin (West) 33

Dr. Raija Kalimo
Senior Scientist, Institute of Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki

Dr. Michael Kentner
Institut für Arbeits- und Sozialmedizin und Poliklinik für Berufskrankheiten der Universität Erlangen-Nürnberg, Schillerstr. 25-29, D-8520 Erlangen

Dr. Ilona Kickbusch
Regional Officer for Health Promotion, Regional Office for Europe, World Health Organization, 8, Scherfigsvej, DK-2100 Copenhagen

Dr. Heinz Leymann
National Board of Occupational Safety and Health, S-17184 Solna

Herr Rüdiger Lutz
Zukunftswerkstatt, Kommunikationszentrum für Zukunfts- und Friedensforschung, Goldersbach 3, D-7400 Tübingen

Herr Reinhard Mann-Luoma
Referatsleiter Verhütung ernährungsbedingter Erkrankungen, Ernährungsaufklärung und Verbraucherschutz, Bundeszentrale für gesundheitliche Aufklärung (BZgA), Ostmerheimer Str. 200, D-5000 Köln 91

Dr. Helmut Milz
Allgemeinarzt, Auelstr. 2, D-5370 Kall

Prof. Rainer Müller
Fachbereich 11, Universität Bremen, Bibliotheksstr., D-2800 Bremen 33

Dr. Horst Noack
Institut für Sozial- und Präventivmedizin, Universität Bern, Finkenhubelweg 11, CH-3012 Bern

Dr. Kenneth Pelletier
Assistant Clinical Professor, Department of Medicine and Department of Psychiatry, School of Medicine, University of California at San Francisco, USA-San Francisco, California 94143

Herr Holger Pfaff
Wissenschaftlicher Mitarbeiter, Technische Universität Berlin, Fachbereich 2, Institut für Soziologie, Dovestr. 1, D-1000 Berlin (West) 12

Dr. Elisabeth Pott
Direktorin, Bundeszentrale für gesundheitliche Aufklärung (BZgA), Ostmerheimer Str. 200, D-5000 Köln 91

Herr Michael Rinast
Dipl.-Psychologe, Falkenburger Str. 118, D-2360 Bad Segeberg

Dr. Beate Ritz
Medizinische Soziologie, Universität Hamburg, Martinistr. 52, D-2000 Hamburg 20

Mr James Robertson
The Old Bakehouse, Ilges Lane, GB-Cholsey, Wallingford, Oxfordshire 0X10 9NU

PD Dr. Wolfgang Slesina
Institut für Medizinische Soziologie, Medizinische Einrichtungen der Universität Düsseldorf, Moorenstr. 4, D-4000 Düsseldorf 1

Dr. Malcolm S. Weinstein
Senior Consultant, Wilson Banwell & Associates Ltd., Corporate Health & Development Service, Oceanic Plaza, Suite 1810, 1066 West Hastings Street, CND-Vancouver, B.C. V6E 3XI

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Introduction: A New Era of Health Development

J. E. Asvall

A new era of health development was inaugurated in the European region in 1980 when the representatives of the member states approved their common health policy – the European strategy for attaining health for all – on the occasion of the 30th session of the Regional Committee (WHO-EURO 1980a). Calling for a basic change in countries' health policies, the strategy urged that much higher priority be given to health promotion and disease prevention; that not merely the health services but all sectors with an impact on health should take positive steps to maintain and improve it; that much more stress should be laid on the role that individuals, families and communities can play in health development; and, finally, that primary health care should be the major approach used to bring about these changes. It also called for the formulation of specific regional targets to support the implementation of the strategy.

Thirty-eight Targets as Guideline for Action

Today, this wish has become reality. At its 34th session in September 1984, the Regional Committee endorsed 38 targets in support of the regional strategy. Of these, seven concern education for health directly. The targets set out the fundamental requirements for people to be healthy, define the improvements in health that can be achieved by the year 2000 and propose action to secure those improvements.

Six major themes have inspired the strategy:

1. Health for all implies *equity*. This means that the present inequalities in health between countries and within countries should be reduced as far as possible.
2. The aim is to give people a positive sense of health so that they can make full use of their physical, mental and emotional capacities. The main emphasis should therefore be on *health promotion* and the prevention of diseases.
3. Health for all will be achieved by people themselves. A well-informed, well-motivated and actively *participating community* is a key element for the attainment of the common goal.
4. Health for all requires the coordinated action of all sectors concerned. The health authorities can deal only with a part of the problems to be

solved, and *multisectoral cooperation* is the only way of effectively ensuring the prerequisite for health, promoting healthy policies and reducing risks in the physical, economic and social environment.

5. The focus of the health care system should be on *primary health care* – meeting the basic health needs of each community through services provided as close as possible to where people live and work, readily accessible and acceptable to all, and based on full community participation.
6. Health problems transcend national frontiers. Pollution and trade in health-damaging products are obvious examples of problems whose solution requires *international cooperation.*

One of the 38 targets adopted by the Regional Committee specifically concerns the workplace and suggests some solutions to the critical problems facing European countries in this field. Let me quote here from the official document on the *Targets for Health for All* (WHO-EURO 1985, p. 92).

Health and the Working Environment

Satisfying work in a safe and pleasant environment is a source of health and wellbeing. Yet, the physical and psychological working environment is all too often responsible for diseases and injuries.

Many workers are exposed to toxic chemicals, harmful dusts and fibres, noise and the hazards of fatal or disabling accidents. In some European countries over the last 10 years, there has been little reduction in the incidence of accidents at the workplace. In certain industries, such as mining, quarrying or construction, there are remarkable variations among the countries of the region with regard to the frequency of accidents per number of hours worked, apparently due mainly to differences in the effectiveness of regulations and safety education of workers. The self-employed and workers such as those on farms, on construction sites and in small manufacturing plants are often at most risk.

The total incidence of occupational disease in the region is unrecorded, although information is available on the effects of particular substances, such as lead, arsenic, asbestos and vinyl chloride, and of processes such as coal mining, stone quarrying and furniture making. Deaths from occupational diseases such as asbestosis, silicosis, pneumoconiosis and byssinosis are recorded in some countries. Individual behaviour such as smoking can greatly increase the risk of health damage due to occupational exposure.

As a result of the increasing employment of women, who currently represent 30%–40% of the civilian workforce in Europe, there is now an interest in identifying and controlling the potential effects of chemicals on reproductive processes, both male and female. Mental disorders, hypertensive diseases and myocardial infarction have sometimes been linked to psychological and social stress associated with certain working conditions, changes in

those conditions and unemployment. Noise levels can have a disturbing effect on workers and result in severe physical impairment.

In most countries of the region, occupational health records are inadequate, and it is not possible to establish clear links between them and the overall morbidity and mortality statistics. Coordination between occupational health services and the rest of the health care system is often unsatisfactory.

Taking this situation into account, member states of the European region have set themselves the following target (No. 25):

> By 1995, people of the region should be effectively protected against work-related health risks.
>
> The achievement of this target will require the introduction of appropriate occupational health services to cover the needs of all workers; the development of health criteria for the protection of workers against biological, chemical and physical hazards; the implementation of technical and educational measures to reduce work-related risk factors; and the safeguarding of specially vulnerable groups of workers.

This target could be achieved by ensuring that occupational health services cover the needs of all workers, with reporting systems that facilitate identification of hazards, assessment of risk and evaluation of the effectiveness of control measures.

Occupational health services should cover all places of work, including the home. In some countries, it will be necessary to introduce or intensify training programmes for the various categories of personnel required. It is important that workers, employers and the general public should be involved in developing, and should receive guidance on ways to improve, working conditions and prevent occupational risks, including reference to the association between such risks and personal behaviour such as smoking.

Legislation, economic incentives and improved employer/employee cooperation should facilitate health promotion and risk prevention. In particular, the registration of workers and the recording of workplace exposure to potentially harmful processes and materials should make it easier to take preventive action. Special attention will have to be paid to high-risk vulnerable groups. Measures to reduce risks should include the introduction of safer procedures and in some cases the replacement or strict control of chemicals known to be dangerous, especially those having carcinogenic, teratogenic or mutagenic effects.

Methods and procedures for monitoring chemicals, dusts, fibres and radiation in the workplace will need to be strengthened. Internationally developed health criteria concerning all potential hazards should provide the basis for the assessment of risks and the establishment of control strategies. Epidemiological studies and surveillance of workers' health will need to be expanded in many countries of the region.

Efforts are needed to improve the linkage between occupational health services and the overall health care system at all levels, from the highest government authorities to primary health care units.

Of particular concern to the readers of this publication is the component of the target concerned with the *educational measures* required to achieve greater wellbeing at the workplace.

These educational measures should aim at all the five important groups of active participants on whom implementation of the European strategy rests: the health authorities, the health professionals, sectors other than health, international organizations and, last but certainly not least, the people.

Health for All: For the People, with the People, by the People

The most important group of participants are indeed the people themselves. The health for all movement is for the people. And people have both rights and privileges: the right to equal opportunity to health, the right to health care, the right to be informed and the right to be involved.

Health for all is also a movement with the people. People are partners in that movement; they share responsibilities. They must therefore be fully conscious of the importance of their own active contribution at individual, family, group and community levels towards achieving health for all. They should play an active role in grasping the available opportunities to develop and maintain health. It is people who ultimately decide on the value of health in their lives, although their real options may be severely restricted by the economic, social, cultural and physical environment. People must develop the ability to define, recognize and express their needs and should be aware of when and how to use health care to satisfy those needs. People have the right to be informed; they should actively use the opportunities that exist to obtain the required information, to analyse it and to draw conclusions.

People have the right to be involved. They need actively to ensure that their right can be given practical expression, that satisfactory prerequisites for health exist for all, that the environment in which they live is healthy and provides conditions in which it is easy to select a healthy lifestyle and that the health care system is responsive to their needs. It is for this reason that health for all is, above all, a movement by the people.

A major political challenge is to mobilize the necessary support of the general population and of the specific groups most concerned, so as to make such programmes a priority at all relevant levels of health policy-making in member states and to procure the resources needed to carry them out efficiently.

One principle is true for all countries: the key to solving many health problems lies outside the health sector or is in the hands of the people themselves. High priority should therefore be given to stimulating the contributions that other sectors and the public at large can make to health development, particularly at the local level. It is essential in this respect to accept the basic principle that people's involvement in health development cannot be merely passive. It is a basic tenet of the health for all philosophy

that people must be given the knowledge and influence to ensure that health developments in communities are made not only for, but also with and by, the people.

Momentum for Workplace Health Promotion is Accelerating

There is growing worldwide interest in workplace health promotion programmes across a wide range of businesses of all sizes. Current experiences are illustrated in risk appraisal and education or counselling programmes, in company-sponsored exercise facilities, policies about smoking and canteen food, and in support for self-help groups. The consideration of workplace conditions that influence health has led to changes in organization or in work practices as seen in some of the programmes oriented to improving both health and the quality of working life. There are numerous examples of workplace programmes that include concerns for the role of industry in promoting family and community health.

This increasing investment in promoting employee health is due, in part, to the increase in employer health care expenses (for example, General Motors spends more on contributions to Blue Cross/Blue Shield than to any other single supplier) and to threats to productivity caused by poor health, absenteeism and low morale. These developments also reflect a parallel growth in public interest in participation in matters of health and the potential offered in the workplace setting. As more examples of successful and effective programmes are emerging, with more attention to appropriate evaluation, the momentum for workplace health promotion is accelerating. The WHO Regional Office for Europe will be supporting these developments through a network of institutions in member states, among which the Federal Centre for Health Education in Cologne, Federal Republic of Germany, is an important link.

Foreword: We Have One Certitude

Elisabeth Pott

A highly industrialized country such as the Federal Republic of Germany, which owes much of its economic prosperity to the quality of its workplaces, needs to ensure that work and health are not in opposition to one another. Hence, considerable efforts were made in the past to ensure that workplaces would be as healthy and safe as possible by means of numerous laws, rules and regulations protecting the employee. Nevertheless, still much remains to be done in this area. A major research programme of the Federal Government, "A more humane work environment", aims precisely at investigating such questions as: "How can technology at work be made more humane?" and "How can technology be adapted to meet the particular needs of those who have to work with it?"

Health promotion in the working world should both serve the interests of the employees by helping them develop health-conducive behaviours and lifestyles and assist with the further development of the working world by supporting healthy work routines and workplaces. This double objective involves ambitious programmes which the FRG and other countries in Europe are only starting to explore.

When we compare the working world today with the situation in the past, we see a marked change. A few decades ago the main problem was heavy physical work which placed considerable strain on the muscles: today experts point to work processes which, in a particular way, create nervous tension. This "psychosocial stress" is a subject that merits all our attention in relation to health promotion in the working world. Nevertheless, even today, this is not the only kind of stress and a large number of employees still work in draughty conditions, in hot or cold temperatures, in places where they are exposed to noise, smoke, dust, gas or fumes, or in situations where they have to maintain particular physical positions. These problems have by no means disappeared, and, while they are no longer so prominent, they are still important from the point of view of health promotion in the working world.

We are also witnessing a considerable change with respect to occupational diseases, also linked to the evolution of the working world. Formerly when mining was still important, silicosis was the number one threat. In the FRG quite different occupational diseases now head the list: for a time noise-related disorders were the most common, while today skin diseases and allergies have become a major concern.

Every year, over a million medical checkups are carried out at places of employment in the FRG. On the one hand, this indicates that a great deal is being done, but on the other hand it shows that there are many workplaces which are hazardous to health, making such checkups necessary. Hence the decision to develop health promotion in the working world in a joint programme of the WHO Regional Office for Europe and the Federal Centre for Health Education, in addition to family health education projects and the implementation and testing of the lifestyle concept which these involve.

Statistics derived from checkups at the workplace show that we can no longer confine ourselves to occupational diseases and accidents at work, or on the way to and from work, but that a main concern is the large grey area of so-called *work-related illnesses*. These illnesses are playing an increasingly large part in debates about social policy, although it can be very difficult, in individual cases, to produce concrete proof that a stressful situation at the workplace is the specific cause, for example, of a cardiovascular disease that subsequently develops.

The promotion of health must be implemented by all sectors of society if we are to achieve our objective of health for all by the year 2000. Hence the need to pay more attention to the working world than has been the case so far. Obviously, the role such organizations as the Federal Centre for Health Education can or should play, the main areas on which to concentrate and finally the organization and implementation of concrete health promotion programmes in the firms themselves will vary from area to area, from sector to sector and from firm to firm. This conference, however, provides a unique opportunity for exchanging information and ideas, reviewing strategies and pooling international experiences relating to the problems of health promotion in the working world. The Federal Centre for Health Education could be of further assistance in this respect since the promotion and support of the exchange of information is an objective that is definitely within its scope.

Health promotion in the working world is of course a complex area that does not respond to superficial solutions. We could take a rational – or what we would consider to be a rational, if one-sided – approach and announce that in all sectors health promotion should come first. But this would not be realistic. If we want to step up health promotion in the working world, we must look critically at the situation as it is now and start from there.

The technological change we have witnessed in recent years has led to a fundamental restructuring of work routines and work processes. People have not yet been able to adjust fully to this transformation and a good deal of help is still necessary. According to experts, the importance of the service and administration sectors will continue to grow in our economies; this will involve further automation and rationalization processes. In the future, as flexibility increases and as working hours and the length of the period of worklife gradually reduce, people will be forced to develop a new attitude towards work.

We must be clear in our own minds that the measures proposed will have considerable economic repercussions, which must be shared by all sectors. The subject of health promotion in the working world is unlikely therefore to meet with an enthusiastic response from everyone. If we are to convince people, it is essential to present clear concepts and strategies that can be easily understood and applied in everyday work situations. Simultaneously, we need to develop concepts for the future and to postulate objectives for the year 2000; whether these are realistic and can be achieved will have to be explored and tested. Whatever problems we must overcome, we have one certitude: health promotion in the working world, as in other areas, will be successful only if we act jointly to make it so.

Preface

Rosmarie Erben

The International Conference on "Health Promotion in the Working World" was organized by the Federal Centre for Health Education, Cologne, in collaboration with the Regional Office for Europe of the World Health Organization, Copenhagen. It was held 7–9 October 1985 in Cologne, in the Federal Republic of Germany, and brought together 65 participants from 12 European countries and Canada.

The major role of the working world with regard to the development, maintenance and modification of both individual and collective health-conducive lifestyles is gaining increasing attention. In addition to the physical and biochemical risks which are the traditional concern of preventive health care, the manifold effects of stress at work and of psychosocial variables have now become the focus of interest. This shift was stimulated by the findings of socioepidemiological research on the relationship between health and lifestyles.

The promotion of health at the workplace, including health-conducive lifestyles, is now seen as a necessary complement to measures aimed at reducing or eliminating occupational risks as well as risk behaviour.

Stress phenomena in the work environment and their impact on health were the focal point of the conference. The most contradictory research findings exist on stress and this has given rise to a variety of approaches and initiatives. The conference, therefore, focussed on possible ways not only to reduce stress but also to improve stress management, and examined the implications for health education and health promotion. In this context, three key issues were discussed:

1. Since the response to stressors and the capacity for stress management vary widely from person to person, how can we *influence these reactions?*
2. What possibilities exist for *coping with stressors* such as working conditions, lack of satisfaction at work, changes in the work environment, the working atmosphere? What consideration should be given to psychosocial factors in the conflicting field of work and leisure?
3. Some risk behaviours are in fact *stress-coping mechanisms*; yet, they can also act as stressors or as variables giving rise to stress reactions. What are the implications for health education?

Within this broad framework, the conference had the following specific aims:

1. Identify different possibilities for health promotion at the workplace and outline approaches for further development
2. Reinforce the WHO regional strategy towards lifestyle-oriented health promotion, including reference to specific health risks
3. Provide support for the work of the Federal Centre for Health Education in the prevention of cardiovascular diseases
4. Formulate recommendations for WHO and for national organizations, and encourage an intensive exchange of experiences between members of the main target groups, i.e. employees, employers, etc.

Organization of the Conference and Involvement of Target Groups

A *Workshop comprising a small group of experts* was organized on the 1st day for the presentation and discussion of the concept and principles of health promotion at the workplace, especially stress prevention and coping behaviour. The experts represented different areas and disciplines, i.e. medicine, psychology, management, employee associations, self-help groups, futurology and media. The workshop was a sort of "futuristic laboratory" providing a setting for innovative thinking. It acted as an "idea generator", focusing on a holistic health promotion approach.

The workshop was followed by a 1-day *seminar bringing together potential initiators and multipliers*, i.e. representatives of groups, institutions and organizations from the working world, namely self-help groups, employer and employee organizations, sickness insurance funds – particularly those concerned with companies – as well as representatives from governmental and non-governmental health education institutions who reported on health promotion projects in the work environment.

The 3rd day was devoted to an *information bazaar* involving a wider audience. This informal setting enabled participants to present various approaches and concepts to representatives of employer and employee organizations who had been invited. Experience-stimulating methods such as games and exercises were used to communicate the health promotion concept and reinforce awareness of the conference themes. Questions and suggestions from visitors were another source of information for organizers and participants.

The conference made it possible to establish a baseline network of people who shared their experiences and who will work together in the future. The concepts of health promotion and the lifestyle approach at the workplace were seriously discussed and provided a totally new perspective for a number of participants. The research results presented at the conference, especially in relation to stress, resources and social support at the workplace, showed clearly that a change is needed with regard to current directions in health education at the workplace, and perhaps also as concerns some of the approaches of occupational health itself and the need to enhance health promotion.

In This Publication

Selected presentations made at the workshop, the seminar and the bazaar have been organized by subject area, and the papers covering several subjects divided accordingly. This will enable the reader to find, in each chapter, all the views and experiences shared on one or the other day on the following subjects:

- The new conceptual framework provided by health promotion and the lifestyle approach
- The research findings with regard to a) stress and stressors and other health problems at the workplace and b) coping with stress
- Programmes of stress management and health promotion developed in various work settings
- Conclusions and recommendations of the conference

Each chapter is introduced by a brief overview of the subject in the shape of an extract from the WHO final report on the conference.

I A Conceptual Framework

Introductory Remarks

According to the WHO definition, health promotion can be regarded as a process that enables individuals, groups and communities to exercise greater control over the contributory factors of health and thereby to improve their mental and social wellbeing.

Health promotion has come to represent a unifying concept for those who recognize the need for change *in the ways* and *conditions of living, in order to promote health. Health promotion represents a mediating strategy between people and their environments, synthesizing personal choice and social responsibility in health to create a healthier future* (WHO-EURO 1984).

The broad goals of health promotion can be stated as improving access to health, developing a health-promotive life environment, strengthening social networks and fostering positive health behaviour through the participation of those concerned and the involvement of all the health professions and of many sectors.

Health promotion is oriented to the population as a whole and to everyday life. The working world occupies therefore an important place in this strategy. On the one hand, it plays a central role in the formation and modification of health-relevant lifestyles; on the other hand, it is of major importance not only in the causation of disease but also in the promotion of wellbeing.

Health Promotion: A New Approach at the Workplace

I. Kickbusch

The Health Promotion Programme at the regional office for Europe of WHO was established in 1984, in connection with the policy documents that the Regional Office had developed over the 5 previous years. These documents represent the first common health policy adopted by all 33 member states of the European region of WHO.

In 1980, the regional office proposed a regional strategy for health for all by the year 2000 which deals with what the member states thought were to be the main health problems in the next 20 years. To operationalize the subject areas put forward in the strategy, regional targets were outlined, and endorsed in 1984 by member states. One of the central areas in both the strategy and the targets concerns life styles conducive to health (WHO-EURO 1980, 1985).

For a long time life styles have been assimilated with specific and narrowly defined risk behaviours. The regional office approached the subject from a much broader perspective, recognizing that the behaviour of people is patterned to a large extent by living conditions. Hence the responsibility of all sectors of society to make "healthier choices the easier choices". A large number of people at present have little or no choice at all in relation to their health and there is still a long way to go, both in general public policy and in health policy, before living conditions are really conducive to a healthy life.

Principles

The WHO has defined health promotion as "the process of enabling people to increase control over and to improve their health". A number of principles evolve from this definition.

1. Health promotion is concerned with the population as a whole, in the context of everyday life, rather than with people at risk from specific diseases. The workplace is one of the areas of everyday life where people probably spend most of their time and put in most of their energy. Too often, health education and life style programmes have focussed only on the family or on leisure time and have not considered the importance of the workplace, nor of the family as a workplace for that matter.
2. Health promotion is directed towards action on the determinants or causes of health. This is very much in line with the tradition of the

occupational health and safety programmes that have tried over the last 100 years or so to work in exactly this direction.

3. Health promotion combines diverse, but complementary, methods or approaches. These include communication, education, legislation, fiscal measures, organizational change, community development and spontaneous local activities initiated by the people themselves. Too often, people equate health promotion with health education. We are speaking, however, of a much wider grouping of activities under the heading of health promotion and this is very important in relation to the workplace.
4. Health promotion aims particularly at effective and concrete public participation. Only a smaller range of programmes have actually been built up from the start with the participation of the people concerned. As a result, new ideas are not yet discussed as much as they should be in those very organizations that are concerned by the health of the working population.
5. Finally, while it is basically an activity in the health and social field, health promotion is not a medical service. It involves a wide range of professionals.

Subject Areas

The next step was to define specific subject areas for health promotion.

First on the list is access to health. This means reducing inequalities in health and increasing opportunities to improve health.

Second comes the improvement of health, which depends upon the development of an environment conducive to health, especially at the workplace and in the home. What we have usually called "work" over the last 100 years is "employed work". Yet, there is much unpaid, hard work in society, there is much women's work, there is much double work, and this cannot be overlooked.

Third, health promotion involves the strengthening of social networks and social supports, what other people have called resources for health.

Fourth, promoting positive health behaviour and appropriate coping strategies are a key aim in health promotion.

And, fifth, a very basic objective of course is to increase knowledge and disseminate information.

Current Programmes and Priorities

The WHO is trying to develop health promotion in various settings. We have already started doing so in relation to the family. Then, the school: we have prepared a project on "the health-promoting school", a setting where a large number of children and young people have to spend the major part of their working day, so to say. And now, one further area is health promotion

at the workplace. This is an area undergoing many changes – not only technological change, but also changes in the direction of a service society.

A major question needs to be asked: How do our work styles relate to our life styles as a whole and how do they interact? Too often, when we look at the problems of people in the work context, we forget to look at their life outside work. The fact that our general way of life has changed, that familiy life also has changed, has many – and major – implications as both constitute a very important interlink with the workplace.

A priority is to identify the possibilities for health promotion in the workplace and to develop new approaches. For this we need detailed descriptions of experiences from which to build a lifestyle-oriented strategy. In this connection WHO – perhaps with the assistance of the Federal Centre for Health Education – could help by setting up a health promotion information centre on the working world in Europe, which would provide member countries with very useful information for national programmes.

Approaches to Holistic Health Promotion at the Workplace

H. Milz

The most important contribution to the promotion of health in the working world is the creation of working conditions that are in keeping with a sense of human dignity and human needs. The social organization of work and its specific conditions are created by humans and, as such, can be changed by them. Thus far, general health has been an important element in the capitalist production process only in those cases in which diseases endanger the availability of human manpower or the costs resulting from sickness become an important economic factor. Matters may be different if those concerned are willing to open their minds to the value of their health and to promote it actively.

Health as a positive prospect means an improvement in the quality of life and the way of life. This is something that should not stop at factory and office doors. By the same token, it is not very sensible to develop health-promoting measures in the workplace if the pollution produced by the company in question endangers health outside or the companies' products destroy health.

Health has hardly ever been formulated positively as a common demand. Instead, the demand for sufficient medical care in case of sickness continues to dominate, followed by the reduction of risk factors for specific diseases. Strategies followed by trade unions and political parties with regard to the promotion of health in the workplace are defined in defensive terms and are concerned with accidents and harmful substances, work speeds, working hours, etc. They imply a concept of health that is identical with the absence of objectively quantifiable diseases. Consequently, they direct their attention to external factors and conditions – the stimuli – and less to subjective factors – the responses. Strategies of this kind continue to be of considerable importance. However, in their one-sidedness they lack important psychosocial and psychophysical factors that play an important role in helping to determine the health of the persons affected and the risk of falling ill. The individual factor in the genesis of diseases is usually taken up only in criticism of the persons affected for wrong behaviour. This attitude is often called "blaming the victim". It tends to limit health education efforts to warnings and prohibitions. A changed attitude, i.e. one based on positive health promotion, must go much beyond and facilitate a learning process which stimulates the training of awareness and opens up feasible choices for healthier behaviour.

The phenomena of "helplessness" and "hopelessness" have received increased attention in the research being carried out in the fields of clinical psychology and the psychology of learning. In this context, "helplessness" is seen as the non-presence of cognitive or behavioural coping strategies when a behavioural plan is interrupted. "Hopelessness" is triggered by long-term or very frequent experience of "helplessness" without any possibility of acquiring coping responses, e.g. avoidance or change (Birbaumer 1977).

This kind of experience with "helplessness" and "hopelessness" is determined not only by objectively given but also by subjectively experienced "helplessness". We must therefore promote an increased interest in the need for change in both the objective and external area and the subjective and internal area. It is only on the basis of a holistic view of realities – one which surpasses the limits of specific disciplines and demands a discourse on equal terms between experience and science – that health promotion in the working world can be more than an amateurish and managemental curing of symptoms.

Health promotion based on learning and the search for ways of overcoming "helplessness" and "hopelessness" is an attempt to relocate our identity in a mostly alienated situation, i.e. to find more genuineness. The increase in subjective and collective wellbeing aimed for is, at the same time, "subversive", as it promotes the work productivity of the employed.

How Is Health To Be Defined?

"If health as a project takes the place of life, indeed assumes its name, then life itself loses importance to an abstract norm" (Basaglia 1985).

Health promotion in the workplace is a project connected with the debate concerning the definition "health". On the one hand, there is publicly, scientifically, objectively defined, measurable and statistically relevant health, i.e. the opposite of and the absence of disease. On the other hand, there is private, subjective, non-normable and non-measurable health, i.e. a sense of wellbeing. The two positions cannot sensibly be separated from one another and have to be viewed in terms of their multifarious interactions.

Health is not a subspecialty of medicine. People can exist only in a process of interaction with what they are not. Interaction is thus defined as flexible adjustment to ecological and social conditions as well as the planned change of these conditions. "Health and happiness cannot be absolute and lasting values. ... Biological success is in all of its manifestations an expression of 'fitness' and this 'fitness' requires a constant effort of adjustment to a complex environment which, itself, is caught up in a process of steady change" (Dubos 1959).

This steady process of interaction between man and his environment determines the psychological and physiological experience and structures of the individual which, in turn, determine the future "fitness" of his behaviour and actions.

One of the special characteristics of the human body is the fact that its self-reflective mind is capable of *anticipation*, i.e. "passively as expectation and anticipated experience, actively, i.e. purposefully, as creative shaping of its future" (Jantsch 1984). With respect to health this can be understood as the *liveliness* and the *self-certainty* that enables people to explore and accept themselves and their environment with all the associated anxieties, pain and confusion as well as their positive aspects such as warmth and love. Health also signifies a *relative* value, as in the case of disease, "relative with regard to events, experience and contradictions of a life that constantly moves between health and disease. It is only when the value is the human individual himself that disease does not signify a loss of dignity" (Basaglia 1985).

"An exact definition of health and disease is an almost impossible task. One is tempted to define each of the two as the absence of the other. There is a truth contained in this that we strongly support, i.e. the fact that 'health' and 'disease' are words that only indicate a direction and not an absolute condition. It would be logically correct only to speak of more health, less health and even less health and totally to drop the word 'disease'. However, this would amount to a violation of normal usage"(Menninger 1974).

Personally, I consider the concepts "health" and "disease" as elements in the continuum in which our lives take place. Advocates of holistic concepts in medicine and health frequently emphasize that disease and symptoms of disease are a sign that a person is suffering as a result of the life he or she is leading and is involved in. The life he or she is leading is painful for him or her. As such, psychosocial factors acquire the same importance as biochemical damage. It is only on the basis of a complex interaction of all these components in the specific life situations of an individual that the experience of "health" or "disease" derives.

Remarks on the "Working World"

The concept "working world" could lead to the mistaken assumption that what is involved here is a separate and distinct "world". An approach that views the working world as a *whole* is only one possible approach, since, in addition, the "working world" is *part* of the overall social system and is largely determined by its organizational principles. At the same time, work in the life of a human individual is, on the one hand, a unit in itself and on the other inseparably linked with the overall situation of everyday life.

The specific characteristics of the "working world" have a strong influence on the potentials and requirements for health promotion (this may involve hourly wage earners or the self-employed, skilled craft or industrial labour, manual or mental work, defined or self-organized working times, daytime or night-time work, the production or services sectors, etc.).

In addition to the general statement that social and economic organizational structures influence the "working world" and, as such, the stress to

which working individuals are exposed, it can also be said that individuals should be understood *not only as victims, but also as the origin* of their institutions, as subjective and objective factors in the latter, as producers and products at the same time. They generally are capable of understanding and learning, developing awareness, and intervening by bringing about changes both in their own behaviour as well as in social circumstances.

Approaches to health promotion should be concerned with social norms and forms of "working worlds", as well as the potential for individual and collective influence on these factors. Scientific analyses of the workplace and work organization provide important aids for concepts of this kind. The description of individual risk factors is helpful, but it is based on an approach aimed at the isolation and measurement of individual factors and not one that goes beyond specific analysis to consider the accumulation, interaction and reinforcement of individual risk factors (Friczewski 1984).

Health Promotion in the Working World: A Learning Process

Only viewing the interactive play of forces between external and internal stress factors, between stimuli and different response options can lead to an emancipatory understanding of health. The individual areas of scientific research, i.e. occupational medicine, occupational hygiene, occupational sciences and industrial psychology can provide important assistance in the analysis of data and specific pathologies. Externally prescribed or managed behaviour is not sufficient for the implementation of health programmes. It is only the voluntary and conscious inclusion of the employees concerned, the equal consideration of their experience, as well as the training of their perception skills that can successfully bring about better health over the long term.

The elimination of health-endangering work situations and noxious substances, the promotion of movement and relaxation, qualitative improvement of nutrition, communications structures and social structures (suitable for overcoming "helplessness" and "hopelessness") are all important factors for holistic health promotion. The weighting and significance of the individual components must be assessed specifically in each case for the different working worlds. Current health management programmes being carried out by different corporations and institutions can be discussed as models, but they must be critically modified to take specific circumstances into account, and developed jointly with the people immediately concerned. "The effects of the physical and social environment cannot be understood without having a knowledge of the history of the individuals concerned" (Dubos 1979). This means as well that promotion of health in the workplace is not possible if it does not relate to the social and ecological reality in the off-the-job everyday lives of those concerned.

Lifestyle, Stress and Work: Strategies for Health Promotion

M. S. Weinstein

The Lifestyle Concept and Its Consequences for Health Promotion

According to Buddhist teachings, work has three functions:

1. To help people develop their faculties
2. To overcome self-centeredness by making individuals join with others in a common task
3. To bring forth the goods and services needed for a becoming existence.

This paper addresses the concept of "lifestyle" – the social values and personal practices that affect our health – in relation to the working world.

Much work is organized today in such a way that it inhibits positive health practices and increases feelings of powerlessness and stress; this situation contributes to, and is reinforced by, breakdowns in the family and community. To be successful, health promotion strategies in the working world must focus attention upon the *work itself,* not only upon the worker.

Substantial disagreement exists about the definition of lifestyle. To paraphrase the Canadian government policy document, *A New Perspective of the Health of Canadians* (Lalonde 1974, p. 32), the term "lifestyle" refers to the sum of decisions by individuals that affect their health and that can, to some extent, be controlled by them; decisions that affect health negatively then create self-imposed risks and, in that sense, individuals contribute to their own illness or death.

As used by WHO, "lifestyle" is more than the sum of choices about personal behavior. It is "an analytic rather than a pragmatic term ... a concept of mediation between the social structure and the individual and social groups." The term "lifestyle" refers to the patterns of shared behaviors, values, traditions, and culture of social groups – "a reservoir of socially selected patterns of behavior and interpretations of social situations, which is developed and used by the group to cope with life in a common way" (Wenzel 1982, p. 5).

Another way of looking at lifestyle is in terms of the personal allocation of time, money, and energy to various activities. Studies of how people budget their time (e.g., Moss and Lawton 1982) provide a useful way of studying

lifestyles defined in this way. Wenzel points out that, within their social, political, and work environment, individuals often feel powerless. They may adopt behavioral patterns, often unconsciously, that place their health at risk by choosing an immediate satisfaction such as smoking, rather than delaying satisfaction by adopting a healthier longer term strategy of risk reduction. As an Israeli remarked to me recently when I questioned the high rates of smoking in his country: "How can you speak of giving up smoking when at any moment I may be called upon to go into battle and die?"

Perception of Power: What Role?

The findings of a 1984 Prevention Index study by Lou Harris and Associates in the United States for *Prevention Magazine* support this notion. Specifically, the study found that people who believed they had more control over their own health had higher prevention scores than people who felt they had less control. People who experienced less stress had higher overall prevention scores than those who experienced more stress.

Unfortunately, health programs aimed at the reduction of specific risk factors do not collect data about workers' perceptions of power. Similarly, studies of worker morale do not assess health risk behaviors. What I am suggesting is that, as part of our health promotion strategy in the working world, we should collect such data. For instance, why not add to our existing computerized Health Risk Appraisal questions dealing with perceptions of personal power in the workplace? While we are at it, we might even expand our focus to examine perceptions of personal power and health with regard to other settings, such as the family and community.

What definitions of health and health promotion should we adopt for programs of lifestyle change? What is it that lifestyle choices are aimed at anyway? Should lifestyle change programs be based upon a traditional epidemiology of sickness or, as some would argue, upon an epidemiology of health (Terris 1975)?

According to WHO (Wenzel 1982), health promotion "is the process of enabling people to increase control over, and to improve, their health." Health is not an end in itself, but "a resource for everyday life" that enables an individual or group "to realize aspirations and strategic needs . . . and, on the other hand, to change or cope with the environment." The promotion of lifestyles conducive to health – promoting positive health behavior and appropriate coping strategies – is a key aim of health promotion.

Most definitions of health reflect the origins of the word itself in terms of mental, spiritual, and physical wholeness and harmony among various aspects of our life, particularly work, love, and play. To the extent that our lifestyle contributes to this harmony, we enjoy health. The consistencies and contrasts between our patterns of activities across the contexts of work, love, and play are important considerations in our health promotion strategies.

Importance of the Working World for the Development and Maintenance of Lifestyles

The working world offers important opportunities to promote health (Weinstein 1983; Fielding 1984; Pelletier 1984). First, most adults spend at least one-third of their lives in formal paid work. Second, work settings provide the continuity needed to identify personal health risks, to encourage referral to risk reduction programs, and to support and monitor habit change over a period of time. Government and private sector bodies in both Canada and in the United States have launched significant efforts to study and promote lifestyle change in the workplace (Bezold and Carlson 1984).

In Canada, building upon the policy contained in the *New Perspective* report (Lalonde 1974), national surveys of health status, fitness, and health beliefs and studies of unemployment and mental health (Kirsch 1983), major efforts are being made to encourage workers to increase their commitment to exercise (through the federal government's Participaction program) and to improve the quality of working life (Dorion 1981). The US Surgeon General's report, *Healthy People* (1979), has led to a national commitment to meeting over 200 specific health objectives by the year 1990, many of which emphasize workplace wellness.

In the United States, private sector health promotion entrepreneurs abound, and business is expanding as hospitals and employers discover the joys and potential profits of marketing health and fitness programs. National clearinghouses such as the Washington Business Group on Health provide important linkages between health professionals and employees, and specialized journals such as *Corporate Commentary* now exist to spread the news of recent developments. Employee Assistance Programs, initiated to focus on helping to rehabilitate employees whose misuse of alcohol and drugs adversely affected their work performance, now provide a broad-brush approach for a wide range of stress-related problems.

In my own work in Employee Assistance Programs in Canada, I find that more and more employees are asking for programs on stress management. Labor union leaders are also finding that such programs can offer their employees genuine benefits and are requesting that they be included in collective agreements. In a case I have dealt with recently, the union shared the cost of lifestyle counseling with management.

In fact, health promotion programs have developed in the United States and Canada in relation to a number of factors. The first is health cost. In North America, for example, many corporations pay the health costs for all their employees; the larger corporations are self-insured. Chrysler Corporation estimates that 20000 cars must be sold to account for the health costs of their employees. That represents over US$ 600000/year. As the literature provides more and more evidence of the benefit-to-cost ratio of the health promotion approach, companies are interested. Some estimates indicate, for example, that counseling programs for employees in the area of psychologi-

cal services have ratios that are as high as 14:1. For every dollar spent, the company saves 14.

Another point: as there are fewer dollars available today to raise salaries, employes are looking for other benefits to offer. They are looking at what you might term "psychological pay." Benefit packages, such as health promotion, are examples of such "pay." The second factor is increased employee awareness of risk factors. It is not possible to pick up a magazine or a newspaper today without reading something about health "this is bad for you" our "this is good for you." Part of this has led to an increased employee demand for changes in the workplace, i.e., noise factors, poor food in cafeterias, excessive smoke, and so on.

Increased marketing of health has also played a role. In the United States and Canada, hospitals, public agencies, and others are developing very powerful programs with the same kinds of resources as large manufacturing or industrial companies. They are selling health. Some people might feel that health should be adopted for its own sake. Unfortunately, we have to compete against very strong vested interests and it seems reasonable to use the techniques that they use and find so successful.

Yet another factor that is leading to increased interest in health promotion is the demographic shift toward an elderly population. In North America and in Europe, the percentage of elderly is reaching 25%. The longer we keep people healthy, the happier their lives and the less the health costs. Some people talk about the compression of morbidity. The idea is that all of us will live healthy, productive lives until the age of 80 and then die quickly, hopefully of a heart attack. These, then, are some of the factors that have led to an increased interest in health promotion programs.

Elements of Wellness at the Workplace

As I noted elsewhere (Weinstein 1985), workplace lifestyle change programs are being undertaken from a variety of perspectives. It appears that almost everyone – from traditional occupational health and safety practitioners to organizational development consultants, from advocates of industrial democracy to researchers on occupational stress – is discovering the value of a long-term strategy to achieve wellness through health promotion. While it will be some time before we are able to judge the results of this synergy, the elements of a shared vision of workplace wellness are beginning to emerge:

1. *A systems approach:* Each worker is part of an open, dynamic system, affected by and acting upon his internal and external environments.
2. *Risk identification:* Programs must identify worker exposures to threatening situations, both psychological and physical, that pose a serious threat to health.
3. *Wellness potential:* The factors that place one at risk for illness are not necessarily the same as those that promote wellbeing (Headey et al. 1984). Lessons learned from traditional disease epidemiology do not

provide and adequate scientific basis for health promotion. An epidemiology of health is needed.

4. *The job itself cannot be ignored:* Efforts that focus only upon the worker and the environment are unlikely to be effective in the long run. The traditional public health triad of agent-environment-host should be explored more fully for health promotion in the working world. This model directs us to pay more attention than we do to the agent, i.e., the nature and structure of the work experience itself.
5. *Behavior change requires support:* The work group, family and community are critical to the development and maintenance of lifestyle. They must be included in efforts to support lifestyle change.

In 1980, the WHO Regional Office for Europe published the report of a working group on *Health Aspects of Wellbeing in Working Places.* While the report does not address lifestyles or health promotion explicitly, its focus upon wellbeing is worthy of note. The working group recognized the multiplicity of factors influencing health at work, especially psychosocial factors, i.e., "those influencing the health and wellbeing of the individual and the group which stem from the psychology of the individual and the structure and function of the work organization" (WHO-EURO 1980b, p. 4).

After reviewing the various causes of ill health and lack of wellbeing, the authors set out measures for dealing with them. One of the most important conclusions drawn by the group, reflecting earlier studies of psychosocial problems among Swedish civil servants, is that the organization, not the individual, should be the focus of treatment. In fact, they suggested including as part of occupational health service departments "someone with competence in behavioral sciences – a new type of health expert who could gain insight, promote contacts and communication, and recommend changes in organizational structure" (WHO-EURO 1980b, p. 15).

Health promotion efforts must look at forces that act upon the total ecology of work and not just upon the worker. This was also stressed in the June 1985 issue of *Corporate Commentary*, a journal published by the Washington Business Group on Health. One interesting paper in that issue, "Individual and organizational health at Rockwell International," a very large firm, said clearly that quality of worklife and employee wellness programs have the same fundamental goal: creating and sustaining change in the workplace. Both programs go hand in hand. It is difficult to create a healthy organization if its members are unhealthy. Just as it is difficult for employees to maintain their health in an organization that behaves in unhealthy ways.

Further Linkages Needed

When it comes to lifestyles, we cannot really separate work from home and family. In my work as a clinician, I am struck repeatedly by the interconnectedness of work and, for example, marriage. In recent months, I have seen

an epidemic of marriage breakdown. I have been struck by the similarities among these couples. The typical couple is in their mid to late twenties. Both work full-time. They have usually been married for 3–7 years. The wife is younger, having been married at age 17–20 to escape from a painful home life characterized by a domineering mother and a distant, sometimes alcoholic and abusive father.

"He doesn't communicate – he grunts" is a common complaint. Their sex life is minimal. Their work performance is deteriorating; their supervisor and colleagues are aware that something serious is wrong. The wife would like to leave, but says that her feelings of guilt are holding her back. If her husband doesn't "shape up," then she will "ship out."

Either or both of them suffer from hypertension, headaches, chronic pain, ulcers, and so on. This pattern has become deeply ingrained – there is little energy, nor is there any skill, to renegotiate the marriage contract. As a result, each labels the other inadequate and blames the other for the marriage breakdown. Children are subtly used by each parent as "runners," carrying messages of blame and hostility between them.

This pattern of marriage breakdown and health reflects the joint pressures of work and family life. In turn, work and family life reflect social policies made about nonhealth issues – employment, housing, agriculture, energy, transportation.

Hancock (1982) has written eloquently about the interconnections of the health system – more aptly described as the sickness system – and these nonhealth sectors. In order to plan for health, whether in the home or the workplace, it is necessary that we look beyond our traditional domain of medical care and take collective action to bring the health impact of their actions to the attention of decision-makers. Indeed, improvements in health are much more likely to result, as they have throughout history, from improvements in nonhealth areas, particularly those affecting the quality of our air, food, and water, than from changes in medical technology. What we need is more than public health policies; we need healthy public policies that are aimed at creating a healthy society, that are holistic in their approach, oriented to the future, and foster a sense of personal power and self-respect (Hancock 1982, p. 9).

A Life Apart from Work

A similar argument can be made about health promotion in the workplace and lifestyle change. Improvements in personal health habits that will have an effect on personal health status for many individuals should not be abandoned as a goal. But, we cannot forget that, for many, health is adversely affected every day by the nature of their work and the sense of powerlessness and futility they feel about their role in the organization. As a bank manager client remarked to me recently, "I used to have good health until they took away my authority to make loans and my private office. I

used to have some control over my work and my space. I feel helpless and trapped. I end each day feeling like I want to throw up and often I do. My blood pressure is too high. I've started smoking again. Meditation is not enough – I need to get out of this business!"

Some would argue that today workers are better off than they were before. In fact, in terms of nonwork or leisure time, they are only now beginning to approach the position of their thirteenth century counterparts (Wilensky 1981). The average person today still works from 1900 to 2500 h annually and has about the same number of holidays, rest periods, and vacations as he would have had about 600 years ago!

What are some points to remember in forging linkages for workplace health promotion?

1. Each individual has a life apart from work. For some, work is a matter of indifference; for some, a source of pain; for others, a source of self-worth and pride. Programs must recognize the different meanings of work.
2. Changes in lifestyle – diet, smoking, managing stress, and so on – that involve significant others are more likely to succeed when those individuals support or at least do not sabotage the effort.
3. Large-scale community efforts to change values and norms can create a positive climate for individual lifestyle change. The success of large-scale community efforts to reduce risk factors for coronary heart disease – e.g., the North Karelia study (Salonen et al. 1981); the Stanford three-community study (Farquhar et al. 1977) – attest to this fact. Indeed, some of the results of these studies have been criticized as less impressive than had been hoped for because control communities also showed improvement during the period of study. Rather than feeling badly about this so-called "contamination" effect, we should note that it may also effect normative changes in society in favor of a healthier lifestyle.

While efforts to change lifestyles in the workplace will probably increase, efforts to help children and teenagers adopt healthier lifestyles cannot be forgotten. Family-centered programs in the workplace can contribute to linkages by involving family members in programs with the employee to learn about diet, exercise, and stress management. Companies can help by sponsoring programs and campaigns about healthy eating, lifestyles, and the avoidance of cigarettes by children and teens. Canada's federal government is working very hard to produce a generation of nonsmokers by the year 2000. Private industry, often through the schools, enlists the help of prominent sports and entertainment figures to set a healthful example for students.

In 1981, recognizing the importance of cultural linkages for health promotion, the US Department of Health and Human Services published a booklet dealing with strategies for promoting health for specific populations, such as blacks, Hispanics, and the elderly. In the case of Hispanics, they noted: "The family is of utmost importance to all Hispanics ... all health services should be available in one place, with the major emphasis on the family ....

Even mental health problems such as alcohol and drug abuse should be dealt with from the family perspective."

I will examine in Sect. IV of this publication some approaches to lifestyle interventions and attempts at influencing stress in the working world.

In Conclusion

1. The concept of lifestyle in health promotion refers to patterns of choices that affect a person's health. Health promotion strategies that focus upon the individual may be appropriate where choices can be made without constraints, but more payoff from our efforts may occur if we target structures and systems. Some lifestyle habits, while seemingly unhealthy, are essential to a person's survival in certain work cultures.
2. Work settings can provide a special opportunity to influence lifestyles, especially to reinforce or hinder changes initiated at system levels.
3. Lifestyle approaches in the working world flow through main channels – quality of working life, worksite wellness, and occupational safety and health progress. A convergence of these approaches is emerging.
4. Corporate lifestyle change efforts are increasing and some have yielded positive results. Their focus seems still to be on individuals and health habits. The job itself is ignored but should not be.
5. To influence stress, we must combine organizational and lifestyle change programs with a careful reexamination of the nature of the job itself.
6. Effective programs for health promotion in the workplace must recognize and use other systems to reinforce and assist them. The workplace, community, neighborhood, and family are interdependent elements that require further linkage. The nonworking world of the pre-employed, unemployed, and postemployed must also be addressed.

Participation: Three Major Obstacles

R. Grossmann

Central to the development of health promotion is the role played by people in the working world. For the overwhelming majority of dependent wage and salary earners, working conditions are predominantly characterized by a high degree of stress, little scope for independent control and organization, low work qualifications and few learning possibilities at work.

What opportunities do people actually have to control and influence their work environment? Everyone is agreed that employees should play an active role and should be encouraged to examine their working and living conditions critically, responsibly and independently. And everyone is agreed that the various social groups must work towards a healthy lifestyle and healthy working and living conditions. Yet, this is anything but obvious from a political or a professional standpoint.

A Threat to the Power Structure

In the firm, health is of prime importance, in the first place as a cost factor and in the second place as part of a very logically organized power structure, designed to ensure control over what is produced, how it is produced and how the profits of production are to be distributed – often departing from sensible economic practice in the process.

There are many examples where employees and their representatives have requested or suggested improvements in working conditions that would have been beneficial to their health. Yet, these have been refused, even though the cost-to-benefit ratio would have been positive. But these improvements might have interfered with working conditions and could have had repercussions on the authority structure of the firm.

Political history shows that there are no permanent changes in social conditions for which workers did not have to fight to make them an established part of their work setting. This point should be kept in mind when planning health promotion measures since the structure of the working conditions themselves – the work culture – is regarded as the central factor in the development of conditions conducive to health.

The System: Many Negative Effects of Health

Let us now turn from the power relationship between employer and employeer to the role played by employees in the area of health promotion and the interventions initiated by "experts". Here, there is another major obstacle to participation in the very system devised for the provision of health and safety at the workplace. The way the system is constructed plays a very important part in determining how the connection between work and health is seen, as well as in defining the ways in which health promotion is to be achieved. Furthermore, health promotion must take as its starting point the traditions of the system and carry on from there.

What is the role of the employee in this system? There are considerable differences on the international scene with respect to this role and the way the various systems approach it. In the Federal Republic of Germany and Austria, it would appear that employees are largely excluded from playing and active role in the system designed to provide for health and safety at work. They are considered as objects of protective interventions and welfare measures. Employees are examined, transferred, dismissed, given therapy, rehabilitated, re-employed, re-examined, assessed by supervisors, assessed by insurance lawyers, compensated. They are sometimes recipients but they do not actually have a say in health matters.

The institutions we have created to ensure healthy workplaces are at fault since their structure is such that it allows no active role for employees. There are historical reasons for this: sociopolitical traditions which aim to protect, but *not* to help, people protect themselves.

Politically, the most controversial examples are the medical examinations employees undergo when they start a job, and the medical checkups. Introduced in the interests of the employees, they often result, in practice, in increasing the risk to health. In the Federal Republic of Germany, for instance, a little over 30% of those who have been unemployed for a long time are in this situation for health reasons. It then becomes clear how we create – with the help of experts in protective, caring roles – the kind of stress that is most damaging to health in the industrialized countries, namely the stress of being unemployed.

The prevailing system has some very crucial effects on the safeguard and promotion of health and we must start to tackle these effects by introducing some new ideas. First, the system hampers the development of awareness. Awareness is created by a process of active, critical examination or problems. The driving forces behind the development of awareness are action and experience not instruction. Second, the protective approach often acts against the interest of the employees by excluding them, although this is not the intention of the experts involved. Third, the effect of this exclusion is to cover up the full dimension of numerous problems since these problems are, metaphorically speaking, "taken away" from those they affect and transferred to the sphere of appeals and proceedings conducted by experts.

A case in point is the question of early invalidity. About 50% of workers have to stop working before retirement age for health reasons. Such a situation is a strong indication that working conditions should be investigated more closely. The medical and financial processing of early invalidity involves thousands, tens of thousands and hundreds of thousands of individual cases, of individual "fates"; the sheer numbers make it impossible really to think about prevailing conditions. The person who has retired early due to illness is usually considered as someone who has not "made it" and seen as a medical and insurance case rather than as a reason for developing primary preventive measures.

Experts: A New Approach Is Needed

Despite his refined instruments and procedures, the expert is not in a position to evaluate all the stresses in a single firm, or to deal with multiple stress as occupational sociology and occupational medicine would require. In the final analysis, stress as a whole – or, to put it more positively, the resources available at a particular workplace to counteract stress and whether they make for healthy working conditions – can only be judged by the employees themselves. Here we find similarities with the medical situation. If a doctor wants to intervene in time, i.e. when the first symptoms and disorders appear rather than when chronic illness has set in, then he is dependent on what the patient tells him about his situation and his living and working conditions.

A new relationship between experts and the affected persons must become a central theme of health promotion. This is not a move aimed at disqualifying the work of experts. In many areas, highly qualified experts are needed more than ever before as the problems on which we have to concentrate are new. But their occupational role, and their conception of this role with regard to health promotion, will have to change radically. Experts should not be working for people but *with* them. This will be a difficult learning process, both for the individuals concerned and the institutions, since experts are predominantly oriented towards keeping a certain distance between themselves and the persons they are dealing with. The scientific methods followed until now with "affected persons" also contribute to create a distance. Cultural and milieu differences should not be underestimated either. Experts generally come from a social environmental which is different from that of the people with whom they are working, not only on the individual level but also on the institutional level.

Changing Values Is the First Step

How can we develop organizational forms that are more strongly oriented towards active participation on the part of those whose health is involved? How can we change the cultural climate concerning the value placed on

health in the working world? A great deal of experience has already been accumulated in these areas but many initiatives have gone unnoticed because we are living in a relatively closed world and the barriers between the different environments are often hard to cross.

For the time being we should make use of every practical opportunity that presents itself to promote health. All kinds of means and methods can be employed. When we examine matters closely, we can see how complex the problems are: a physically healthy labourer or a scientist can still be a cruel husband and behave in an impossible manner towards the children. Or healthy, physically fit employees produce military technology or chemical substances which are harmful to colleagues in other firms and to consumers.

Health promotion is very much bound up with the overall structure and value system which shapes the working world as a whole, and its progress will depend on how successful we are in bringing about changes in the dominant value structure.

Worker's Participation: A Key to Health Promotion at the Workplace

L. Briziarelli

Promotion of health at the workplace can be achieved only through the workers' full participation in the fundamental aspects of the process. This involves:

- Recognition and analysis of risk factors and health hazards
- Analysis of the work organization to identify how and when harm occurs
- A general change in working conditions, in both the work environment and the work organization

Thus, two conditions are simultaneously required:

1. Awareness and knowledge of risks (and consequently of stress factors)
2. Direct intervention ability in:
   - Analysis (elaboration of knowledge)
   - Planning (elaboration of change hypotheses)
   - Involvement (action for change)

Health services have so far reacted to the workers' needs almost exclusively in terms of curative medicine, a type of medicine which allows predominance of the technical aspects within a rigidly authoritative and hierarchical system. This curative medicine intended, and intends, to be the expression of a presumed (but false) "neutrality" when faced with health hazards. In fact, it acts as a "partner" of the "establishment" by intervening on the damage instead of the risk, while providing a seemingly acceptable coverage of an unhealthy environment and work organization. Even when official medicine has, on occasion, provided certain preventive measures, these were still expressions of a medical system fulfilling the establishment's directives: selective and early diagnosis which simply registers the harm suffered and lacks both the capacity and will to enter into the essence of health protection or to face the true risks and causes of occupational diseases (Briziarelli et al. 1977).

Complementarity of Experts and Workers

Obviously, it is essential to promote a new type of medicine. Not simply the medicine of health, predominant today, but a medicine *for* health. This involves both a cultural and a technical choice, and is the only solution suited to the needs expressed by the people.

The new health policy should aim at reinforcing the collaboration of experts with workers, so that experts and workers wage a common battle for a common purpose, based on common interests and goals, and leading towards a different medical system.

We suggest two phases (and *not* two different approaches) with regard to participation in coping with occupational hazards: (a) the participation of workers on the one hand and (b) the participation of experts on the other hand.

Through their involvement, the workers must express their will to manage health matters directly, i.e. to administer life and work conditions, and to have a say in the choices made by the health services. This is much more than intrinsic solidarity; it is based on scientific needs, far beyond the intriguing hypothesis of "illness as loss of participation" (Parsons 1951). What we have in mind is not a demagogic type of participation but a self-regulating system which has the skill to identify personal ailments within a homogeneous group of workers, and to relate them to their causes and to all their cultural, organizational and language implications.

This is even more necessary if we consider stress and the typology of the factors which produce it – both during and outside of work hours.

One source of stress is the passive role assigned to workers by traditional preventive medicine (regular visits, checkups, multiphasic screening, etc.). Yet, the workers' active role is of vital importance here, as a basic support to the experts' work, especially in the field of psychological illness. The workers, and of course the group, are in a position to express many things – frequently of far greater significance and importance than what most doctors can report. Indeed, the doctors often lack the professional means required to identify the illness, and above all the cognitive opportunities to single out the cause-effect relation.

Tables 1 and 2 illustrate the complementarity of the contributions from experts and groups of workers characterized by their homogeneity, i.e. by the fact they share common experiences, problems and objectives. They are called "homogeneous worker groups" by Marri (1972), an Italian expert who has devoted much attention to these problems.

The considerations shown in the tables apply to all work situations, although each one may present particular characteristics. Considerable differences exist chiefly in the self-employment sector (craftsmen, farming, commerce) where greater problems are encountered in the control and reduction of traditional risk factors (physical, chemical and biological). There, the control of stress factors is even more difficult in the absence of certain positive elements – i.e. trade unions, class consciousness, group solidarity, etc. – which are present in the employee sector.

Other difficulties arise with white-collar workers, executives and cadres employed in the civil service and public utility services. In these particular sectors, stress is certainly more intense, as evidenced by the increased incidence of certain types of disorders. Indeed, in these cases an overt contradiction exists between the gratification normally inherent in the occu-

Table 1. What the worker has to contribute: Complementarity of the experience of "homogeneous worker groups" and the knowledge of experts in improving work environment conditions

Indications derived from the experience of "homogeneous worker groups"		
Description of the work process	Risk factors	Disorders and diseases
The worker's knowledge is superior and more complete than that of the experts. (This is due to the worker's greater first-hand experience, and because the work processes are never the same as those projected by experts and reproduced in books, but undergo continual changes prompted by direct practical experience)	The homogeneous worker group is the only indicator of environmental factors which cannot be measured with the use of instruments (i.e. the causes leading to fatigue effects). As concerns factors measurable with instruments, the group does not have the know-how regarding which instruments and which techniques to use. It does know, however, to a certain extent, *where* sample measurements are to be taken. The group also knows *when* the measurements are to be taken, i.e. which production phases are normally influenced by specific factors; this can be indicated only by people who possess detailed know-how of the work process	Workers are in a position to establish causal relationships by means of the epidemiological method. The group knows where to search for the causes leading to damage, including causes producing fatigue, and is able to relate them to environmental factors. (The group can therefore identify causes according to the number of people suffering from certain disorders and diseases connected with the presence of environmental factors such as dust, fumes, gas, vapours and fast pace)

Table 2. What the expert has to contribute: Relationships between the knowledge of experts and of "homogeneous worker groups" in improving work environment conditions

Indications derived from the knowledge of experts		
Presumed risk	Collection of data on the environment	Control of individual health (medical visits and necessary examinations)
The possibility of pointing out potential risks that the group has not perceived (and of which the expert is aware through international medical experience). Difficulty and/or impossibility of establishing the causal relationship (need to refer to the experience derived from the homogeneous group's observations)	The expert is therefore obliged to integrate his knowledge with the experience of the group for the recording of environmental data with instruments. As regards other man-measurable factors, he must learn to make use of the diagnostic and epidemiological skills of the workers, that is, the "subjective" evaluation of the group. He does not know when to take the measurements. The moments when, and in part the places where, they are to be taken must be indicated by the homogeneous worker group. The expert knows how to measure the environmental factors, and frequently knows where to carry out the measurements (for example: he knows the specific weight of gas fumes and therefore the height at which they are to be measured, and with which instruments and techniques they are to be collected.) He does not know where, how or when to measure the factors causing fatigue	The experts knows which medical examinations and which laboratory analyses are required. When preparing the control visit programme for the workers, he is able to decide which medical visits and which analyses or other laboratory tests are to be performed, and when; however, he must first determine with the homogeneous worker group all the risk factors presumably connected with the work process

pation itself (i.e. the profession) and the negative consequences deriving from work. Naturally, other factors must also be taken into consideration, i.e. competitiveness, and the increased impact of factors outside work.

The problem on hand is not that we need a different form of participation, or even a different intervention programme, but rather different means through which participation can be achieved and improved as regards prevention and health promotion.

Taken that workers' participation in prevention is essential and concerns all categories, the main problem facing us is therefore the following: how can we achieve this objective, what are the ways and means to apply in order to involve employees, the self-employed, the professionals, white-collar workers, the civil service and the public utility services?

Model for Health Promotion in the Workplace

A model for health promotion in the workplace based on several years of practical experience is currently being implemented within the national health service in Italy. The model involves three components: knowledge, communication and change.

Knowledge

Knowledge from two different sources can be identified: (a) the technical, or *expert knowledge* (objective), which is the result of studies, measurements and instrumental readings carried out in the environment and on man; and (b) the *workers' knowledge* (subjective), formed directly through daily experience at the workplace.

The objective data are transferred onto *risk maps,* which are developed in two steps: a draft based exclusively on the observations of workers is first established; then, it is completed by the insertion of data from the experts. Although traditional risks still exist, the maps drawn up today are very different from those of the seventies, and must still undergo considerable modification to cover the interaction mechanisms which now exist between man and organizational models. For one thing, maps must be based on a more extensive range of knowledge and include elements from managerial disciplines: sociology, psychology, psychoanalysis and communication. These elements will provide the key for reading and interpreting processes and data.

As regards subjective knowledge, the homogeneous worker group is the fundamental tool for collecting data. This group serves as an epidemiological control group and helps to identify the cause-effect ratio between risk factors and damage to health.

This data-collecting model is still valid today as regards traditional risk factors, especially for permanent jobs employing sequential methods of work providing workers with an overall view of the work process. With the new production processes which aim at the total separation of work phases

(see article in the chapter on "Stress and Stressors"), the role of the homogeneous worker group must be reexamined, case by case, and adapted where necessary to the new conditions. Group questionnaires, group discussions and models for the formal expression of interventions must also be integrated and/or reviewed according to the new ways of organizing work.

Communication

The diffusion of knowledge occurs when all the information collected on the workplace and working conditions (subjectively and objectively) are fed back to the workers.

This phase is the result of various communication situations (i.e. groups to discuss survey results, biostatistical data and risk maps). At this point, a very high level of what we call health education in the workplace has been achieved. Awareness and knowledge have a stress-reducing effect, and consequently represent a health promotion factor.

Change

This phase follows on from the other two. Here, modifications are proposed – in the work organization and the environment – which aim to reduce, if not eliminate completely, the risk factors present.

In this phase, experts and workers reacquire their autonomy, and their choices are distinct – sometimes at variance. In the negotiation phase, the experts rely on their formal power and authority; the workers select the mechanisms or forms of demand and action they consider most appropriate.

This model offers an overall approach to health problems including living conditions and the so-called work-related diseases. It is based on a strong belief in the importance of worker participation, and therefore must stem from an organic and articulated health education intervention, totally integrated in the functions of the services responsible for the safeguard and promotion of the workers' health.

Health Education in the Work Environment: Many Obstacles to Overcome

In the light of the preceding considerations, it is evident that traditional methods of health education need radical change. The model we have outlined challenges some current principles of health education and rejects the rigid structural organization which makes it the exclusive domain of professional health workers.

All parties concerned must decide when the intervention will be carried out, what its content and scope will be and how it is to be implemented.

It cannot be otherwise, since the intervention is intrinsically bound to the conflictual dynamics of class relationships and linked as well to the economic and political situation, which will strengthen or weaken its development, and to the contractual and mediating aspects of negotiations. This explains

why a health programme in a particular work sector reaches a certain level, and then fizzles out and collapses when all parties concerned are not involved. No expert can influence this evolution.

Though many initiatives have been undertaken to protect and improve the workers' health, in fact there is scant commitment to health education. There are several reasons for this.

For one thing, education for health has met with very real problems in trying to reach the work environment, and these problems have increased considerably during recent years as the workers' movement and the unions have been weakened by the economic crisis and the establishment's negative policy.

The second difficulty stems from the health workers' attitude, which has a double characteristic: (a) on the one hand, there is a sort of reluctance to "educate" adult subjects invested with political significance, and with the power to bring about changes in the entire society; this is the sequel of a misconstrued labour culture which spread after the 1968 movement; (b) on the other hand, there is the feeling that a health worker's responsibility and function is to carry out purely technical acts (precisely those included in his basic training) such as measuring risk factors and controlling employees' health – although availing himself of worker subjectivity.

Both assumptions are incorrect: first, workers are not "fully developed" subjects, prepared and able to organize and use their own experiences correctly; second, "working-class consciousness" is not synonymous with "health awareness". Workers, like most people, are generally ignorant where health problems are concerned, although they have at least acquired a positive attitude towards prevention. They still tend, however, to delegate health matters rather than become directly involved, and show no greater interest than other groups in taking action with regard to changing lifestyles which result from the pressures and conditioning of the society in which they live.

This situation has been, and perhaps still is, influenced by the tendency to identify automatically the goals of health promotion, i. e. modification of the environment and of the work organization, with more general targets of the working class, namely: the modification of production ratios and society itself. This leads to a tautology whereby aiming at one objective means aiming at the other as well, and to the belief that the same approaches are effective for both issues. This is essentially true, but ideological overemphasis has negatively affected interventions for the promotion of health in the workplace.

A Broad, Multisectorial Approach Is Needed

Experience shows that the effectiveness of health education interventions is related to specific aspects of the work environement, on the one hand, and to general aspects of everyday life and risk behaviours on the other hand.

Professional education is part of the specific aspects, in as much as it is more directly related to the knowhow required by the worker to fulfil his task. Exact knowledge of the function and of the machinery, tools, materials and substances used is essential for safeguarding health and should be part of the workers' stock in trade. It should be compulsory for the employer, or for the trade unions if necessary, to supply this information before the worker becomes part of the production cycle and is assigned a set task.

Health education action must be completely integrated into the general context of preventive interventions. It cannot be just an appendix, or a separate element for which a limited amount of time is available. Nor can it be managed by people who have no part in the rest of the programme. It is generally considered that health education can be carried out separately, through lessons and other didactic means. Naturally, this is needed, but the entire process should embrace a far wider sphere, involving the direct participation of the subjects in an active role which covers all three aspects of the model: knowledge, diffusion of knowledge and the change process.

This approach has proved successful in situations where the workers' movement itself, or kindred organizations, have voiced a demand for such action. This applies essentially to medium and large industries. How can we intervene in other productive sectors, so far generally ignored, such as transport, building, farming, craftwork? Typically, these are characterized by: predominant self-employment, dispersion of the workers, scant unionism, little or no trade union influence either at the base or cadre levels, the presence of considerable risks and a lack of awareness of the value of prevention.

Apart from some exceptions, requests for preventive intervention are rarely made by workers in these sectors; indeed, they generally reject the idea under various pretexts. Consequently, there is a great deal of preparatory work to be done in order to generate a demand for intervention, create awareness of its necessity and stimulate workers' willingness to participate actively in the various phases.

These are vitally important goals for the local health units since education is a fundamental part of their programme – in Italy at least. The task is undoubtedly a difficult one due both to objective conditions and to the traditional training which prepares health workers and experts to function within the service premises and to perform technical jobs. However, it is only by means of promotional activity that interventions can reach sectors so far neglected and, above all, stimulate the participation process which is essential for prevention.

Three groups of workers are concerned:

1. Health workers in public health services, occupational medicine, training centres, etc.
2. Trade union and factory representatives, who have a fundamental role as key mediators between entrepreneurs and workers and who also have

an essential educational function; this is especially the case of delegates appointed by the workers themselves

3. Various production experts, who can provide information and knowledge with reference to preventive intervention and health promotion

To face the many problems that confront the working world today, there is no need to invent new models but rather to integrate existing knowledge in a new perspective and to focus on intervention areas other than those which had priority in the seventies. The traditional disciplines which have been dealing with health and safety (medicine, engineering, ergonomics, etc.) are not to be abandoned but their scope extended to enable them to meet current demands.

All who are involved in the problems of health and safety at the workplace will have to face the new complexity of their work, unless they want to regress to repetitive and meaningless procedures. This is the road to innovative and vital research, fresh motivation and a new culture of health promotion.

II Stress and Stressors

Introductory Remarks

Research has identified a range of potential stressors in the workplace, namely: conditions inherent in the job and pressures linked to the work role, career-related pressures and those due to relationships, the organizational structure, the organizational environment and the interaction between work and the family.

Inherent job stressors include poor physical working conditions, shift work, excessive workload and job underload. Major work role stressors are role conflict, role insecurity and responsibility for people. Career development is a potential stress area and is important from the health point of view due to problems such as workplace insecurity, promotion blockage and imbalance between professional status and personal career expectations. Double burdens through work and housewife roles, as well as job discrimination, affect women particularly. Organizational structure and organizational climate are potential sources of stress when, for instance, there are insufficient opportunities for participation in the decision-making process.

The interrelationship between work and the family is of particular importance in terms of social change, according to the stress theory. Above all, the emergence of the two-career family in which the wife and the husband pursue their own professional careers may be an increasingly significant source of stress in the future.

An additional stress factor can be seen in the introduction of new information technology, insofar as this leads to a loss of meaning in work, less scope for initiative and anonymous relationships in the workplace. Cultural factors, general living conditions and the associated economic situation of workers can also increase stress. Studies point to a link between early invalidity and higher than average work pressures: such pressures may further contribute to the causation of chronic diseases.

What Is Stress?

R. Lutz

In highly industrialized countries, stress in its various forms has been heading the list of labour-related health problems for many decades. In the Federal Republic of Germany, for example, the percentage of the working population affected by psychosocial stress is above 25%. Purely physical factors, such as noise, heat, dust and smell, are important causes of stress but they represent a lesser problem than overtaxation or the lack of stimulation and monotony (Table 1). This type of stress is not expected to decline in the immediate or near future; on the contrary, it may even increase. However, this does not apply to the population as a whole, but merely to an increasingly dwindling section of society employed in the purely productive sectors. This is due to the fact that the new superindustrial technologies are dispensing with more and more workers. Those who remain within the production process are subject to increased stressors and demands; a shift can thereby be observed from physical stress to more nervous and psychological stress (Sonntag 1983).

In the future, stress will mainly be related to the responsibility of the supervisory engineer, the permanent exertion of employees at video stations or the creeping adjustment to the rhythm of machines – computers or robots.

This view does not claim to be the final word and merely presents *one* probable development, if current trends continue. As always with respect to the future, options are open. And it is at this level that we can find leads for qualitative improvements in the working world.

Two Types of Stress: Positive and Negative

Stress, in principle, is not merely negatively charged. Stress is a necessary factor, both in the evolution of man and in the personal development of individuals. Intellectual, cultural and material progress can scarcely be conceived without a certain degree of tension, crisis situations and demands. However, there are tolerance limits. Excessive demands or overchaotic situations cannot be constructive and can only have a destructive effect.

We can therefore differentiate between two types of stress: on the one hand, we have the positive and constructive element: *eu*-stress and, on the

Table 1. Frequency of stress factors in the Federal Republic of Germany (Volkholz 1977)

Stress factors	Percentage of the labour force affected	No. of those affected (millions)	Statistical reliability (range in millions)
Psychosocial stress	25.4	6.8	5.9–7.7
Monotony	22.7	6.1	5.3–6.9
Noise	22.2	6.0	5.1–6.8
Shift-work	21.7	5.8	5.0–6.6
Heat	17.1	4.6	3.9–5.3
Working outdoors	16.4	4.4	3.7–5.1
Draught	16.0	4.3	3.6–5.0
Dust	14.8	4.0	3.3–4.6
Concentrated observation	14.5	3.9	3.2–4.6
Heavy loads	13.4	3.6	3.0–4.3
Dampness	10.9	2.9	2.3–3.5
Night work	8.5	2.3	1.7–2.8
Imposed working position	7.9	2.1	1.6–2.7
Heavy work tools	7.6	2.0	1.5–2.5
Jolting, vibrating	6.9	1.8	1.4–2.3
Smell, toxic gases	6.5	1.7	1.3–2.2
Piecework	6.2	1.7	1.2–2.2
Poor lighting	5.5	1.5	1.0–1.9
Glaring light	4.6	1.2	0.8–1.6
Cold	3.2	0.9	0.6–1.1

other, the destructive and negative element: *dis*-stress. Eu-stress and dis-stress are the two poles of a highly complex system ranging between these two extremes. It is difficult clearly to differentiate between eu-stress and dis-stress, because what may be stimulating – and therefore constructive – for one person on account of his/her personal development, may be destructive and therefore take the form of dis-stress for the neighbour (Selye 1976). Similarly, occupational stress should not be regarded as an absolute constant, but as a situational parameter to be assessed within the context of society and industry and the relevant value-system.

This brings us to one of our first key points: is it a question of identifying purely external stress factors and then eliminating these factors within the enterprise which often leads to pure bureaucracy? Or should we examine personal and social developments with respect to the destructive and constructive aspects of stress? A further yardstick, directly and empirically related to eu-stress and dis-stress, is the extent to which the individual feels alienated from his work or identifies with it (Schacht 1970). Gradual alienation is clearly accompanied by an increasing degree of dis-stress. On the other hand, identification with work often allows for a greater amount of stress, which is then perceived as motivating (Dean 1961).

The development of the so-called dual or alternative economy in highly industrialized societies is a typical example of this viewpoint. Although in the formal sector of our economy working time is gradually falling from a

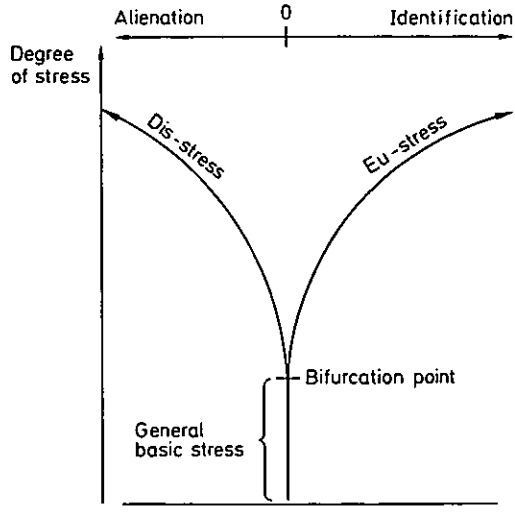

Fig. 1. Possible outcome of stress situations

maximum of a 40-h to a 38-h or 35-h week and two-thirds jobs are not infrequent, there are no signs of this trend within the informal sector, where 70- to 80-h weeks are no exception (Huber 1985). Those who reject the alternative economy have described this as "self-exploitation". Yet this is by no means a true reflection of the facts. Whereas an employee in dependent employment, who feels increasingly alienated from his work, will attempt to minimize his working time as much as possible, people working within the dual or alternative economy will identify with their work to such an extent that they will not quantify their work or gauge it in terms of time, but will strive towards the optimization of the content or product of their work (Fig. 1).

Creative Possibilities of Technology

The above are two extremes and reality usually lies somewhere in between. Naturally many workers, employees and managers in the formal sector of the economy identify with their work and are therefore prepared to work longer hours. Similarly, there are also indications of dis-stress, and therefore alienation, within the dual economy. What is of significance is that this *bifurcation* exists within the labour world. The fact is of great importance with respect to future developments (Fig. 2). Rather than attempting a purely cosmetic humanization of the labour world with ergonomic, legal and organizational instruments, our goal must be to eliminate the basic dilemma of a labour world conducive to alienation and dis-stress. Ultramodern technology does not provide the key to the problem but is simply a vivid

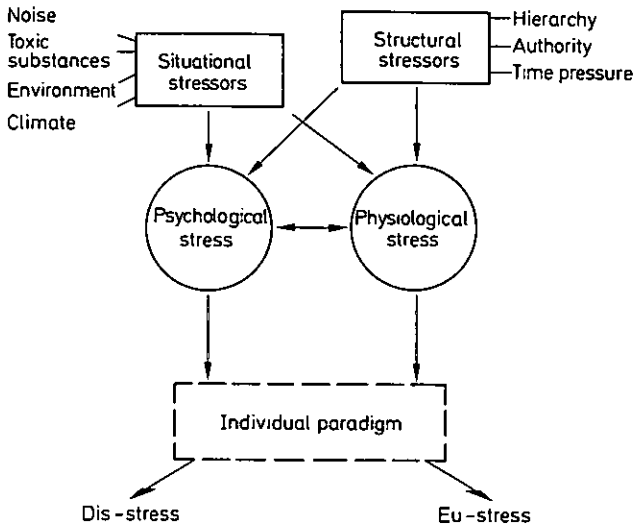

Fig. 2. Importance of the individual paradigm in the type of stress provoked by situational and structural stressors

symptom of the situation. This is particularly evident in the present debate on computer and robot technology.

Why, for example, should the one and same machine – a microcomputer – be regarded as a popular personal toy when used as a home-computer and teleterminal – and yet become a nightmare and a symbol of slavery à la Orwell when employed as a video workstation in a large or medium-sized enterprise? (Volpert 1985). It is not the machine itself which generates dis-stress or eu-stress, but its function in a specific working or living context. The same can be said for any type of machine or robot: dis-stress only results from a particular significance attached to a given tool in a particular labour context.

The above may have created the impression that I am, to a certain extent, postulating the *neutrality value of technology*. This, however, is not my intention. I am concerned with describing the overall framework and pointing out the creative possibilities of technology. Of course the hardware and software of a fully automated plant may be such that its only effect is dis-stress. In many fields of our labour world this stage has in fact already been reached. However, this does not mean that machines and robot production are to be rejected per se; they are only to be rejected in this particular form and under certain conditions. A case in point is the project called "Stafford Beer in Allende's Chile", which unfortunately failed due to political circumstances. It was based on a most promising concept involving ultramodern production complexes to be administered by the workers themselves – which would only have been possible with the support of computers and robots (Beehr 1975).

New Stressors – A Provocation To Thought

Let us now examine some of the characteristics of the technical misery of production looming ahead of us in the decades to come.

First of all, a new factor, *communication stress,* is gaining increasing momentum in the current debate and reflects the transition from our hardware industrial society to a software society (Meier 1972). The term generally refers to the fact that, on account of the new media and the link-up of these new media, the workforce, consumers and citizens alike, are bombarded with vast quantities of information with which they can simply no longer cope. Personal communication systems, machine supervision, cable television, interactive videotext, etc. spring to mind in this context. This example is in fact a paradigmatic model for the above-mentioned *bifurcation* of eu-stress or dis-stress.

The concern most frequently expressed with respect to communication stress is based on the assumption that the human perceptive and intellectual processing capacity has quantitative limits. Therefore, beyond a certain level of incoming data, an *information overload* is created, which can trigger off psychological and emotional stress, counter productive behaviour or even mental illness.

This explanation may initially appear fairly plausible; it has its roots in our prior patterns of thought and concepts and is a fully mechanistic and quantitative model. In fact, the comparison of human perception and intellectual, cognitive processing capacity with a quantitatively limited computer memory and a processor relies on uncorroborated fiction. Of course, there is evidence that people do not know what to do with the influx of information and feel overtaxed. But this does not imply a clearly definable quantity of information which sparks off communication stress; it simply means that the persons subject to this communication stress lack the perceptive structures and cognitive models to classify the influx of data in a meaningful way.

Here again the situation and context determine whether environmental signals lead to dis-stress or eu-stress. Even from the purely neurophysiological point of view, the new media give rise to a number of paradoxes: for example, there is evidence that cathode-ray tube technology, i. e. the picture tube in both the television set and the entire computer display, leads to a shift in the cerebral hemisphere. This means that the activity of the two differently functioning sides of the brain is changed by the cathode-ray tube. Whereas the left side of the brain (which is normally associated with an intellectual, linear and causal pattern of thought) does not respond to the video signals on account of their speed and frequency and virtually "falls asleep," the right cerebral hemisphere (which accommodates contemplative thoughts) is activated. Cathode-ray tube technology could therefore be described as a stressor which provokes *a change in the mode of perception* (Kaplan 1972). This is the result of relevant research into television and evaluation of the effects of technology.

But the problem goes beyond the fact that this new technology is causing a new mode of perception. The very existence of a quasi-intelligent machine poses a challenge of thinking to man in this age of enlightenment, which is still the stage at which we are. This has been clearly pinpointed by the American psychologist, Sherry Turkle, in her book *The Second Self* (1984). Ms. Turkle examined the effect of the new machines on children and youngsters and discovered that, from the smallest video game to the most complex computer programme, the structure of the new machines has a provocative function. The computer is an evocative (i.e. challenging) medium which clearly produces cognitive stress, but – and this is Sherry Turkle's hypothesis – not necessarily in a destructive or alienating sense, rather in an evolutionary, constructive way.

The existence of new technologies makes it possible for man to question, and reflect upon, his own structures of thought. Moreover, there is also the possibility of escaping from one's own imagined mechanical thoughts. This stands subject to the reservation made at the outset: the context must be the right one, i.e. *the framework for the personal development of the individual must prevail.* Otherwise a machine may indeed turn out to be purely a form of surveillance and alienation:

There is therefore no absolute communication or computer stress, but merely inadequate models of perception and reaction.

Technological Change Demands New Paradigms

The priority of psychosocial stress among labour-related health problems mentioned at the beginning indicates that at present neither the individual nor society have a sufficient number of adequate mental processing models at their disposal. We must declare war on this state of affairs (Dohrenwend and Dohrenwend 1974). The seven future scenarios I have developed (see Sect. V) are an attempt to offer new contexts and paradigms within which present and future developments can be assumed productively (Lutz 1984). They can help to transform apparent dis-stress into eu-stress. The precondition for this is of course a cultural and social climate which permits experiments and innovation.

Industrial society is probably at the threshold of the greatest transition in its history. To believe that current problems can be solved with the means of the early days of capitalism or the emergence of industrialization is to tread on the thin ice of illusion. This will automatically lead to dis-stress, not only among individual workers, but also within the whole of the social system. Social phantasy, and thereby the existing potential for innovation within our society, must be motivated in such a way that changes can be faced positively and processed adequately.

Stress is unavoidable, both at the level of the individual and of society. It can neither be magically eliminated nor ignored; it must be countered on the basis of adequate new paradigms. The first examples of such adequate paradigms are already at hand. However, it is only when large sections of society face this change in paradigms that we will be saved from the distress of a labour society doomed to ruin.

The Six Major Sources of Stress at Work

C. L. Cooper

Hans Selye (1946) was one of the first to try and explain the process of stress-related illness with his "general adaptation syndrome" theory. In it he described three stages of individual encounters in stressful situations:

1. The *alarm reaction*, in which an initial shock phase of lowered resistance is followed by a countershock during which the individual's defence mechanisms become active.
2. *Resistance*, the stage of maximum adaptation and, hopefully, successful return to equilibrium; however, if the stressor continues or the defence does not work, the individual will move onto the third stage.
3. *Exhaustion*, when adaptive mechanisms collapse.

Since Selye first postulated the process of environmental stressor and bodily reaction, a great deal of research has been undertaken in the field of occupational stress. From the growing literature, it is felt that the available data can be organized into the simplistic model shown in Fig. 1.

Most research indicates that, depending on the particular job and organization, one or some combination of the sources of stress in the above model, together with certain personality traits, may be predictive of a variety of stress manifestations, such as coronary heart disease, mental ill health, job dissatisfaction, marital disharmony, excessive alcoholic intake or other drug taking.

The six major sources of occupational stress will be discussed: factors intrinsic to the job; role in the organization; career development; relationships at work; organizational structure and climate; and home/work interface.

Factors Intrinsic to the Job

Sources of stress intrinsic to the job include: poor physical working conditions, shift work, work overload or underload, physical danger, person-environment fit (P–E) and job satisfaction (Cooper and Payne 1980). This applies to a variety of occupations.

Poor Physical Working Conditions

Poor physical working conditions can enhance stress at work. In regard to nuclear power plant operators, for example, Otway and Misenta (1980)

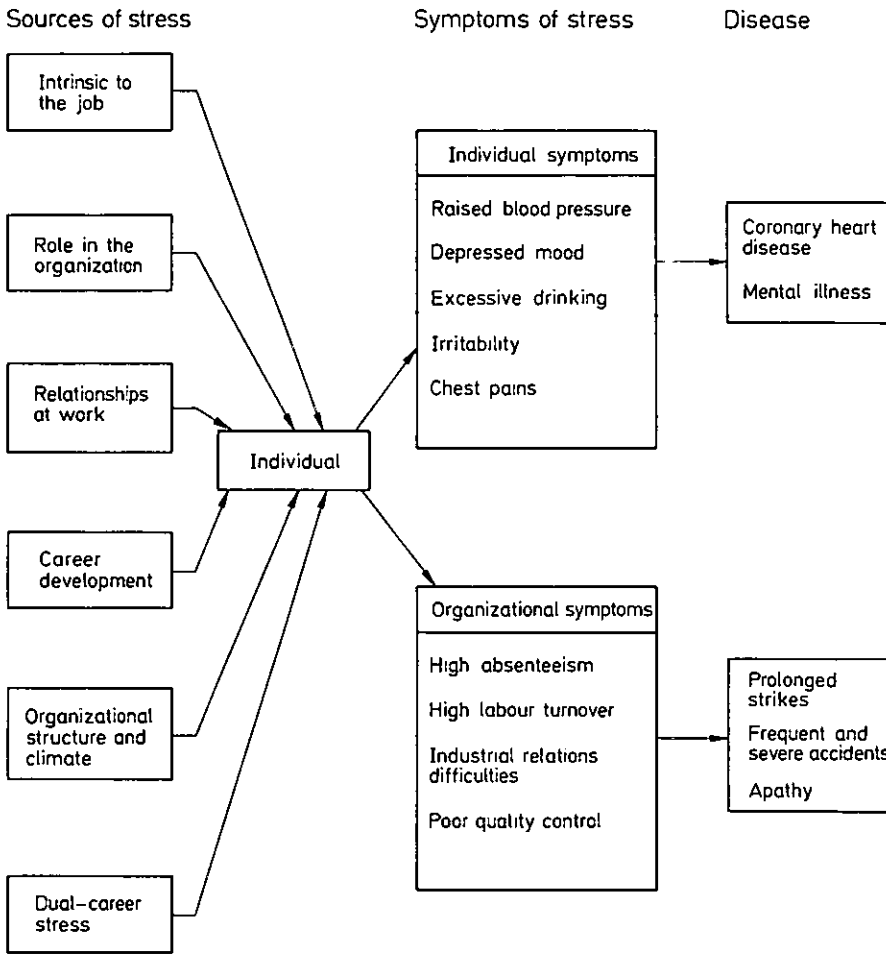

Fig. 1. Sources of stress and stress-related illnesses

believe that the design of the control room itself is an important variable in terms of worker stress. They propose that control room designs need to be updated, requiring a more sophisticated ergonomic concept. Furthermore, they refer to a study which highlighted an important stress factor in the Three Mile Island accident as being the distraction caused by excessive emergency alarms.

In a study on the stressors associated with casting in a steel manufacturing plant, Kelly and Cooper (1981) found poor physical working conditions to be a major problem. Many of the stressors were due to physical factors, i.e. noise, fumes and, to a lesser extent, heat; to these were added the social and psychological consequences of isolation and interpersonal tension. A further possible source of stress came from the lack of job satisfaction linked to the

stressors above, and also partially inherent in the casting of liquid steel in a continuous process lasting some 70 min. For 75% of this time cycle, the casters were exposed to very high levels of noise (up to 110 dB for much of the time) – from which they were unable to escape due the nature of their task – and to periodic and unpleasant air pollution caused by the activities of other workers and machines in their proximity. These conditions necessitated the wearing of ear protection, in the form of ear muffs or cotton wool swabs, which effectively isolated the wearer from those around him.

Shift Work

Numerous occupational studies have found that shift work is a common occupational stressor; it affects as well neurophysiological rhythms, such as blood temperature, metabolic rate, blood sugar levels, mental efficiency and work motivation, and may ultimately result in stress-related diseases (Selye 1976). A study by Cobb and Rose (1973) on air traffic controllers found four times the prevalence of hypertension, and also more mild diabetes and peptic ulcers, among the subjects of the study than in their control group of second-class airmen. Although the authors identified other job stressors as being instrumental in the causation of these stress-related manifestations, shift work was isolated as a major problem.

Job Overload

French and Caplan (1972) see work overload as being either quantitative (i.e. having too much to do) or qualitative (i.e. being too difficult), and certain behavioural malfunctions have been associated with job overload (Cooper and Marshall 1976). For example, in a study of air traffic controllers, Crump et al. (1981) found that one of the primary short-term but uncontrollable stressors was "being overloaded". They devised a unique method of measuring job stress, using the repertory grid technique, which allowed them to assess the sources of stress among air traffic controllers in terms of a number of paired constructs (e.g. controllable/uncontrollable and long-term/short-term stress).

In another investigation of stress among British police officers, Cooper et al. (1982) found that work overload was a major stressor among the lower ranks, particularly police sergeants. Those who scored high on the depression scale of the Crown Crisp Experiential Index tended to be older operational sergeants who believed they were overloaded and who perceived a number of bureaucratic and outside obstacles as contrary to effective police functioning. They complained about the long hours and heavy work load, as well as the increased paperwork, lack of resources and the failure of the courts to prosecute offenders.

Job Underload

Job underload associated with repetitive, routine, boring and understimulating work has been associated with ill health (Cox 1978). Moreover, in

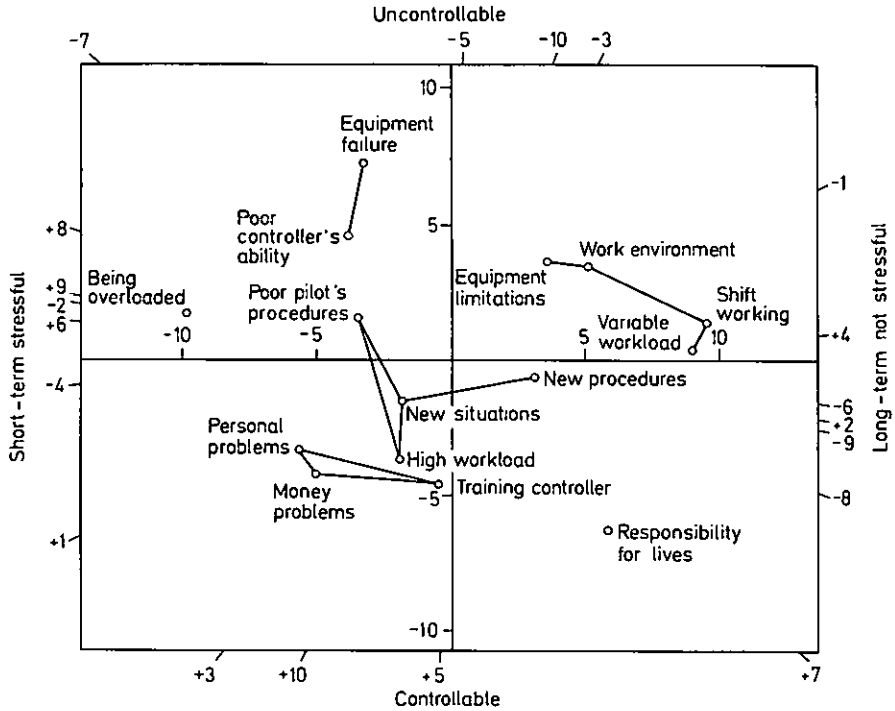

Fig. 2. Stress among air traffic controllers. (Crump et al 1981).

certain jobs, such as airline pilots and air traffic control, periods of boredom have to be accepted, along with the possibility that routine may suddenly be disrupted by an emergency situation. This can give a sudden jolt to the physical and mental state of the employee and have a subsequent detrimental effect on health. Furthermore, boredom and disinterest in the job may reduce the employee's response to emergency situations.

Physical Danger

There are certain occupations which have been isolated as being high risk in terms of potential danger, e.g. police, mine workers, airline pilots, soldiers and firemen (Cooper and Payne 1980). However, stress induced by the uncertainty of physically dangerous events is often substantially relieved if the employee feels adequately trained and equipped to cope with emergency situations.

In conclusion, a measure of job satisfaction and related variables which deserves mention is the measure known as person-environment fit (Beehr et al. 1976). According to McMichael (1978), P–E fit can be defined as an interaction between an individual's psychosocial characteristics and objective environmental work conditions. Consequently, a score of P–E fit can be attained by subtracting the amount/degree of a particular job factor (e.g. work load) preferred by a person from the actual amount in that same

person's job environment. The overall hypothesis is that stress can occur and result in such problems as anxiety, depression, job dissatisfaction and physiological maladies if there is a P–E misfit.

Role in the Organization

A person's role at work has been identified as a main source of occupational stress. This includes role ambiguity (i.e. conflicting job demands), responsibility for people and conflicts stemming from organizational boundaries (Cooper and Marshall 1976). Authors such as French and Caplan (1972), Beehr et al. (1976) and Shirom et al. (1973) have indicated that the organizational stressors stemming from role ambiguity and conflict can result in such stress-related illnesses as CHD. Furthermore, Cooper (1983) has suggested that the more intellectual types of occupations, i.e. managerial, clerical and professional, are more prone to occupational stress related to role conflict.

After reviewing the relevant literature, Kasl (1973) concluded that components of job satisfaction tend to be strongly related to role conflict and ambiguity; on the other hand, correlations with mental health tend to be weak. However, personality differences are important determinants in how an individual reacts to role conflict, and greater job-related tension is produced in introverts than in extroverts. French and Caplan (1972) also hold that flexible people show greater job-related tension under conditions of conflict than do rigid individuals.

Degree of responsibility for people and their safety also appears to be a potentially significant occupational stressor. Kroes (1976), for example, sees responsibility for people as a potential stressor for police, although to a lesser extent than for air traffic controllers. This has recently been verified by a study of occupational stress among air traffic controllers, which isolated responsibility for peoples's safety and lives as a major long-term occupational stressor (Crump et al. 1981).

The problems that role conflicts can generate were amply demonstrated by Cooper et al. (1978) in their investigation among dentists. It was found that the variables which predicted abnormally high diastolic blood pressure among dentists were factors related to the role of the dentist, i.e. the fact that he considers himself to be "an inflictor of pain" rather than "a healer"; that he has to carry out non-clinical tasks such as administrative duties, sustaining and building a practice; finally, his role also interferes with his personal life, primarily in terms of time commitments.

Career Development

The next group of stressors is related to career development, which Cooper (1983) has found to be a fundamental stressor at work, and refers to "the impact of overpromotion, underpromotion, status incongruence, lack of job

Table 1. Impact of personality and job stressors on raised diastolic blood pressure among dentists (Cooper et al. 1978)

Personality and job stressor	Multiple R	R^2	R^2 change
Age	0.36	0.13	0.13
Dentists as inflictors of pain	0.40	0.16	0.04
Coping with difficult patients	0.45	0.20	0.04
Administrative duties	0.49	0.24	0.04
Too little work	0.52	0.27	0.03
16PF factor QUI "anxiety"	0.54	0.29	0.02
Sustaining and building a practice	0.55	0.31	0.02
Job interfering with personal life	0.57	0.32	0.01

$F = 6.88$, $P < 0.01$

security, thwarted ambition". Status congruency or the degree to which there is job advancement (including pay grade advancement) was found by Erickson et al. (1972) to be positively related to effectiveness and negatively related to the incidence of psychiatric disorders in their large sample of Navy employees. However, in terms of pay, Otway and Misenta (1980) postulate that large increases in workers' pay would not necessarily mean simultaneous increases in job satisfaction and might result in personnel remaining in jobs which no longer give them satisfaction. Career development blockages are most notable among women managers as a study by Davidson and Cooper (1983) revealed. In this investigation, the authors collected data from over 700 female managers and 250 male managers working at all levels of the organizational hierarchy in several hundred companies. It was found that women suffered significantly more than men on a range of organizational stressors, but the most damaging to their health and job satisfaction were those associated with career development and allied stressors (e. g. sex discrimination in promotion, inadequate training, male colleagues treated more favourably, not enough delegation to women).

Relationships at Work

Relationships at work, which include the nature of relationships and social support from one's colleagues, supervisors and subordinates, have also been related to job stress (Payne 1980). According to French and Caplan (1972), poor relationships with other members of an organization may be precipitated by role ambiguity, which in turn may produce psychological strain in the form of low job satisfaction. Moreover, Caplan et al. (1975) found that strong social support from peers relieved job stress and also served to condition the effects of stress on cortisone levels, blood pressure, glucose levels and the number of cigarettes smoked, as well as cessation of cigarette smoking. It is interesting to note that, among air traffic controllers, help and

social support (as assessed by the repertory grid) was provided mostly by friends and colleagues rather than by persons in supervisory positions.

In addition, where male executives had problems, these were associated with relationship difficulties, as Cooper and Melhuish (1980) discovered in their study of 196 very senior male executives. It was found that male executives' predispositions (e.g. outgoing, tough-minded) and their relationships at work were central to their increased risk of high blood pressure. They were particularly vulnerable to the stresses of poor relationships with subordinates and colleagues, lack of personal support at home and work and the conflicts between their own values and those of the organization.

Organizational Structure and Climate

Another potential source of occupational stress is related to organizational structure and climate; it includes such factors as office politics, lack of effective consultation, lack of participation in the decision-making process and restrictions on behaviour. Margolis et al. (1974) and French and Caplan (1972) found that greater participation led to higher productivity, improved performance, lower staff turnover and lower levels of physical and mental illness (including such stress-related behaviours as escapist drinking and heavy smoking).

Home/Work Interface: The Dual Career Stress

Being a housewife, with all it implies in terms of support to the breadwinning husband and of coping with family demands, is no doubt a full-time and difficult job. Yet, increasingly, women are seeking full-time careers as well.

According to the US Department of Labor, the "typical American family", with a working husband, a homemaker wife and two children now makes up only 7% of the nation's families. In fact, in 1975, 45% of all married women were working, as were 37% of women with children under six; in 1960 the comparable figures were 31% and 19% respectively. It is claimed by many psychologists and sociologists that the dual career development is the primary culprit of the very large increase in the divorce rate over the last 10 years in the United States and Western Europe.

The problems this evolution creates for the male worker rare enormous; it affects almost all aspects of his life at work. For example, many professional men (e.g. managers, pilots) are expected, as part of their job – and promotion prospects – to be readily available for job transfers, both within and between countries. In the past, most of these men could accept promotional moves almost without family discussion. In the 1980s, as women themselves begin to pursue full-time careers as opposed to "part-time jobs," the prospects of professional men being available for rapid deployment started to decrease substantially. In the future, such moves will create major problems

for both breadwinners in the family. We are already seeing this happen throughout Europe and the United States. The situation is particularly exacerbated by the fact that corporations have not adapted to this new social phenomenon and that few facilities are available to help either of the dual-career members of the family unit.

New Stressors

L. Briziarelli

There are two sources of psychosocial stress in the working world: "work", itself, and "external factors" related to the worker's background.

The components of the first group of stressors are mentioned by Lutz and Cooper in the two previous papers and include a constant fast pace, monotony, excessive responsibility, depersonalization, pressure from superiors, changes in production processes, inability to adapt to new technologies, and insecurity as concerns the job itself. These factors also affect the worker's family. A recent study on the incidence of headaches in children in the Piedmontese region in northwestern Italy revealed a significantly higher rate among subjects whose father had a monotonous, repetitive job.

In the second group of stressors, various factors are involved, namely:

- Social group (age, sex, etc.)
- Cultural background (basic education, professional training, group integration)
- Living conditions (including both the type of housing and the area in which it is situated)
- Economic aspects (both general and specific)
- Trade unions and the struggle-for-rights (both from the point of view of the individuals and the sector to which they belong)

These potential stress-generating and mutually reinforcing factors have each been researched. Their incidence and characteristics tend to vary according to each country, to the type of work and to the sociopolitical situation existing at the time of the study.

Stress is also influenced by the profound changes taking place in the structure and management of companies due to the rapid growth of microelectronics. Production factors, including workers' duties and roles, are being reorganized to fit flexible models which operate according to company objectives. New patterns of work are being introduced, separating interventions from the material "objects" which "circulate" inside the factory. As a result, human beings are obliged to communicate through machines, and this has reduced the workers' opportunity to visualize the total process in the production system (Gualandri 1984).

A Mere Watchman of Machines

The most important change concerns the new opportunities, via data processing, of adjustment and control of the act of production itself; this enables the management to intervene directly in production processes. Thus the managerial and decision-making aspects of these processes are now very flexible indeed, but the possibility of "informal" interventions by the workers themselves in order to adapt the work to their own pace has been drastically reduced.

The greatest cause of hardship for workers is this loss of autonomy in controlling their work environment. The experienced, skilled worker, who used to interact with his machines and to "run" his own work without following blindly the prescribed procedures, is now becoming a mere "watchman" of the machines which contain the information that was once an essential part of his professional knowledge.

Distress becomes unbearable when the worker has no opportunity for interaction with others. His only companion is the automatized information system from which he receives nothing but instructions which *must* be followed. Indeed, loneliness at work and the lack of group interaction and appraisal can lead to deep anxiety. The worker starts to doubt his capacities and may even develop a persecution complex.

This state of distress has been called the "glass man syndrome" (... they can see everything I am doing, and I can't do anything about it ...).

Work Becomes Meaningless

The intrinsic significance of work is being lost. This is one of the main problems we face today. Two factors at least are involved:

1. Executive, manual and/or intellectual activities are sinking into decline and will shortly be absorbed by some automatized process or some new machine.
2. Work in automatized sectors is very different and does not involve the same rational and logical motivations as those associated with the current information system.

The loss of meaning of one's personal action (work) is the crux of the matter. It explains the common malaise arising from lowered self-esteem (devaluation processes) which many workers experience today.

This transition phase presents major problems for those responsible for health at the workplace. This is perhaps the first time that the connection between organized work and health appears so clearly.

This technological change is not just another step forward in a familiar and continuous rationalization process. It represents a new approach, in which the work phases are broken up. Work becomes more and more a series of planned actions – whether in the factory or the office. Group cooperation is no longer as important as it was since the highly centralized

work pattern does not require continuous collaboration among fellow workers but only submission to the instructions delivered by the automatized information system.

In these conditions, the worker has increasing difficulty in identifying with his group and relationships become extremely impersonal. In the absence of the confrontation factor, which is essential if the worker is to assess his output and production, a feeling of distress is experienced. This was clearly shown in a study undertaken by the Filcams Union in Bologna. The "depersonalized" type of communication provided by the machines is yet another cause of distress.

We are going through a phase in which the loss of work significance, the isolation of the individual and the depression due to a lack of hope in change lead the worker to seek identity and recognition from the concern itself, which is assuming more and more a "saviour" and a "protector" role. Readaptation frequently provokes regressive processes which can bring about serious psychic disorders.

In current organizational models (whether in a bank or in an industrial firm producing carburettors), a radical gap exists between operative areas and information systems, i.e. between the workpeaks and the system which controls these peaks in a logical form.

This new "atomization" of the work process is experienced by the worker as total deprivation of access to the whole invisible rationality and logic of the production cycle and seems to be a new incarnation of "Taylorism".

Noise: A Leading Cause of Stress

H. Ising

The progress of industrial development has provoked a considerable change in the nature of stresses to which people are subjected at their workplace. This paper deals with the increase in stress due to high noise levels and its relationship to magnesium intake in people's diets.

In the more prosperous societies, fewer vegetable and more animal products are eaten; one consequence is that the magnesium intake per calorie is lowered and the magnesium requirement raised due to the increased intake of protein. With less physical work, less food is needed and the intake of magnesium, among other substances, is reduced even more. In addition, food technology has considerably lowered the magnesium content of vegetable products – in particular cereals – and the use of artificial fertilizers containing little magnesium has resulted in a noticeable reduction in the magnesium content of the soil in the last few decades and, hence, of the plants. The combination of all these factors means that people in the industrialized countries are no longer supplied with enough magnesium.

These changes in lifestyles act synergistically with the stress of exposure to noise and can lead to a change in the body's mineral metabolism. In some organs, intracellular magnesium is reduced while the intracellular calcium content is increased. This increases the risk of auditory damage (to the internal ear) and extra-auditory damage (in particular to the cardiovascular system) as a result of noise (Fig. 1).

Loss of Magnesium Resulting from Stress Due to Noise

When the human body is subjected to noise and other forms of psychosocial stress, an increased amount of catecholamines (stress hormones such as adrenaline and noradrenaline) are secreted. As a result, the membrane permeability of, e.g. the heart and blood vessel muscle cells, is increased, leading in turn to an increase in the influx of calcium, while intracellular magnesium is found in higher quantities than usual in the extracellular area.

When guinea pigs were exposed to noise [95 dB(A)] for 2 h or crowded together in a cage, the magnesium concentration in the serum (SMg) rose by 67%, while at the same time the magnesium content of the erythrocytes (EMg) went down by 24%. Rats reacted slightly less strongly.

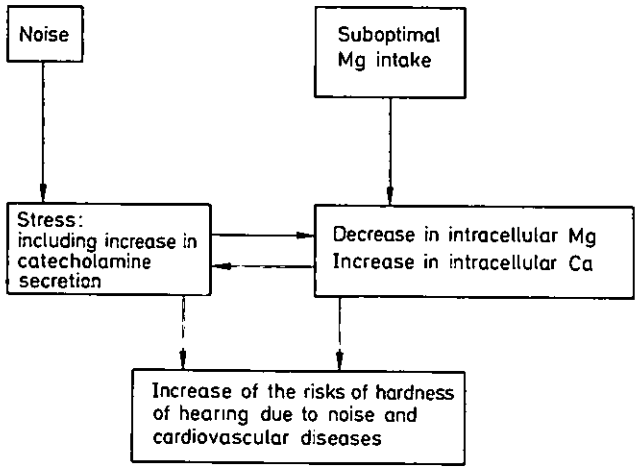

Fig. 1. Correlation between stress and magnesium loss with long-term effects

The rate at which the SMg increased under stress conditions was measured on human subjects. On exposure to noise [110 dB(A)] the SMg rose within 6 min by 5%.

Large increases of SMg have a vasodilating effect and function physiologically as a countermeasure when the blood pressure rises due to stress. In the case of circulatory shock, rises around 50% have been recorded (Ising et al. 1981 a, b), which of course make the circulation problem even worse. The stress-reducing effect of increases in SMg was proved by tests carried out on 18 healthy men. The rise in blood pressure resulting from a noradrenaline infusion was measured when the SMg level was normal and when it was artificially raised. We found that the rise in blood pressure was noticeably less with this pharmacological simulation of stress, as long as the SMg was increased. The increase in SMg in stress situations does not only have, however, the positive effect of reducing stress; it also has the negative effect of causing an increased excretion of Mg through the kidneys. Thus with prolonged exposure to noise the body loses Mg and is less able to increase the SMg level in stress situations.

Figure 2 is a schematic representation of some psychological and biochemical changes occurring as a result of exposure to noise, or another form of psychosocial stress, and leading to changes in the Mg/Ca balance. This pattern has been verified as shown in Table 1 by examinations of 57 healthy men who worked for 1 day in quiet conditions and were exposed on another day to extremely loud traffic noise [continuous sound level 85 dB(A)]. On exposure to noise the mental tension rose significantly. In the urine samples taken, adrenaline was shown to have risen by 27%, noradrenaline by 8.5% and cAMP by 4.3%. In blood samples, which were taken 5 min after the noise had stopped, the EMg had gone down by 1.5% and the SMg had risen

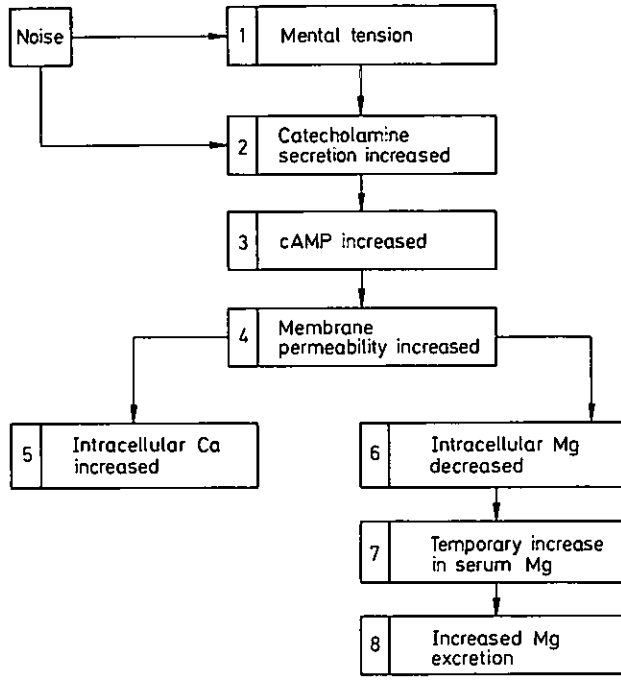

Fig. 2. Effects of exposure to noise on the relationship of intracellular Ca/Mg

by 2.4% The excreation of magnesium in the urine was 15% higher when there was noise than when the surroundings were quiet.

The magnesium content of erythrocytes was selected here as the model for intracellular magnesium. In rats with varying intakes of magnesium and a 12-week exposure to noise, a satisfactory correlation was established between the magnesium concentrations in the erythrocytes and in the myocardium.

In similar experiments it was shown that the reduction of magnesium in the myocardium is associated with a rise in calcium.

Increase of Noise Effects Through Magnesium Deficiency

Noise has auditory and extra-auditory effects. Both types of effect are increased through lower quantities of magnesium in people's diets.

Hardness of hearing due to noise is the most frequent occupational disease in the industrialized countries of Europe. A proportion of the people who are exposed for many years to continuous sound levels of over 80–90 dB(A) suffer permanent damage to the internal ear. The reasons for the considerable differences in individual sensitivity where noise-induced loss of hearing is concerned have not yet been established. In tests on guinea pigs and rats we were able to show that magnesium deficiency considerably

Table 1. Psychological and biochemical changes induced by noise. Average changes in specified parameters in 57 subjects who worked for 7 h exposed to traffic noise [Leq = 85 dB)(A)], in relation to values in the case of work carried out without noise

No. in Fig. 2	Parameters	Noise-induced change
1	Mental tension	+ 0.5 scale divisions on a five-stage scale[c]
2	Adrenaline	+ 27 %[b]
	Noradrenaline	+ 8.5%
3	cAMP	+ 4.3 %[a]
6	EMg	− 1.5%[a]
7	SMg	+ 2.4%[b]
8	Magnesium excretion in the urine	+ 15%[b]

Significance levels (Wilcoxon test): [a] 5%; [b] 1%; [c] 0.1%

exacerbated the loss of hearing due to noise. In experimental animals, the loss of hearing was negatively correlated with the magnesium concentration of the perilymph (fluid of the internal ear).

In human beings with a comparable exposure to noise but distinct differences in the degree of hearing loss, we found significantly lower SMg values in the group with the greater hearing loss. This finding is an indication that lower Mg concentrations can also lead in human beings to an increased susceptibility to noise-induced auditory damage.

Two mechanisms seem to be at the root of increased hearing loss when there is a deficiency of magnesium:

1. A reduction of magnesium in the perilymph causes an increase in the energy consumption of the hair cells in addition to the energy consumed in connection with the hearing function.
2. The energy deficit thus arising can also be increased by a reduction of the blood circulation in the internal ear due to vasoconstriction caused by a chronic decrease in magnesium and an increase in calcium in the blood vessels of the internal ear.

Among the extra-auditory effects of noise, only the indirect effects on the heart and circulation will be considered here. Noise is today considered to be a stress factor, which can contribute to the development of hypertension in people with a tendency in this direction.

Acute rises in blood pressure were measured in 30 workers who were exposed to noise in the range of 86–102 dB(A) and who carried out their normal work with or without ear protection on different days. In the group as a whole there were significant increases in the excretion of noradrenaline (NA) and its catabolic product vanillylmandelic acid (VMA); the systolic blood pressure (ps) also rose noticeably when they wore no ear protection. When the group was divided into high and low exposure to noise and high and low levels of EMg, the effects of noise were shown to be dependent on

Table 2. Influence of noise on blood pressure. Changes in the excretion of noradrenaline (NA) and vanillylmandelic acid (VMA) as well as in the systolic (ps) and diastolic blood pressure (pd) during work with and without ear protection, in relation to continuous sound levels (Leq) and to the Mg content of the erythrocytes (EMg)

Leq	EMg	*n*	NA	MA	ps	pd
[dB(A)]	(mmol/kg dw)		(zmg/8 h)	(mg/8 h)	(mmHg)	(mmHg)
86– 94	6.2–8.6	6	0.0	0.27	1.7	–2.7
86– 94	4.9–6.1	7	1.0	0.48	4.9	2.0
95–102	6.2–8.6	7	5.9	0.56	5.0	1.0
95–102	4.9–6.1	7	8.5	0.81	11.0	2.7

the amount of exposure, and sensitivity to noise was shown to rise as the subjects' EMg went down, as shown in Table 2. In the above-mentioned study of 57 men, their subjective sensitivity to noise was ascertained by means of a questionnaire, and we also found that there was an increase in sensitivity with decreasing EMg.

Sensitivity to Stress Can Be Reduced

As mentioned earlier, with the progress of industrial development, people's intake of magnesium has gone down. This problem is reinforced by a higher magnesium excretion due to stress. As a result, the proportional relationship of calcium to magnesium, particularly in certain intracellular areas, has changed to such an extent that sensitivity to stress has noticeably increased in some sectors of the population.

It should not be assumed, however, that sufficient protection from stress can be provided by an increased Mg intake alone. The higher degree of membrane permeability that is also caused by stress means that an increase in the intake of Mg will not lead to a rise in the intracellular Mg content, or only to an inadequate degree. Long stress-free periods combined with an optimal intake of Mg are therefore necessary to normalize the intracellular Ca and Mg content. Stopping smoking is also part of the stress-reducing process.

Regular physical exercise helps to normalize the intracellular Ca content, as we were able to show in a study of long-distance runners; the ECa values of this group were about 40% lower than those of a group of people the same age but without training in long-distance running. With increased physical activity, however, care should be taken to compensate for the higher Mg losses with nutrition rich in Mg.

Sensitivity to stress can therefore be reduced by physical training in combination with an optimal intake of Mg.

Stress and Illness: What Relationship?

M. Kentner

The promotion of health in the occupational sector – as in other sectors – requires a purposeful and methodical approach, particularly since we have indications, here, that causal factors with identifiable effects can be controlled. A distinction must be made between occupational diseases and work-related diseases.

With regard to *occupational diseases*, causal factors have been scientifically established as a result of experimental, empirical and epidemiological research which identified particular stressors as the main cause of specific syndromes at the workplace. Preventive measures together with technological change resulted in a clear reversal of trends with respect to important occupational diseases such as silicosis (reversal of the trend as from 1953) and hardness of hearing due to noise (reversal of the trend as from 1977).

On the other hand, the part played by specific occupational factors in the aetiopathology of *work-related diseases* is still largely unexplained. This category generally includes injuries to health which have been partially but not fundamentally caused by factors at work.

There is considerable overlap between work-related illness and *early invalidity*. In this paper, early invalidity refers to the inability of a person to work in the occupation for which he/she was trained, or the inability to work at all. This means that retirement takes place before the person concerned had reached the normal age for receiving a pension due to permanent injuries to health. In the Federal Republic of Germany, in 80%–90% of cases, early invalidity today is caused by *five main groups of illnesses*. In decreasing order of frequency, these are: cardiovascular disorders, musculoskeletal disorders, malignant tumours, psychiatric and psychovegetative illnesses, and respiratory diseases (Kentner et al. 1983).

These are also the main illnesses that are classified as being – at least in part – related to work. Stresses at the workplace are therefore held to be responsible for a high proportion of persons who prematurely stop working due to illness. As regards the Federal Republic of Germany, this view is based primarily on the early retirement statistics of the Association of German Pension Insurance Institutions. Unfortunately these statistics do not provide a clear picture of the morbidity rate, since early retirement is influenced to a considerable extent by normative and institutional factors. These factors include: the procedures for providing medical evidence in support of a pension, legislative and juridical measures (these are particularly

important), as well as developments in the labour market and the population structure which also influence the early retirement statistics, not only quantitively but also qualitatively.

We were able to draw some conclusions on this subject as the result of a comprehensive study undertaken at the request of the Baden-Württemberg Ministry of Labour, Health and Social Affairs and conducted by the Institute for Occupational and Social Medicine in Erlangen and the Institute for Empirical Sociology in Nuremberg (Ministerium für Arbeit, Gesundheit und Sozialordnung, Baden-Württemberg 1984; Kentner et al. 1985).

Conditions Determining the Occurrence of Early Invalidity

Since early retirement statistics do not provide a satisfactory explanation of the extent to which various environmental or occupational factors lead to early invalidity or chronic illness, we conducted a follow-up control study which included all the persons under 60 who retired prematurely in 1982 and had been covered by the insurance institutions of Baden-Württemberg. A total of 17595 persons who had retired early, and an equally large control sample with a similar structure, were asked to fill in a standardized questionnaire covering possible causes of early retirement in the work situation, the environment and daily life. The response rate was 50%–60%. We also had access to other material such as medical evidence put forward in support of early retirement as part of the formal application for a pension.

Findings indicated *an increased risk of early invalidity* in cases of:

- High susceptibility towards illness
- Unfavourable personal circumstances (family situation, socioeconomic situation, having to cope with particularly difficult circumstances)
- Individual behaviour detrimental to health (primarily the abuse of stimulants)
- Low occupational qualifications
- Above-average occupational stress

Early invalidity is therefore due to a combination of factors, whereby it is also possible to establish *quantitative relationships* between its occurrence and work-related stresses.

Relationships Between Stress at Work and Chronic Illnesses

A special study was also conducted in order to attempt to make *qualitative associations* between stress at work and chronic illness. The people selected for this purpose were those whose questionnaires indicated that they were highly likely to have spent the whole of their working lives in the same occupation. The various occupations were put into 16 occupational groups and the individual illnesses into 15 groups in such a way that there was no overlapping between the groups and each group was of adequate size. In

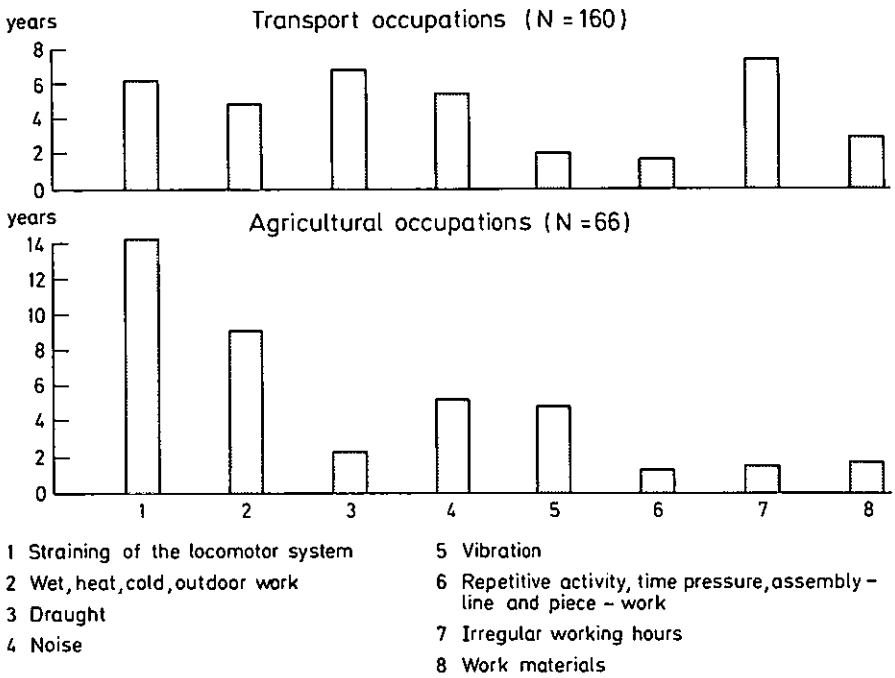

Fig. 1. Stress profiles of prematurely retired men working in the transport and agricultural sectors

addition, the 28 different occupational characteristics and stresses included in the questionnaire were condensed by means of an elaborate statistical procedure into the following *eight stress factors*:

1. Straining of the locomotor system
2. Exposure to humidity, heat and cold and outdoor work
3. Draught
4. Noise
5. Vibration
6. Repetitive activity, time pressure, assembly-line work and piecework
7. Irregular working hours
8. Work materials hazardous to health

This preliminary work made it possible, on the one hand, to check the validity of the above stress factors by constructing stress profiles for specific occupations and, on the other hand, to establish associations between the stress factors at the workplace and individual chronic illnesses. The following selected examples may serve to illustrate this in greater detail.

Figure 1 compares the *stress profile* of prematurely retired men who had transport jobs and men who had worked in agriculture. While in the transport occupations "irregular working hours" and "draught" were the main

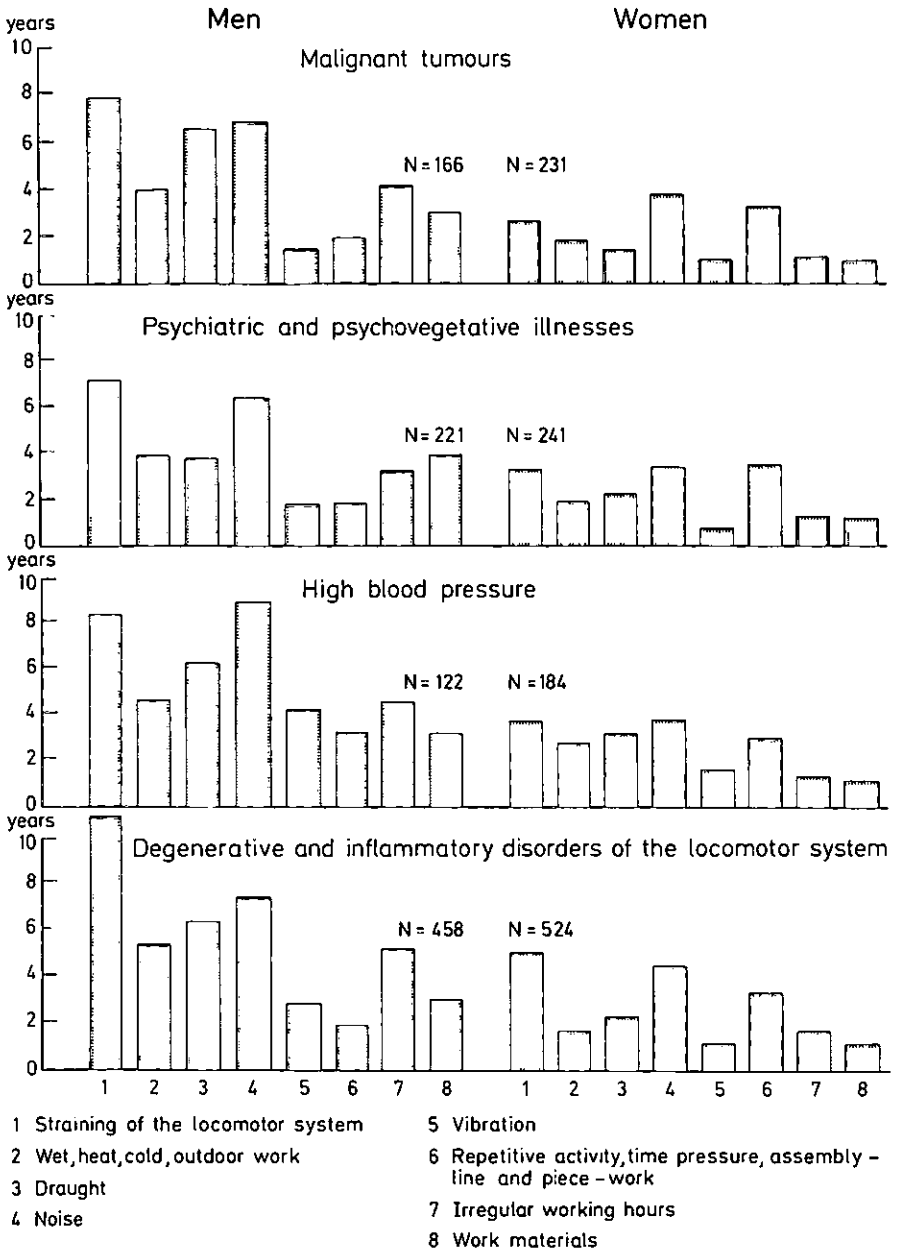

Fig. 2. Relationship between eight stress factors and four major groups of illnesses

stress factors, agricultural workers were particularly susceptible to "straining of the locomotor system" and to the effects of unfavourable climatic conditions such as "humidity, heat and cold". It was possible to construct plausible stress profiles of this kind for all occupational groups and both sexes. Our findings with respect to selected stress factors can thus be considered to have an acceptable degree of reliability.

If, using the same stress factors, stress profiles are now constructed for the individual groups of chronic illnesses, similar profiles are obtained for all groups of illnesses, which only differ more noticeably from one another when comparisons are made according to sex. Figure 2 shows this phenomenon for four aetiopathologically different *groups of illnesses*. In the case of *men*, stress factors 1 (straining of the locomotor system) and 4 (noise) are predominant, while for *women* factor 6 (repetitive activity, time pressure, assembly-line work and piecework) is also in the foreground. These findings can also be supported statistically by means of a special test procedure.

Work-Related Stress: A Partial Cause Only

The obvious conclusion that we can thus draw here is that early invalidity or work-related diseases cannot be accounted for by qualitative occupational stress characteristics (Kentner 1985).

Here it must be emphasized that the construction and analysis of the stress factors are based on data that were collected subjectively and retrospectively. Thus the statistical connection between an increased risk of early invalidity and above-average stress should not be erroneously interpreted as a causality model for chronic illnesses. All that should be inferred is the indication that various work-related stresses can have a partial effect in the development of certain chronic illnesses. The explanation of the extent to which certain cause and effect mechanisms play a part must be left to field studies, conducted with modern scientific methods.

Stress: A Holistic Approach Is Needed

H. Milz

The scientific and analytic study of different health-endangering stress factors in the working world is an important and necessary aid for those concerned. If this aid is to be understandable to the persons affected it will have to follow Einstein's remark to the effect that all knowledge of reality is based on experience and ends in experience. Analytic and experimental studies and assessments of individual stress factors are carried out under strictly defined test or laboratory conditions. As a result, individual phenomena are consciously isolated from their everyday context. Results obtained in this way need to be reassessed if they are to be applied to everyday living and working conditions.

A particularly important aspect of theoretical scientific analysis is the fact that it develops concepts on the basis of which the effects of hazards not immediately perceivable (i.e. "invisible hazards") on cell and tissue structures as well as physiochemical regulatory processes can be studied and assessed. They help in developing preventive strategies aimed at specific risk reductions and in formulating them as laws.

The necessity of isolating individual phenomena or factors in analytic and experimental studies means, at the same time, that their results are always general in nature and can only provide approximative statements in practice.

Noxious Chemicals and the Problem of Toxicity

The identification and assessment of noxious substances in the workplace is the domain of toxicology. Employees experience the effects of noxious substances in the form of functional complaints and later as organic or psychic disabilities. Scientific proof of a possible cause-and-effect relationship between debilitation and toxic exposure is required before the employees' demand for change or elimination of this exposure is listened to. Quantification and statistical significance are modern idols of industrial society – without worshipping them no significant changes in the workplace can be undertaken. Governments and corporations generally take the view that as long as there is no scientific proof, the problem does not exist.

Access to data of this kind varies greatly among the different social groups. The types of questions and working hypotheses scientists use to

carry out a study have an important influence on the results of their assessments.

In recent years considerable attention has been devoted to concepts that focus on the *accumulation* of different substances and the joint damage they cause in addition to the analysis of individual substances. These studies cast doubt on the reliability of past definitions of toxic thresholds and maximum permissible concentrations in the workplace. Potential hazards caused by individual substances are placed in the overall context of hazards caused by the amount of continuous stress in specific jobs as well as by work organization. Affected human organisms are seen as stress recipients with specific "vulnerabilities". Vulnerability is linked to components such as genetic disposition, age, sex and education.

"Safe" concentrations of toxic substances remain relative values and should not lead to transferring the possible specific contribution of individual substances to functional ailments or manifest diseases. The field of clinical ecology provides models for the empirical testing of reactions as well as the benefit of 40 years of accumulated experience. Food and toxic-substance-related ailments are tested, assessed and treated in this field (Bell 1982). The results obtained in the field of clinical ecology are mostly empirical in nature and do not correspond to the required scientific standards. It has not yet been possible to use them to support general health promotion programmes in the work process (Lerner 1985).

One hypothesis established by clinical ecology is that there are common biological mechanisms which, in the early phases of a disease, are threatened and damaged by qualitatively different stress factors (inhaled substances, chemicals, food, physical and psychosocial factors). This hypothesis needs to be subjected to scientific analysis. The focus of interest in clinical ecology is on damages and changes in the immune system and the central nervous system.

Psychoneuroimmunology is a rapidly growing new field of research that, for some years now, has provided detailed studies of interconnecting factors of this kind.

Large-scale studies of stress phenomena have shown that completely different stress factors can lead to general, non-specific stress responses of the entire body – something that also has an influence on the body's immune defences. A further specific problem in the assessment of potential damage caused by noxious chemicals and their potential carcinogenicity derives from long-term exposure and long-term damage that can neither be directly experienced nor directly assessed. The effects of such exposures may manifest themselves only after decades.

What is particularly unfortunate about this is the fact that it may provoke genetic damage that will have a reinforced negative effect on future generations. The National Cancer Institute estimated that 20%–40% of all cancer cases are caused by exposure to noxious substances in the workplace (Pelle-

tier 1984). This doubtless applies in similar or stronger measure to other functional or organically manifest diseases (in particular with regard to the skin, lungs and digestive tract).

Whereas, on the one hand, the process of scientific identification of toxic or possible allergy-provoking substances must be systematically continued, this should not serve as an excuse for delaying immediate measures necessary in those exposed workplaces in which dangerous effects as perceived by the employees are already obvious. In these cases hesitation is more an expression of political and economic interests than of objective science.

A tentative conclusion is that there is a need to increase training in perception and recognition of subjective, often functional, ailments caused in employees by toxic substances. This would reduce the occurrence of manifest sicknesses. Better communications between employees and company management about these ailments must also become a starting point for specific measures aimed at reducing risk exposures. Scientific assessment is important and necessary, but it is only an accompanying measure and must not become a delaying and solely determining yardstick for necessary changes.

Lack of Exercise and One-Sided Movement

Ever since systematic studies on stress and the body's reactions to stress have been carried out, the positive side of this phenomenon has been emphasized again and again. Physical response to stress enables the body to react to dangers by mobilizing energy reserves in preparation for a "fight-or-flight" situation. Various stress factors in the workplace evoke the same physiochemical responses. However, in general the work situation allows the individuals concerned neither to fight nor to take flight.

The mechanization and automation of industrial work processes have greatly reduced and simplified the physical activities of most employees. In extreme cases they have been reduced to a single manual movement that is repeated over and over again. This causes the individual to lose sight of the overall process. "His activity must be guided from the outside so that individual jobs can be systematized to form a meaningful whole. As such, it is not only prescribed *what* the individual is to do, but also *how* he is to do it, *when* and *in what time* ... An integral situation is replaced by working individuals and this establishes itself as superordinate structure" (Bamme et al. 1983).

In order to guarantee the smooth execution of complex work and production processes, manifestations of individualism must be largely suppressed. However, this can only be done to a certain degree and it has considerable consequences for the health of the individual.

Time off the job can hardly provide adequate compensation for needs suppressed, energy potentials accumulated, or physical functions constantly

undertaxed as a result of the work process. Patterns established in the work process may have a strong influence on patterns followed in leisure-time activities.

Different stress factors mobilize the body's muscular and hormonal systems for emergency action. If the appropriate type of action does not take place, the body accumulates tension that may remain for a long time. Via malfunctions in the body's self-regulatory mechanisms unreleased stress may result in ulcers, high blood pressure, recurrent headaches, insomnia or depression. Sustained stimulation of the adrenal glands as a result of constant stress brings about a total change in glucose and lipoid metabolism. This results in a considerable rise in cardiovascular risk factors connected with progressive arteriosclerotic process. Blood-clotting processes are influenced in a similar manner and, as such, can increase the danger of thrombosis, a cause of heart attacks and strokes. In addition to the weakening of the immune defence system mentioned earlier, distress increases all crucial risk factors for the diseases and causes of death prevalent in the industrial countries (Selye 1976).

All this should be reason enough to organize health-promoting measures in the working world, not only in specific programmes based on individual risk factors, but also programmes aimed at a general reduction of stress, programmes that would bring about a change in the way stress factors and stress are approached and handled.

III Coping with and Managing Stress

Introductory Remarks

Analysing stress factors in the working world is insufficient. It is also important to examine what social, personal or legal-organizational resources are available to deal effectively with work pressures and stress management.

Risk behaviour is one way for individuals to cope with stress. Research shows that links exist between harmful working conditions and long-term health-damaging behaviour such as higher cigarette, drug and alcohol consumption as well as physical exercise. Thus, it is again clear that the health behaviour of the worker is not per se his or her own fault.

The availability or non-availability of health-relevant resources is often the deciding factor in whether a potentially stressful working condition acts as a stressor or whether it constitutes a challenge, the overcoming of which exerts a positive effect on the wellbeing of the worker concerned. A person's training and professional experience, for instance, constitute personal resources that make it easier to deal with potentially stressful situations. Having control over work and being integrated into a supportive network of colleagues constitute social and organizational resources that can also help to eliminate stress factors or to cope more adequately with given pressures.

The stress-resource approach has major implications for health promotion in the working world: it means that the worker's resources in the workplace must be strengthened to make it easier for him to deal with potential stress situations. This allows a gradual transition from a stressful to a motivational working situation. Thus, greater efforts must be made to improve the human dimension of working conditions.

At the corporate level, more and more companies are providing health promotion and counselling facilities to ensure employee wellbeing. These include keep-fit programmes, awareness training, quality of life circles, etc.

A. At the Personal Level

Resources: A Major Asset in Coping with Stressors

M. Frese

Stress at work has been shown to contribute to ill-health in a variety of studies (an overview is given in Frese 1982, 1986). In this paper I would like to argue that it is necessary to differentiate between stressors and resources in order clearly to understand how stressors may have a long-range impact on health.

Examples of stressors at work mentioned in Sect. II include monotony, high-speed work or disturbances in the work flow. Examples of resources are control over conditions of work or social support. Stressors and resources interact in the development of ill-health. The differentiation between stressors and resources is necessary in order to develop an adequate theory of the dynamics of stress and effective avenues of interventions. Only then is it possible to envisage the full range of preventive actions that can be taken to reduce potentially harmful effects of stress at work.

I would like first to explain my concept of the stress process, and then develop a theory on the interaction between stressors and resources. Figure 1 presents the various aspects of this process, which includes:

Objective Stressors. These stressors (work demands) trigger off the process. An objective stressor might be, for example, the need to react quickly when there is a danger signal. Stressors are "objective" in the sense that conditions in which they occur can be ascertained independently of individual coping strategies or stress reactions. Obviously, the stress process is only *potentially* triggered off by an objective stressor; people with good coping strategies or good resources may never experience stress.

Stressor Perception. This objective stress situation is perceived, e.g. the individual perceives the danger signal, which calls for a quick reaction.

Stress. After the stressor has been perceived, the aversiveness of the situation is assessed. This point is related to the primary appraisal process of Lazarus (1966). Thus, a potential damage to the person or a threat to one's goals may lead to the assessment of danger. The very need to react to the danger signal may be aversive in itself.

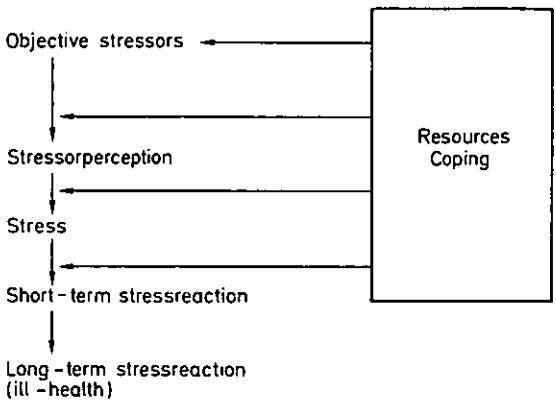

Fig. 1. The stress proccess

Short-term Stress Reaction. After assessing the aversiveness of the situation, there may be behavioural, physiological and emotional reactions, e.g. the person may feel nauseated because there is a danger signal which requires a very quick reaction.

Long-term Stress Reaction. Over the long run, the person whose work involves many stressors may develop some psychosomatic or psychological complaints or disturbances, e.g. stomachache or ulcers.

As described in Fig. 1, coping and resources can have an impact on objective stressors (i.e. eliminating them) or on any of the intervening processes (actually, some writers argue that resources may also have a direct impact on stress and stress reactions, although I personally doubt that this is the case). I shall not deal with coping in this paper (see Frese 1986), but concentrate on resources.

Interaction of Resources and Stressors

Resources are those means that enable the individual to achieve a goal, to minimize aversive situations and to cope with stress at work (cf. also Badura 1981 for the concept of resources). There are *internal and external resources.* Internal resources reside in the person; external resources are provided by the environment. The following is a list of resources.

Internal Resources

Internal resources include the following.

Competence and Skills. These are skills used at work. For example, work intensity is higher for a person who has not been trained adequately for the

job; knowledge of signals and mental models of the machines are also to be included here. For example, certain machine sounds are used by blue collar workers to indicate that everything is in order and other sounds to indicate that a problem might develop. Knowing these signals helps the worker to avoid dangers or to produce better quality work.

Social and Political Competencies. Having these competencies helps the individual to deal with colleagues and supervisors. Knowledge of one's legal rights and how to use them to achieve one's goals, as well as knowledge regarding how to obtain support from the worker's council (Fricke 1975), are also important.

External Resources

External resources include the following.

Changeability of Working Conditions. When working conditions can be changed, stressors can be changed as well.

Discretion Level at Work. This means that one is able, for example, to plan when to do specific tasks and when to have rest periods.

Changeability of working conditions and discretion level at work can be combined under the label of *control at work* in the sense of control over conditions and over the planning of one's job.

Sense of Work. Stress may be reduced if one understands why a certain (demanding) task is necessary. Jacobi and Weltz (1981) report, for example, that secretaries who know why certain complicated tables have to be typed are in a better position to cope with this (disliked) task.

Social Support. This implies direct help (e. g. doing part of another person's task when the workload is too heavy) and emotional support (e. g. listening to other people's problems). Social support can be given by colleagues, supervisors, partners and friends. There is evidence that it helps to reduce stress effects (Frese 1987b; House 1981).

Influence on Technological Changes in the Job. People who have a decision-making role regarding what new technology is to be introduced at the workplace and how show less psychological problems (Frese 1987c; Gardell 1979). Among these seven resources, control at work and social support have been researched most often. Empirical research shows consistently that resources either moderate the stress or have an impact on the stressors or on the stress reaction (Broadbent 1985; Frankenhaeuser and Gardell 1976; Frese 1987a; Frese et al. 1981; Gardell 1971, 1978; Hackman and Lawler 1971; House 1981; Karasek 1979; Kohn and Schoaler 1982; Margolis et al. 1974; Schardt and Knepel 1981; Semmer 1984; Semmer and Frese 1987).

The question is now the following: *how* do these resources affect the stress process? As described in Fig. 1, resources can have an impact on objective stressors, but they can also moderate the relation (a) between objective and subjective stressors, (b) between subjective stressors and stress and (c) between stress and short-term stress reactions. In the following, I shall only talk about control at work (i.e. having an impact on the conditions and the planning of one's work). The arguments, however, apply as well to social support.

Control and Non-control at Work: Their Positive and Negative Effects

To be able to determine more precisely under what conditions control and non-control have a negative impact, it is necessary to develop some thoughts on the potential mechanism by which non-control might have a negative effect and control a positive effect. The following potential mechanisms exist:

1. Control reduces stress at work
2. Control leaves stress at work intact, but reduces its impact (a) by being able to adjust the timing of stressful tasks to one's psychological and physiological conditions or (b) by a safety signal
3. A need for control makes a difference on the impact of stressors, whether this need is inherited from the development of the species or comes from the sociocultural context of the individual

These potential mechanisms will now be discussed.

Mechanism 1: Control Reduces Stress at Work

Control implies in this case that one can change the environment and that certain stressors can be abolished.

A trivial example is that a person can shut out the noise by shutting a door (thus controlling the stressor: noise). A more complicated example is that of a person with high control at work who may influence the design of his or her job and thus minimize the stressors. Since the stressors are reduced or abolished, control helps to reduce any negative stress effects.

Mechanism 2: Control Leaves Stress Intact but Reduces Its Impact

According to this mechanism, the stressors at work are not changed or eliminated but their impact on psychological or psychosomatic dysfunctioning is modified. The first possibility consists in adjusting the timing of exposure to stressors to one's psychological and physiological make-up. For instance, the most stressful tasks should be done when a person is particularly fit for doing them (e.g. some tedious and stressful work should be done early in the morning when the person is not yet tired).

The second possibility is more complex: according to the safety signal hypothesis (Miller 1979; Seligman 1975), control implies that the individual

has the last word with regard to the amount of stress he/she will take. A person may decide not to change a stressful situation (because it is too difficult a task or might lead to other unwanted effects) if it is clear that the situation *can* be changed should it become intolerable. In such conditions, one is more relaxed and stress at work has little impact on psychological and psychosomatic dysfunctioning. An example: if a person knows that he/she can find another job just as good, then the stress of the present job will not get out of hand. When this alternative exists, it allows for a more relaxed attitude in dealing with existing stressors at work.

Mechanism 3: The Need for Control Makes a Difference on the Impact of Stressors

It has been postulated that a need for control at work always exists (Frese 1978, Oesterreich 1981; White 1959). If this need is not met, then negative effects are likely to result. This would explain the direct influence of non-control at work on psychological and psychosomatic dysfunctioning. The need for control hypothesis also accounts for the moderator effect of control.

It could be argued that stress conditions trigger off this need for control: if a person is stressed in a situation of non-control, an attempt is made to control the situation; in case of non-control, the situation becomes more aversive.

The need for control may be inherited from the development of the species (phylogenetic) or result from the sociocultural context of the individual (ontogenetic). In the latter case, people may develop a certain aspiration for control, related to cultural or societal conditions. Hulin and Blood (1968), for example, have argued that only middle class workers have a high aspiration for control while lower class workers are not interested in a high degree of control at work. This viewpoint has not been tested directly, but there is some evidence that an *adjustment* to non-control situations at work *does not* eliminate the negative effect of non-control on psychological and psychosomatic dysfunctioning (Frese 1984). Thus, there seems to be some evidence that if the need for control exists, it has deep roots in the individual and is phylogenetic.

Resources Determine the Role and Impact of the Stressor

The stress process outlined in this paper has important theoretical and practical implications. The most important theoretical implication is that *resources determine whether a stressor is really a stressor or whether it is a challenge*. Potential difficulties in jobs may have a negative role with regard to health. But the same demands may also have a positive function and act as a challenge – if the person has the resources to deal with the stressors. Thus, the resources determine whether a given stress situation has a positive or negative function.

At the practical level, the theoretical concept discussed here implies that it is useless to concentrate merely on stressors when trying to prevent short- and long-term stress reactions. Reducing stressors may also reduce the challenge. Thus, it is necessary to induce as well higher resources at the workplace. We must keep in mind, however, that stressors may have an impact irrespective of resources. Thus, the best prevention strategy is still to take action at both levels: reduce stressors and increase resources.

Another reason why resources are important is that they facilitate the development of individualized patterns of stress reduction at the workplace (e. g. by having control over the job conditions). Given the speed of technological development, this is all the more important. If one tries to understand a new stress situation on a scientific basic, it takes usually a long time. Meanwhile the job situation may already have changed. Therefore, increasing resources gives workers the possibility to deal with new potential stressors that are not yet in the foreground of scientific discussion.

These views imply, or course, that new work design strategies such as job enrichment or semiautonomous work groups (Emery and Thorsrud 1976; Ulich et al. 1973) may also have a preventive function in the health area. However, it is necessary to complement these strategies by providing external resources as well as internal resources. In other words, workers have to learn the necessary job and social skills before they can effectively use the external resources.

The final implication is that the concept of resources is not compatible with a passive concept of health. Resources enable the individual to take an active part in the process of changing the workplace and the job situation, and of influencing stressors and stress reactions. Thus, the concept exposed here points to the importance of active strategies that must be supported by resources. In this way the individual becomes involved in the prevention of sickness and the promotion of health.

Risk Behaviours as Stress-Coping Strategies: Implications for Intervention

R. Kalimo

Psychological and behavioural outcomes of stress may take different forms and manifest themselves with varying intensity. Sometimes they remain hidden. At other times clearly observable and even dramatic emotional and behavioural expressions break through. The understanding of these reactions is based on a recognition of three crucial components in the gradual development of the stress process, namely: perception of the threat, efforts to cope and occasional failure of coping. The last two points will be discussed in this paper.

Coping with Stress

The main causes of stress at the workplace are based on inadequate job demands in regard to the worker's capacity and to frustrated aspirations and unsatisfied needs. People attempt to deal with these situations by a number of coping strategies. Coping has been defined "as efforts, both action-oriented and intrapsychic, to manage (i.e. master, tolerate, reduce, minimize) environmental and internal demands and conflicts which tax or exceed a person's resources" (Lazarus and Launier 1978).

In certain situations, people may try to cope by improving the work situation, when this is possible. At other times, an adequate coping strategy is to avoid an intolerable situation. If neither change nor escape is possible for external or personal reasons, then people may turn to palliative modes of coping to try and overcome stress effects.

Some coping strategies are helpful only if applied on a short-term basis. Avoidance and escape with the help of alcohol, for instance, may be a consciously controlled way of coping occasionally.

In the course of time, however, such a behaviour may become less and less deliberate and an increasingly obsessive habit with debilitating social and health consequences. Some coping strategies may be appropriate only in certain situations but not in others. A flexible use of appropriate coping strategies is one of the main health resources of people (Kalimo and Mejman 1985).

When Coping Fails

Psychosocial stressors at work are frequently long term, continuous or repetitive. In spite of the many ways in which people try to cope with these situations, the demands may exceed their resources and coping may be inefficient, or in the long run provoke new problems. This results in psychological and behavioural disturbances. Among the first indicators are negative feelings such as irritation, worriedness, tension and depressiveness. Cognitive disturbances, reflected in a lowered performance, may follow. Avoidance behaviours, originally aimed at coping and control, may turn into non-purposeful, obsessive behavioural disorders.

This paper reviews (a) some of the published evidence on the relationship between behavioural habits such as smoking, alcohol consumption and absenteeism and work conditions; (b) preliminary results of an ongoing study on these problems; and (c) the needs for health-promotion programmes at the workplace. In the next chapter, an ongoing project based on the principles of health promotion is described.

Behavioural Coping Strategies

Smoking and Eating Habits

Smoking is a habit which may have a number of internal and external motivations. It has been shown to be associated with tension and anxiety (McCrae et al. 1978). A relationship has also been found between stress at work and smoking, the decision to stop smoking being negatively related to various stressors (Schar et al. 1973; Shirom et al. 1973). Caplan et al. (1975) found no differences among smokers, ex-smokers and non-smokers in relation to the stress they reported in their jobs. However, the survey by Caplan et al. of 200 male administrators, engineers and scientists showed that inability to quit smoking was associated with occupational stress and high levels of quantitative workload.

Changes in eating habits, especially overeating, are sometimes observed as a reaction pattern during periods of intensive stress. Currently available data are, however, unsystematic. Research for clarifying the contributing role played by occupational psychosocial factors in obesity is very much needed as the control of obesity is of great public health importance.

Use of Alcohol

Increased or excessive alcohol consumption and an escapist drinking behaviour are generally regarded as possible outcomes of work-related problems, but empirical data confirming this hypothesis are scarce. A main reason for this situation is the great difficulty in obtaining reliable data on alcohol consumption. Furthermore, as cultural traditions and social norms strongly

regulate this type of behaviour, it is not possible uniformly to clarify its potential role as a stress response.

A questionnaire study was carried out by Kühlhorn (1971) among company managers and chiefs, physicians and the representatives of worker groups and labour unions. Job dissatisfaction, haste and stress were regarded as the main reasons for drinking by the workers' representatives; the foremen considered haste and stress as third among the reasons for alcohol consumption; while physicians identified haste, stress and feelings of insecurity as second on the list. Problems in married life, however, were regarded as the most important reasons for drinking by all groups of respondents.

Margolis et al. (1974) undertook a study in which workers in various occupations were asked about the presence of six given stressors at work and about various behavioural habits. Escapist drinking was related to underload and overload at work, inappropriate use of knowledge and skills, job insecurity and low opportunity for participation. The estimated overall perceived workload correlated with escapistic drinking.

Among seamen (Elo 1979), alcohol consumption correlated with perceived health status and was significantly related with perceived occupational stress. Investigations of stress in the police force indicated that high levels of work-related stress can induce some individuals to take up heavy drinking as a possible stress-coping technique (Davidson and Veno 1980).

Analysis of the medical records of clients in an ambulatory alcohol clinic during a 6-year period showed that alcoholics were characterized by low job satisfaction (Strayer 1957). More than half had problems in accepting their supervisors. Only about 20% felt they had the opportunity to work according to their own professional objectives. About one-fourth had no occupational goals.

Absenteeism and Turnover

Sickness absenteeism from work has increased in all industrialized countries during the past few decades according to a number of estimates. The frequency of absences annually has increased more than the number of lost working days, which indicates that short periods of absences have increased more than long ones.

Absenteeism and turnover are related to job dissatisfaction. Porter and Steers (1973), in a review of studies published before 1973, drew the conclusion that job dissatisfaction is a central factor in withdrawal. Level of job satisfaction, in turn, may be determined by a multitude of work-related factors. It is therefore necessary to highlight the role of the work environment in absenteeism.

Literature reviews (Porter and Steers 1973; Muchinsky 1977; Clegg 1983) have moreover indicated that absenteeism and turnover are related to the following factors in the work setting: unmet expectations with regard to pay

and incentives; low promotional opportunities; lack of recognition, feedback and equity from the supervisor; inexperienced supervisor; dissatisfaction with co-worker relations; lack of support; repetitive tasks; lack of responsibility and autonomy; work role ambiguity; and large worker unit. Findings reflected a progression from the tendency to lateness to absenteeism (Clegg 1983) and from absenteeism to turnover (Muchinsky 1977).

On the other hand, a drastic reduction was recorded in absentee rates after employees had taken part in a health evaluation programme aimed at increasing the means of coping more effectively with job stressors (Seamonds 1982).

Sociodemographic factors are related to absenteeism to a relatively great extent. Young people are more often absent than older workers. With increasing age, short-term absences tend to diminish and long absences to increase (Behrend and Pocock 1976). The number of children and day-care facilities are additional determining factors, especially among women (Nyman and Raitasalo 1978).

Decrease of social participation and physical activity is related to job stress. A spillover effect of monotonous, underloading work is seen in increased passivity at leisure (Gardell 1976). This means that the compensation hypothesis, i. e. a compensation of dull work with enriched leisure, does not usually hold true.

Results from an Ongoing Study

Various forms of risk behaviour are currently being studied by the author and Vuors in a sample of Finnish employees in various occupations. A subsample of 419 subjects was drawn from the total sample of a prospective longitudinal study for this paper. The subjects were first studied as adolescents about 20 years ago, before they started to work and again in 1985. Data are being collected on four factors: smoking, alcohol consumption, physical passivity and sickness absenteeism. Other areas of research include data on work and the work environment, stress and various self-reported health indicators.

Preliminary results presented here are based on correlational analyses concerning the relationship of risk behaviours to work conditions, perceived stress and general views on life.

Consumption of alcohol in men had several noteworthy correlations to job stressors, such as qualitative and quantitative overload and role conflicts (Table 1). Role conflicts were also connected with smoking in men. In women, both smoking and alcohol consumption were connected with a heavy physical workload as well as with high levels of decision-making at work. The tentative following conclusions can be drawn: among men, drinking is related to work problems and smoking shows the same tendency; among women, both drinking and smoking are connected with occupational

Table 1. Correlations between job stressors and behaviour in 210 male and 209 female employees. (Only correlations of 0.15 or higher are given)

	Smoking		Alcohol consumption		Lack of physical exercise		Sickness absence	
	M	F	M	F	M	F	M	F
Physical workload		0.15		0.17	0.17			
"Total"mental workload			0.28					
Underutilization of skills					0.21	0.21	0.32	0.15
Qualitative overload			0.19		0.16			
Quantitative overload			0.28					
Time pressure			0.17			0.20		
Monotonous work					0.16			0.16
Role conflicts	0.15		0.25			0.22		
Lack of social support at work					0.18		0.15	
Injustice of superviser					0.21		0.27	0.17
Lack of achievements			0.17		0.20		0.17	0.22
Lack of decision-making latitute		−0.17		−0.27	0.17	0.16	0.24	0.16
Lack of appreciation					0.21	0.23		

status: heavy physical work on the one hand, and independent emancipated work roles on the other.

The more the subjects perceived stressors in their work, the lesser their participation in various forms of physical exercise and the more frequent their sickness absences.

Both smoking and alcohol consumption in men were clearly connected with stress reactions such as thinking about work at home, sleep disturbances, depression and a number of other factors (Table 2). In women, alcohol consumption seemed to be connected with good health and a motivating job, i. e. with indicators of good status. Smoking was related to stress reactions in women, but to a lower degree than in men.

Connections between all the behavioural patterns and sociodemographic factors were found, but more in men than in women. According to these data as well, alcohol consumption in women was related to good status, on the one hand, i. e. high monthly income, and to a low basic education on the other (Table 3).

In this study, cognitive resources for dealing with life circumstances were also studied, using as a basis the "sense of coherence" theory of Antonovsky (1979). Sense of coherence (SOC) is composed of three fundamental dimensions which people use in structuring their experiences. They are: comprehensibility, manageability and meaningfulness. According to Antonovsky, a person's position on the SOC scale reflects the extent to which he/she perceives life as structured, ordered and predictable (comprehensibility);

Table 2. Correlations between symptoms of stress and behaviour in 210 male and 209 female employees. (Only correlations of 0.15 or higher are given)

	Smoking		Alcohol consumption		Lack of physical exercise		Sickness absence	
	M	F	M	F	M	F	M	F
Thinking about work at home	0.15		0.30					
Job dissatisfaction			0.15		0.18		0.25	0.26
Job insignificant as life content				−0.15			0.19	0.23
Sickness absences (number)	0.15		0.17	- 0.18	0.16			
Perceived health status low			0.16		0.43		0.26	
Disturbed sleep due to worry	0.15	0.21	0.19				0.19	
Exhaustion			0.17		0.25	0.27	0.18	
Difficulty in confronting own problems		−0.16	0.18			0.16		
Depression	0.18		0.24				0.20	
Tension			0.28				0.20	
Difficulty getting sleep	0.15	0.18	0.25			−0.16	0.21	
Overall feeling of being stressed			0.29				0.20	
Need for mental health counselling		0.15	0.19				0.25	
Life dissatisfaction		0.15	0.20		0.23	0.17	0.27	

Table 3. Correlations between sociodemographic factors and behaviour in 210 male and 209 female employees. (Only correlations of 0.15 or higher are given)

	Smoking		Alcohol consumption		Physical exercise		Sickness absence	
	M	F	M	F	M	F	M	F
Age	0.18							
Basic education			0.15	−0.16	−0.17	−0.36		
Professional education			0.15			−0.20	−0.17	
Economic situation	0.17				0.19		0.24	0.20
Monthly income			0.17	0.27			0.20	
Job insecurity	0.15		0.24		0.26			

Table 4. Correlations between "sense of coherence" (Antonovsky) and behaviour in 210 male and 209 female employees. (Only correlations of 0.15 or higher are given)

	Smoking		Alcohol consumption		Physical exercies		Sickness absence	
	M	F	M	F	M	F	M	F
Comprehensibility		−0.21	−0.18					
Manageability			−0.23		−0.20		−0.24	
Meaningfulness		−0.15	−0.22		−0.21	−0.18	−0.22	
Sense of coherence		−0.16	−0.20				−0.15	

controllable with one's own means or by some other agent on whom he/she can rely (manageability); and worthwhile (meaningfulness). SOC in turn, plays a crucial role in a person's health.

Smoking was negatively related to SOC in women while no relationship was found in men. In men, alcohol consumption was negatively related to SOC while drinking was independent of SOC in women (Table 4).

Conclusions and Implications for Interventions

Unhealthy palliative forms of coping and job-related stress seem to be interrelated to a certain extent. Most data available are based on cross-sectional studies and correlative information, which makes it impossible to draw causal conclusions. However, those who perceive work as stressful also smoke, drink alcohol, are physically passive and tend to be absent from work more often than others. This complex issue deserves further attention.

A broader conceptual perspective of health behaviour and risk behaviour is needed. We must recognize that health is not only influenced by behavioural patterns that have an immediate or secondary physical impact but also by social behaviour patterns. Social behaviour may not always have direct relevance to health but its indirect importance may be much greater. Social inactivity, for example, decreases opportunities for support and for the development of social skills, which are of importance in dealing with interpersonal situations at work and elsewhere. Moreover, strongly aggressive and other antisocial forms of palliative coping may have harmful social consequences and indirectly influence a person's health.

To prevent risk behaviour related to stress at work and promote health at the same time, two basic forms of interventions should be implemented:

1. Improve the work environment in order to eliminate stressors that provoke risk behaviour and to create health-promoting conditions
2. Increase individual resources for dealing with job stress and stop risk behaviour through group processes and the provisions of counselling and support to individuals

A great deal can be done in this respect by occupational health personnel in the context of their existing activities. This is particularly true regarding worker-oriented interventions. For work-oriented improvements, an interaction of all concerned, i.e. the representatives of employees, employers, safety specialists and health professionals, is needed. The participation of a specialist is often helpful to stimulate change.

Further research is indispensable for the evaluation of strategies and outcomes, and for appropriate focusing of interventions. Further information is needed on factors that help people to stop riskful behaviour. It would be useful, for instance, to study previous smokers in order to identify the motives leading to smoking cessation and the kind of factors which help to maintain the decision.

How Women Office Workers Deal with Stress

B. Ritz and B. Hullmann

A most important aspect of the lives of people in industrialized countries is their workplace. Up until now, relatively few studies have looked beyond the physical causes of illnesses and taken work factors into account as conditions which have an important influence on lifestyles and the handling of stress (Greif et al. 1983; House 1981; Folkman and Lazarus 1980; Menaghan and Merves 1983; Pearlin and Schooler 1978). While at the beginning social scientists only studied how people coped with extreme forms of stress and the effects these had on health (life event research), in the past decade everyday chronic stresses have also attracted the attention of research. The model of a "psychosocial immune system" (Antonovsky 1979; Badura 1983; Cassel 1976) thus takes into account the demands of everyday life as well as ways and means of reducing stress in its description of how illness develops. Both immunity from, and susceptibility to, stress are dependent on how stressful situations are handled.

The work situation is a specific area where people develop habits and modes of behaviour which are useful in coping with stress.

Coping Strategies Vary with Status and Age

The influence which the conditions prevailing in various offices had on the way employees coped with the demands placed upon them was examined in a research project on working conditions, health behaviour and rheumatic diseases. This paper focuses on one aspect of this study, namely the differences in coping behaviour between women administrative workers and women employed in text processing, mainly typists working with dictaphones in central typing pools (Ellinger et al. 1984).

In the case of the administrative workers, their jobs were more responsible and varied than those of the typists; they also had more freedom to make decisions of an organizational nature. The typists' jobs were characterized by a greater degree of monotony and one-sidedness; they had their work assigned to them and had to meet specific requirements.

The differences in coping behaviour described in this paper have also been identified by means of discriminant analysis once the characteristics significantly distinguishing the groups were identified. For reasons of clarity we have limited ourselves to an explanation of the bivariate correlations.

The qualities which the women subjectively considered to be important for their jobs in addition to the normal job qualifications underline these differences. The administrative workers said it was important to be able to solve problems independently, to show consideration for other people and their problems and to take responsibility. The typists, on the other hand, found that it was essential to be able to "fit in" and be patient and persevering.

The frequency of the most important types of coping behaviour in the two groups is shown in Fig. 1, where the two groups have been divided into four age groups (under 30, 30–40, 40–50 and over 50 years). The following is a description and interpretation of the most noticeable differences in the ways of coping with stress at work.

"Talking to colleagues about work problems", "participation in consultations, meetings and strikes", "keeping problems to themselves", "eating" and "alcohol" occurred with equal frequency among all those who took part in the study, although the last two items were not generally mentioned very often.

In both groups there was an uneven age distribution for the variable "talking about work problems at home", the women under 40 mentioning this as a way of dealing with stress twice as frequently as the older employees. Here, it is important to bear in mind the family situation: older women in full-time employment are more often single than their younger colleagues.

In the case of an increased workload or difficult tasks, the administrative workers coped much more frequently by "sharing the work with one another" (4.5 times more often for the under forties and twice as often for the older women, by comparison with the typists). This is easy to explain: in the rigid hierarchical structures of the typing offices, independent distribution of work is scarcely possible and then, at best, on an informal basis.

The typists were also less often able to deal with increased workloads by "working harder or for longer hours". This is probably due to the fact that they were already required to work at a certain speed and therefore hardly in a position to increase their output or to work more than 8 h.

Administrative workers twice as frequently took their minds off the stress by thinking about changing to a different job. This coping mechanism was mostly used by the younger employees; with increasing age the women thought less frequently of changing their job.

Under the age of 40 years, twice as many administrative workers as typists were members of unions. Among the older employees, however, there were even as many as six times more administrative workers than typists in unions. These noticeable differences are undoubtedly due to the fact that there is in general a much higher degree of union organization in the Federal authorities – where the majority of administrative workers involved in the study were employed – than in the Hamburg authorities – where the majority of the typists in the study were working.

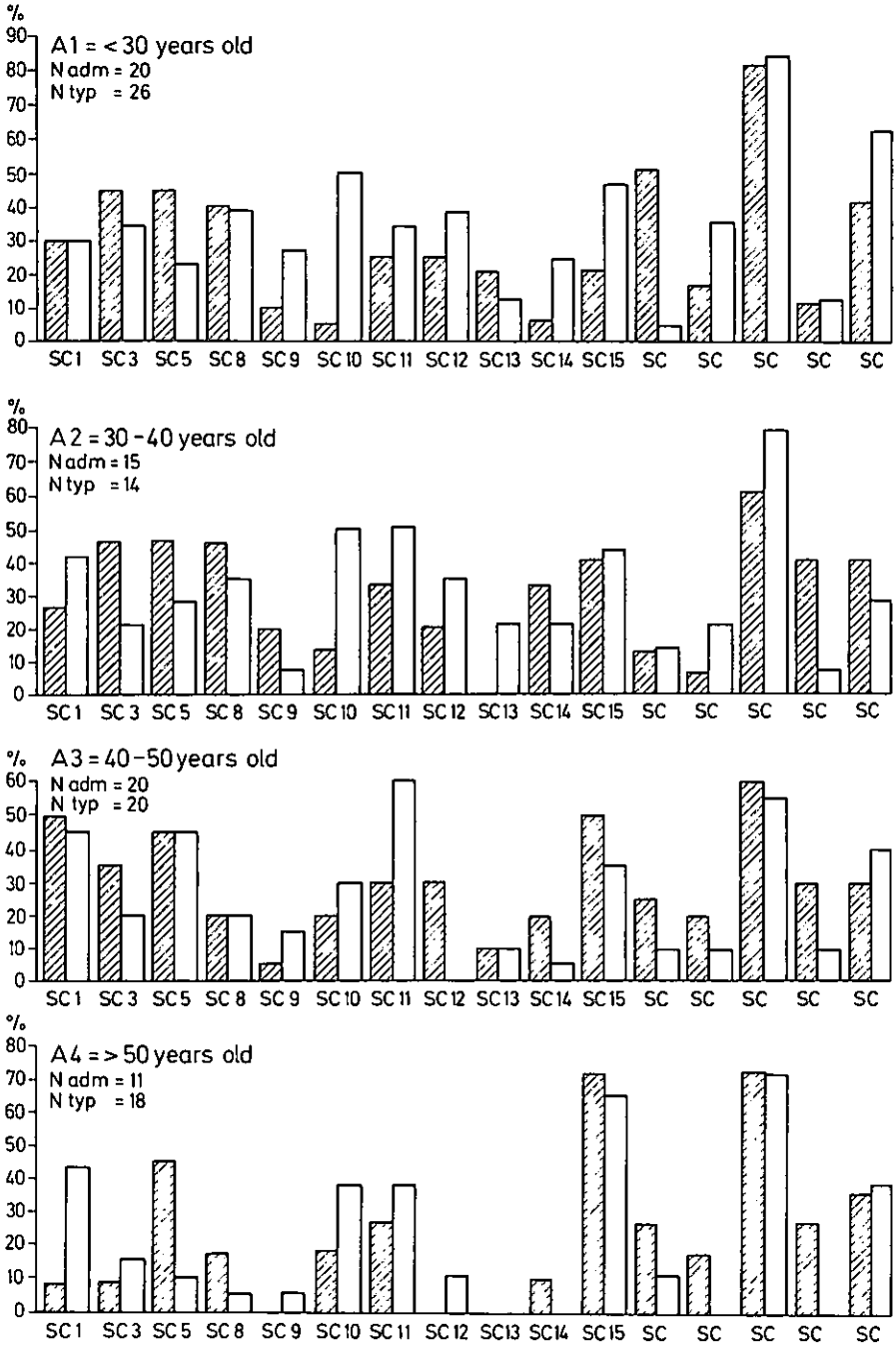

Fig. 1. Ways of coping with stress in two occupational groups, divided into four age groups

Escaping from Stress

The typists were noticeably more likely (around 4.6 times) to stay at home sometimes if there was increased stress at work. This way of coping with stress was particularly conspicuous in the under forties: the younger typists stayed at home around ten times more frequently. As already pointed out, typists were scarcely in a position to redistribute the work; as a result, they were more likely to resort to individual coping strategies; a brief escape from the work situation was one of the remaining ways open to them.

In addition, the typists under 40 complained more often about the demands placed on them (around three times more frequently than the administrative workers in the same age group), or compensated by smoking more (about twice as frequently as their counterparts). They also had a greater tendency to resort to medication: typists under 50 twice as often said they took medication in order to be able to cope with their work. Here, however, the behaviour of the oldest participants in both groups was similar. This was undoubtedly due to the fact, on the one hand, that complaints increase with age, and on the other hand, that a selection of the healthier employees had already taken place. This would explain the decrease of this type of coping behaviour (from 60% to 38.5%) after the age of 50 among the typists.

Other Forms of Coping Can Be Found

The comparison thus showed that differing use was made by the two occupational groups of the various ways of reducing stress and coping with stressful situations. This can be explained by the overall situation of participants at the workplace. Where there is little scope for the individual to organize work independently, there is an increase (a) in passive forms of behaviour, i.e. behaviour that does not alter the prevailing conditions and (b) in individual coping behaviours in the nature of an escape.

Thus the various types of risk behaviour, such as increased consumption of tobacco and medication, should be seen as an attempt to cope with restrictive work conditions and job demands by drawing on whatever resources are available to the person concerned. Limited possibilities of coping with daily stress not only encourage forms of behaviour that could have a damaging effect on an individual's health but might also affect behaviour patterns in other areas of life.

The work situation should not only allow individuals to cope with stress in their own way and enable them to be generally in control, but should also provide for the independent organization of duties. These are prerequisites for the active participation of everyone in promoting health and preventing illness – as called for by the lifestyle concept.

Self-expression – An Antidote to Stress

M. Rinast

Can we be ourselves at work? Or do we have to fit into strictly defined roles leaving no room for personal expression?

Barriers to being genuine, to being ourselves, are one of the most important sources of stress at work, whether in the office or in factories. Most of the time, people are forced to behave in terms of "functions" rather than as human beings, and this often results in problems. People in "smiling professions", for instance secretaries, waiters and waitresses, personnel in the service professions, are a good example. They smile all the time, they must always be friendly, even when they feel downhearted. They are not allowed to show their real face. Research indicates that these people tend to experience a feeling of complete "burnout" by the evening. They may, then, resort to alcohol to get rid of their false face.

Be What You Are ...

In my courses on management training and organizational development, my aim is to enable people to act as human beings in their work environment, to give them the possibility to express their feelings and to avoid being inhibited by so-called civilized or overcivilized modes of behaviour.

The suppression of feelings can itself be a stressor which influences the coping process. When normal reactions such as anxiety, anger and escapism are not adequately expressed (sometimes, even the very sensing of these feelings is already suppressed), then these reactions can turn against the individual. Restrained aggression can change abruptly into depression; the feeling of being controlled instead of being in control can turn into feelings of helplessness. From our everyday experience and the scientific findings of psychoneuroimmunology and psychoendocrinology, we know that depression and similar mental states weaken the organism's immune defence system, reduce the activities of the NK cells (natural killers) and destabilize the hormonal homeostasis.

As recent research into the mechanisms of coping behaviour indicates, even the mere thought of being given control over a situation has a positive influence on one's coping behaviour. To feel isolated and excluded from social networks heightens the feeling of helplessness: "Without the help of my colleagues, I can't make it, I can't manage, not alone!"

Clinical observations show the relevance of the quality of relationships. "Acquired helplessness" is learnt not only in situations of isolation and despair but also in situations of harmony and overprotection. Families with an "alexithymia-communication style" (i. e. the incapacity of communicating and understanding feelings) tend to produce psychosomatic health disorders. Where feelings cannot be expressed, perceived or understood, this lack in empathy leads to a series of problems: the family members are not able to deal adequately with intra- and interpersonal conflicts, the practice of action-avoidance develops into a daily lifestyle and the family climate becomes cold and drab, fragile as thin ice. This sort of climate is typical for most firms, factories and enterprises.

Well-educated men and women do not show their feelings: they either smile or put on an artificial expression at work. Accepted behaviour involves superficial harmony and hidden hostility, as well as competition at the horizontal level, submission and a teeth-baring smile when communicating "upwards". In case there are any areas left for "genuine behaviour", these are reserved for the bosses: they know how to improve their management effectiveness by using suitable communication styles, disguise or exclusively rational arguments.

In my training courses, I ask participants to be themselves: "Be what you are. Try to be honest with your colleagues". At first, aggressiveness might arise. But why not? The atmosphere changes relatively quickly and the relationships and contacts between the participants improve.

These improvements, of course, do not fail like manna from heaven. It is quite hard for participants to develop a process leading to frankness and confidence. Both aspects are closely interwoven: which comes first? Staff in a department must personally experience that frankness creates confidence and confidence permits frankness. This does not mean: tell everything or show every feeling; this is not the place for group dynamics or role playing such as shouting at colleagues, nor for "soul-striptease" or even "soul-poker" (who is the most honest person in the room?).

Teaching participants to be themselves rather means that they learn, step by step, how to become aware of their own feelings, how to understand the messages from their vis-à-vis, and how they can put a stop to the game: "I have to disguise myself as a robot because I'm surrounded only by robots". This game causes stress and pain. The only winners of such a game are the psychiatrists, psychologists and also the pharmaceutical industry.

After undergoing for a while the strange experience, "neither you nor I are robots, we are human beings", a basis for mutual understanding develops. Mutual understanding means quite simply *understanding,* not a reduction of interpersonal differences. This situation does not necessarily lead to harmony and peace but it allows for an atmosphere of direct communication and self-communication.

At this point, people feel: "I can express myself" – within, of course, the limits of conventional behaviour and without attacking each other. They realise that they can be honest with themselves and with their colleagues.

Very real causes of stress can be eliminated by changing the way people behave towards each other. As a result the whole social climate at the workplace changes.

Bringing Out the Child in Us

The approach is very simple. It does not involve the teaching of progressive relaxation or meditation techniques. It merely asks that people be allowed to be frank and honest. Most people have learnt to control their feelings in their relationships with others, i.e. to wear a mask. "Masks" can serve for various roles; different facial expressions fit specific situations; a mask can also be the kind of clothes you wear, with their corresponding style of communication. Moreno (1964) once said that roles do not come from the inner self but rather that the inner self evolves from the roles. During the process of socialization, we learn to play roles and wear masks in a way that leads to role fixation rather than role flexibility. The mask controls the wearer. The lessons are so well internalized that later one is no longer able to act spontaneously. Our objective is to reverse this learning process, which is by no means easy to achieve.

In organizational development courses, we are usually concerned with "natural groups" such as a department or a working group. Before a development process can be initiated, it should be ascertained whether or not a basis for mutual confidence and common interests already exists. One must bear in mind, however, that confidence can be just as well an outcome of this process.

Other group structures can be just as productive. For instance, groups from different companies can provide a framework for self-expression and self-realization which facilitates the integration of experiences and modes of behaviour into everyday life. In natural groups real conflicts and relationships are in the foreground; everyone must take the risk that derives from real relationships with other people. Sometimes it seems easier for a group to begin with persons unknown to each other before progressing with one's own colleagues.

Our Body Knows ...

Since the spoken language very often sets traps, we use non-verbal techniques and games when it comes to restoring a good contact with one's own body, its sensations and feelings. Non-verbal methods such as pantomime, movement, dancing, painting and clay modelling encourage self-expression and make possible an uncensored form of consciousness and communication.

With body language, we use the very means that served to suppress the expression of feelings. Sometimes the best approach is to give people the opportunity to go back to the spontaneity of their childhood. When, for

example, they start modelling clay or playing with puppets, one can see their facial expressions changing very quickly. As soon as contact with the creative potential is restored, they become more alive. Despite the mask, this potential has not been destroyed.

Whatever You Have in Mind ...

Masks, however, are useful in order to survive in particular situations. Professional masks, private masks, scientific masks: we need them all.

Masks also provide a good method to achieve self-expression. If you want to change the mask that you normally wear in life, it may be helpful to develop a mask which still further exaggerates this normal mask. If a person usually wears a stone-faced mask, he can put on an iron-faced mask or the mask of a Roman emperor, something cruel and suppressive, and then, with this mask, begin to act out roles with opposite masks such as, for instance, a clown. He is thus able to explore various aspects of his or her personality.

Playing with clay masks or with painted masks as well as role playing are methods further to develop expressiveness and the ability to show feelings. In such groups, the leader simply sets the stage and gives each participant the chance to become a child once again.

This can lead to deep experiences which bring back to life certain faculties which are the privilege of childhood: to be inquisitive, to be aware of open systems, to feel motivated to learn, to grow, to be quick and zealous, to question authority. Once the participants have rediscovered these long-suppressed childhood abilities, they consider them as essential elements of their private life (sport, family, etc.). They also realize that the desire to be creative and to express oneself is relevant to their job.

In one of my workshops a top manager was working with clay. The group was given 20 min to "play", after which I called them back: "Ladies and gentlemen, would you please stop now so that we can continue". The man was still totally immersed in modelling his clay and shouted: "Shut up! I have no time for you! You can't tell me when to stop. I need at least another hour!" He continued working just like a child, playing and making lots of jokes. His colleagues were astonished. They had never seen him that way before. He was also surprised about himself as he was usually a totally controlled person: "I don't think I've ever shouted at anyone like that for years!" But, playing with clay brought out the child in him and he did not want to be disturbed as he felt so good in this childlike mood.

Through this "behaviour lapse" he allowed the group to express itself in the way it needed. The entire atmosphere changed and turned into a sort of kindergarten situation. We were not able to finish the workshop on time and it went on for the whole evening.

This self-revelation of the boss made possible a more open communication among the group, other participants dared to be childish, ideas were

developed and played out. This example shows the positive effect of having the boss in the group, although, of course, there are also negative examples. Sometimes only the boss is allowed to be childish, although a much more frequent situation is that the boss does not support the efforts to rediscover childlike abilities. For organizations which use in their management a language borrowed from the military, any approach that promotes the desire to play, to enjoy life or to be creative is dangerous.

A Feeling of Power

There is another effect that participants report: "When I act naturally, when I can express myself in my own way, I experience a sort of power. I realize that I can control the situation. I have not only objective but also subjective options. I get a feeling of self-confidence. I feel alive". Such a feeling seems to be an important constituent of mental health. Relevant research shows that the locus of control is most important. If people feel "I can control what happens to me," stress disappears very rapidly.

Unfortunately, there is no long-term research on the evolution of participants after taking in such seminars, only informal feedback from groups or organizations. Obviously, if it took 20–30 years to learn how to suppress feelings and wear a mask, you cannot expect to change everything in a 2-day seminar. There is no miracle cure. It would be nonsense to expect radical changes.

Far too many variables influence the situation: the company's working style, the various personal biographies, social and cultural values. However, a lot of small steps can add up to a long march!

We were able to learn the style of adults, i.e. we learnt the rules which prevent creativity. The ability of the brain to learn these (important and necessary) rules should not be underestimated. Because it means that working and communication styles, as well as values, can be changed. Liberal and democratic values will, in the long run, replace the authoritarian approach. Once the process starts, not only towards the development of many options but also towards increasing the degree of freedom, then this process will continue automatically.

Group members report that they continue to work together: "OK! Let's try to be honest with each other. Let everybody say what they want. Let's stop this stressful behaviour and secret pacts. Let's be outspoken. My interest is this and your interest is that. So what can we do?" This direct communication style has a good effect according to reports but there is not evaluation per se. Nor is there any plan to research scientifically how and why this influence on the social climate functions.

It is possible that psychoneuroimmunology will be the science that explains in which way working styles influence health and wellbeing. Some of the variables to be considered include social support, subjective control of

the situation and its stressors, and active/aggressive coping strategies, which are different ways to meet challenges at the workplace. When people know that their colleagues allow them to be themselves, a good chance may then arise for overcoming isolation. The alexithymia problem in families and comparable problems at the workplace have something to do with "negative" feelings. Research and clinical experience in the field of psychoneuroimmunology show that it is much better to express and communicate aggressive and other "negative" feelings. Avoiding such forms of behaviour in the name of harmony and rational functioning destroys the basis for productivity and profit: pseudocontact prevents development in companies, pseudorelationships and avoidance behaviour appear to increase the 3-day absence episodes from the workplace, and may lead to psychosomatic and "cryptogenic" diseases which have a hidden significance, very difficult to apprehend.

Aggressive contact is at least one form of contact. It is certainly healthier than hidden hostility or competition. At the beginning of a group process, one can quickly detect whether there is much hidden hostility. It mostly expresses itself as open aggression and anxiety but, after a relatively short while, contacts and relationships develop. Participants are then able to talk to one another. Alongside these aggressive feelings, one always finds some positive feelings which emerge and get expressed.

Improving Productivity

The concept underlying these courses, which aim towards open and honest management and changes in work styles, has also proved itself useful in connection with innovation and quality circles. Experience shows that groups whose job is to create new products or improve product quality or service achieve much better results when there is a good climate and when feelings can be expressed. The double polarity "aggression-attraction" is always present between colleagues. When one develops new or improved products, it is essential to reinforce the potential for spontaneous expression, which is a key element of creativity.

All this has implications for health in the long term. If a company allows its staff to develop ideas and to understand the objectives for which they are working, then they really feel members of the firm.

When one considers the fact that people are striving for a purpose in life, for challenges and for self-realization, it is very difficult to understand why companies still abide by the Taylor tradition which does not sufficiently take account of the human potential.

On the other hand, persons who have introduced "work style programmes" in rapidly expanding American and Canadian companies are not aging hippies but tough managers who have had years of experience with practical management methods. They know that the companies are shaped by their staff. There is no healthy business without a healthy, self-realizing staff. Manipulative strategies are obsolete.

It is good for one's self-concept to be able to say: "I am working for XYZ, I like XYZ", or "This is my invention ...". I once invented a slogan and when I saw it printed in the newspapers, I was very proud of myself. This was certainly excellent for my mental health. The "I am good", "you are good" and "we are good" are steps in the development of an organization. "My organization is good, I am a member of a super group". The corporate identity has definite implications for health.

Stress Expression – Not Suppression

We use martial arts with people who have high stress levels, not because of the feeling of physical strength they provide but because of the possibility of expression they afford. People express their aggressive feelings in karate or aikido. And through the karate they also learn movements that make them realize that it feels good to be totally direct and even aggressive. There is a transfer from the martial arts to their behaviour and work style. This approach avoids stress accumulation in the body. Adrenaline is not eliminated by relaxation. Being aware of a situation and expressing its reality is often much more effective in coping with stress. The approach therefore does not aim to reduce stress but, on the contrary, to *express stress.*

Often, people are given the advice: "If you are stressed, take a valium and relax". Sometimes, it is better to say: "Take an amphetamine (or some other energy-producing method) and act out your stress!"

In fact, there are people who are not able to work with relaxation techniques – about 30% are refractory. Some people need to feel stressed to function effectively. Others experience anguish when they try to relax, especially people who have been raised in a protestant, ethical atmosphere. So why should they relax? Why should we tell them: "You are a type A. That is not good for you. You have to relearn and become type B". That is nonsense. They are type A and what is important is to help them deal with their stress in their own way. People must develop personal techniques of coping. They must find ways which fit them, and not the therapist who offers the "valium solution" to everyone.

This is one approach to stress. It does not focus on physical fitness but on emotional aspects. "Be yourself" is the message. And "dare to become yourself" is the first step along this path.

The basic idea is to "legalize" life. Life, in a way, is like an illegal drug which is not taken in families, in "civilized companies", or in honourable government agencies. It is, however, true: life is one of the most dangerous drugs known to us. Life goes hand in hand with aggression, anxiety, fear, desire, tenderness, sadness. Doses which are too large or too small may, in some cases, signify death. People who take them can become dependent. Dependent people revolt against their working conditions; suppression of life does not result in successful outcomes.

A small, yet a definite aspect of the legalization of life is the changing of work and communication styles in the working world.

B. At the Company Level

Four Major Approaches to Wellbeing

C. L. Cooper

More and more companies are providing health promotion and counselling facilities to ensure employee wellbeing, not so much because of the appalling statistics of stress-related illnesses and coronary heart disease rates, but because they are realizing what it costs to an organization to fail to protect its work force. This cost entails days lost to illness, wasted opportunities and, more recently, a massive increase in claims for worker compensation due to stress at work.

In California, for example, the courts have been awarding "cumulative stress or trauma" claims against employers who have not tried to minimize work pressures. Cumulative trauma is a type of workers' compensation claim in which an employee contends that a major illness or disability is the cumulative result of minor job stresses and strains stretching back over a period of years. Indeed, the largest industrial insurer in the state of California, the Industrial Indemnity Company, showed a large increase in cumulative trauma claims between the early 1970s and the end of the decade; whereas in 1971 the initial cumulative trauma claim reserves represented 5.5% of all new indemnity claim reserves, by 1980 these had jumped to over 20%.

Increasingly, managers and other white-collar workers are making cumulative trauma claims based on the Michigan Supreme Court decision in the case of Carter vs. General Motors in 1960. In this case the court sustained a compensation award to James Carter, a machine operator, for an emotional breakdown resulting from job pressure. The claims for job stress, however, began to take off in the early 1970s and were reinforced by the inability of industrial organizations to show that they had taken adequate measures to minimize the stress-related characteristics of various jobs or to provide counselling or other stress-opening facilities in the work place.

The following section reviews the various ways organizations can ensure the physical and emotional wellbeing of their employees.

Keep-Fit Programmes

Many United States and some European companies have begun to provide extensive keep-fit facilities for their employees. For example, Pepsico Inc. have created a comprehensive physical fitness programme at their world

headquarters at Purchase, New York. They have a fully fitted gymnasium, which includes a sauna, an electrical treadmill, a striking bag (not moulded in the shape of the chief executive!), stationary bicycles, whirlpool baths, showers and massage facilities. In addition, they have a 1.15-mile running track which circles the HQ complex. This programme is under the supervision of a full-time physical therapist and medical physician. Tailor-made exercise programmes are planned for any employee by the physical therapist or the doctor. Although this facility was originally planned for senior executives, it is now used by all employees on a voluntary basis. The corporate HQ is located in an attractive park-like setting which promotes an atmosphere of physical fitness. The company also provides specialized programmes such as aerobic dancing, weekly yoga sessions and diet training to meet the needs of individual employees.

In the Federal Republic of Germany, the chemical company BASF AG takes a group of 36 executives away from their offices twice a year for a 2-week training session in personal health. They swim, jog, take saunas, stick to a well-planned diet and are encouraged to take part in relaxation sessions such as yoga and trascendental meditation. It is hoped that this intensive health programme will help executives to internalize attitudes towards positive physical and mental health.

In Canada, Canada Life Assurance Co. and North American Life Assurance Co. participated jointly in a research project to see what the effects of an executive keep-fit programme would have on their managers. In all, 1125 managers from both companies were enrolled into a systematic physical fitness course in their HQ gymnasium. They found several interesting results. First, there was a drop in absenteeism of 22%, which, if translated across both companies, could mean savings of some $200 000 a year. Second, they found a 3% rise in productivity in the exercising group as opposed to the non-keep-fit one. In addition, they found that the keep-fit managers had a significantly more positive attitude towards work and reported better relationships with their bosses and subordinates.

Converse Corporation in Wilmington did a variation on the keep-fit theme by providing a voluntary 12-week relaxation programme for their employees. Over 140 volunteered and were compared with 63 non-volunteers who were selected randomly. The volunteers agreed to keep daily records for 12 weeks and to have their blood pressure measured. In addition, their general health and job performance were assessed during the experimental period. The results indicated that not only was a relaxation training break feasible within normal working hours, but that it led to improvements in general health, job performance and wellbeing, and significantly decreased the blood pressure of managers from the start to the finish of the training.

Perhaps the best kind of approach a company can follow is the example of the engineering company Emhart Corp. They were concerned about the health of their employees but were cautious about investing large sums of money into a fitness programme that their employees might not use. So they

first surveyed their employees about their attitudes to a company keep-fit programme, and, on the basis of a positive response, built a low-cost gymnasium. Then, after it became clear that their staff were using it regularly, they expanded the facilities (e.g., hiring experienced exercise instructors). After a year of operation, the demand was so great that they decided to build a jogging track. It was a step-by-step approach, with each preceding one justifying the next.

Regardless of the moral or humanistic arguments, the cost/benefit factor of protecting the human asset should be a major concern of any enterprise. The General Motors Corporation spends something like $2000/year, per employee, on health care insurance, and over $1.3 billion overall (in 1978 alone), which represents a 30-fold increase over 1960. More detailed examples of health care programmes can be found in Marshall and Cooper's recent book (1983) of case studies of stress-prevention approaches by different companies.

Stress Counselling

Occasionally an organization will have in its ranks a professional psychologist, whose remit is to be available to discuss personal problems with employees. His services could be extremely helpful in providing a means towards stress mitigation for individuals. The problem lies in the reluctance of the individual to be seen seeking such assistance, and it may be more effective if "the expert" masquerades under a title like Welfare Officer or even Management Development Officer, whose advice can be sought without being seen as acknowledging a personal psychological impairment. For the long-term health of the organization, however, it is preferable to be honest and establish a counselling service, acknowledging the existence of stress openly.

An example of a company which has introduced a counselling service is Kennecot Corporation. They have focused on the psychological health of their managers and other employees by providing counselling facilities for a whole range of work and home-related problems. For example, they have organized alcoholics anonymous groups for employees and their families in situ. Another organization which has taken a similar step is Shell Chemicals (UK), which was one of the first companies in the United Kingdom to set up an employee counselling service within the medical department, with a full-time employee counsellor trained as a psychiatric social worker. The service had three objectives: "to provide a confidential counselling service to all employees and their families, to work with outside helping professions for the welfare of employees, and to promote other activities that enhance the quality of working life". Control Data Corporation in the United States and Europe have also set up a stress counselling service.

Training Managers To Be Aware of Stress in Others

Auden, in his poem *The Unknown Citizen*, wrote "Was he free? Was he happy? The question is absurd: had anything been wrong, we should certainly have heard". But can or should we rely exclusively on informal organizational hearsay about the wellbeing of one of our fellow employees? Stressful behaviour all too frequently can be disguised or covered up in some acceptable form, at least it its initial stages. With the increasing pressures of organizational life, it is important, to provide managers with some awareness of stress manifestation in themselves and others, both subordinates and colleagues. Once a manager is aware of the symptoms of stress, particularly in respect of himself and his subordinates, he/she is in a better position to take appropriate action, either by encouraging the person to participate in some form of stress-reduction training programme, or by modifying the job or workplace factor involved in order to alleviate the organizational stressor.

One or 2-day training programmes can be easily devised which focus on the physical, emotional and behavioural symptoms which may be stress-related. Some of the following have been found by Dr. Melhuish and the author in a 10-year longitudinal study of 350 senior United Kingdom executives (Melhuish 1978; Cooper and Melhuish 1980). This training programme not only aimed to create awareness of the possible stress manifestations, but also to provide experiential sessions where the managers looked at themselves and discussed together the ways in which they reacted to pressure and the events/people/organizational characteristics which they perceived as stressful. By understanding one's own and other people's reactions to stress in a "here-and-now" learning context, one can highlight immediate, observable behaviours which can be invaluable in making sense of the "there-and-then" work environment.

When the norms in a company are changed to acknowledge and accept the reality of stress in organizational life, then the process of managing stress (as opposed to eliminating it, which is probably neither possible nor desirable) will become easier and probably more effective. One of the most efficacious ways of *preventing* rather than *coping* with the pressures of work is by establishing *support systems* among managerial staff, encouraging managers to help one another and share their concerns, to reorganize work schedules and tasks so as to aid those in greatest need and to acknowledge that family circumstances can affect performance, hence the need to counsel or seek help for colleagues who are experiencing difficult home problems, etc. The creation of support groups at different levels of the managerial hierarchy, with the help of management development advisers, can be very useful. Such groups act as an informal counselling service to all managers. They represent more than a mechanism for dealing with immediate problems or with managers who are manifestly "at the end of their tether". Their main role is to detect the development of potential stressors, create aware-

ness among colleagues and help them plan their activities so as to minimize the impact of these stressors or eliminate them before it is too late.

Bridging the Gap Between Work and Home

There are a variety of ways in which the organization can bridge the gap between work and home. Obviously, one of the most important first steps is to find out from employees and their families where the areas of conflict and difficulty are occurring. This could be an extension of what is already being done in some companies by obtaining data on employee attitudes towards particular company practices. For example, Norske Shell in Norway, which is one of about 500 companies in the Royal Dutch/Shell Group, surveys employee attitudes towards the company and its policies each year. Their questionnaire covers such topics as remuneration, personal development, participation, communication, job satisfaction, work conditions, efficiency and the environment. There is no reason why this approach could not be used and adapted to cover attitudes towards business travelling, relocation, hours of work, family's knowledge of the employee's work and of the company, etc. In this way, organizations could get a feel for the efficacy of their current personnel practices, as well as information about future potential problems and developments.

Efforts Must Be Multidimensional

M. Weinstein

Many models have been proposed to relate job stress and life characteristics to work and health outcomes. While these models differ in certain specific respects, each includes at least four components:

1. *Inputs* dealing with either objective environmental characteristics, subjective perceptions, or both
2. *Thruputs* dealing with personal perceptions or characteristics that operate on the inputs
3. *Outputs* that specify both health and work consequences, either positive, negative, or both
4. *Feedback* loops that allow each of the various domains to influence the others

One of the best-researched models, the "person-environment" model (French et al. 1982), hypothesizes that stress results from the lack of "fit" between demands – either objective or subjective – and our ability to cope with them – again objective or subjective. Stresses are further hypothesized to lead, if unsuccessfully managed, to adverse work and health outcomes.

Implications for interventions flow from the model. For example, where large gaps exist between objective job demands and the employee's objective abilities, either training or reducing the demands might be appropriate. A chief characteristic of the model is that it is individually focused to reflect each person's unique life and work space, i.e. his/her type and degree of fit with the demands of the job itself.

Influencing Stress at Work

A recent review of research on stress and its effects in work settings (Kahn et al. 1982) concluded that, while it seems clear that occupational stress can and does affect health, future research must improve on past studies in four ways:

1. Include a balance of both biological and psychological risk factors and descriptors
2. Exploit research opportunities provided by "natural experiments"
3. Focus on the most important variables in the susceptible workers using prospective designs

4. Carefully assess both the work environment (demands and resources) and individual characteristics (needs and abilities) in order to study these issues within an interactive perspective

Studies show that occupational groups vary in rates of morbidity and mortality; and workers in high-stress jobs have higher rates than those in low-stress jobs. The higher the stress, the higher the rates. However, such studies are often methodologically weak. Kasl (1986) has pointed out numerous flaws in their design, including the fact that the type of individual who chooses an occupation accounts for the results, rather than the occupation itself.

What are the implications of these studies for influencing stress in the workplace? As indicated in the previous paper, efforts to help workers to manage job stress must be multidimensional. Can we expect to succeed if we teach people only personal stress management skills such as meditation, thought-stopping or time management?

A Group-Centred Approach

In both the United States and Canada, the stress management seminar business is booming. I am often asked to teach concepts and methods of stress management in seminars ranging in length from a few hours to several days. Whenever I am asked to present such a workshop, I find myself faced with a dilemma. Do I accept the opportunity to introduce people to these ideas, even in a short time, or do I refuse the opportunity by explaining that the time allowed falls too far short of the ideal?

The ideal, in my opinion, involves continuing contact with a small group of individuals, preferably people who work together within the same work unit or department. Once I have exposed the basic ideas of stress and its effects, I like to help the group develop specific action plans for themselves as individuals and for their work unit. These plans should enable them, over a period of time, to identify and manage not only personal reactions to stress, but also influence sources of stress that lie outside their immediate environment. In cases where I use this approach, I find that the effects are more powerful and long-lasting. Not only do people have the time they need to practice and refine their skills, but they develop *the group support and power* that are essential to tackling structural sources of stress. They become, instead of victims, problem-solvers in the stress management process.

This group-centred approach is similar to empowerment interventions that have proven successful in other areas, including quality circles and problem-solving groups. It differs by focusing on stress and health, allowing workers and managers to avoid much of the traditional resistance that arises when the approach is identified too strongly with work reform.

For a more complete discussion of stress management in the workplace, the reader will want to consult some of the excellent books on work stress that have appeared in recent years (e.g. Albrecht, 1979; Greenberg, 1980; Matteson and Ivancevich 1982; Weinstein et al. 1982).

Table 1. High- and low-stress lifestyles (Albrecht 1979)

Stressful lifestyle	Low-stress lifestyle
Individual experiences chronic, unrelieved stress	Individual accepts "creative" stress for distinct periods of challenging activity
Becomes trapped in one or more continuing stressful situations	Has "escape routes" allowing occasional detachment and relaxation
Struggles with stressful interpersonal relationships (family, spouse, lover, boss, co-workers, etc.)	Asserts own rights and needs; negotiates low-stress relationships of mutual respect; selects friends carefully and establishes relationships that are nourishing and non-toxic
Engages in distasteful, dull, toxic or otherwise unpleasant and unrewarding work	Engages in challenging, satisfying, worthwhile work that offers intrinsic rewards for accomplishment
Experiences continual time stress; too much to be done in available time	Maintains a well-balanced and challenging workload; overloads and crises are balanced by "breather" periods
Worries about potentially unpleasant upcoming events	Balances threatening events with worthwhile goals and positive events to look forward to
Has poor health habits (e. g. eating, smoking, liquor, lack of exercise, poor level of physical fitness)	Maintains high level of physical fitness, eats well, uses alcohol and tobacco not at all or sparingly
Life activities are "lopsided" or unbalanced (e.g. , preoccupied with one activity such as work, social activites, making money, solitude or physical activities)	Life activities are balanced: individual invests energies in a variety of activities, which in the aggregate bring feelings of satisfaction (e.g. work, social activities, recreation, solitude, cultural pursuits, family and close relationships)
Finds it difficult to just "have a good time", relax and enjoy momentary activities	Finds pleasure in simple activities, without feeling a need to justify playful behavior
Experiences sexual activities as unpleasant, unrewarding or socially "programmed" (e.g. by manipulation, "one-upping")	Enjoys a full and exuberant sex life, with honest expression of sexual appetite
Sees life as a serious, difficult situation; little sense of humor	Enjoys life on the whole; can laugh at himself; has a well-developed and well-exercised sense of humor
Conforms to imprisoning, punishing social roles	Lives a relatively role-free life; is able to express natural needs, desires and feelings without apology
Accepts high-pressure or stressful situations passively; suffers in silence	Acts assertively to reengineer pressure situations whenever possible; renegotiates impossible deadlines; avoids placing himself in unnecessary pressure situations; manages time effectively

In order to see how the ideas of stress and lifestyle are intertwined, I have extracted a table from Albrecht's *Stress and the Manager* (1979), which contrasts high- and low-stress lifestyles both on and off the job, and provides a useful checklist for influencing stress in the workplace.

The Nature of the Job Cannot Be Ignored

One cannot influence stress in the working world without considering the nature of the job itself and the broader organizational contexts within which the work takes place. There is a large body of literature on the subject; much of it grew out of pioneering work in industrial democracy and socio-technical systems on the quality of working life (Trist 1981), worker participation in decision-making and how jobs are structured, i. e. how the physical and social technology can produce more or less stress on the job. Studies clearly show for example, that adverse health consequences often occur in jobs that are machine paced, where the environment imposes severe constraints on the worker, and where the worker's constant attention is required in order to make skilled judgments at short intervals (Johansson et al. 1981; Frankenhaeuser 1981).

No matter what lifestyle changes are made at work, they are not likely to persist if they conflict significantly with values held by one's community, neighborhood or family. For instance, one company to which I recently provided consultation had some difficulties in one of its departments where most employees are heavy smokers. Indeed, smoking strong unfiltered cigarettes is part of the culture – a "macho" image for male employees. In the course of my organizational development work, the employees identified smoking in public as a factor that negatively affected their corporate image. They decided not to smoke in the presence of customers. Next, they wondered how to stop customers from smoking, although their company policy allowed it. So they sent a letter to the new company president – himself a two-pack-a-day man – asking for a non-smoking policy. Much to their surprise – and, for the smokers, to their horror – the president agreed to ban smoking throughout the company. He wants to quit for health reasons and feels that this is a perfect opportunity to promote his health.

The potential benefits of health promotion are quite clear. What we now need to do is to focus on improving the organizational culture and climate so that it will allow health promotion efforts. We need careful research and, just as importantly, we need careful media coverage to influence politicians, organizations, and labor leaders to recognize that employees should be involved in health promotion activities. It is in the interest of all of us to get together and try to achieve these goals.

Social Support Through Company Doctors: Is It Possible?

R. Müller

The assumption that company doctors can provide social support for overcoming stress at work appears at first as obvious. In fact, we must ask whether company doctors, themselves, do not represent a stress factor against which social support is necessary. The extent to which occupational medicine can function as a social support system depends upon the structural framework and the role assigned to the company doctor, his professional qualifications and the personal profile he contributes to his professional activity.

A scientific study dealing with these questions has not been undertaken as yet in the Federal Republic of Germany. Up to now, only one research group at the Scientific Centre in Berlin has been concerned, in socioscientific terms, with the practice of occupational medicine in our country. This group investigated whether company doctors could contribute effectively to health protection in industrial organizations or whether they were more a personnel policy tool of company management (Hauß 1983; Kühn 1982; Rosenbrock 1982).

This paper is based on my scientific activities in the field of occupational medicine (Müller 1981a, 1982, 1983; Volkholz et al. 1980, 1984; Milles and Müller 1985) and my practical experience as a company doctor.

In general, stress research is concerned with the problems of adaptation of living creatures to their environment (Nitsch 1981). In relation to the workplace, research is striving, therefore, to identify the interaction between specific working conditions and the people subjected to these conditions, i.e. their perception of the situation and their coping behaviour, including short- or medium- to long-term psychophysiological reactions (Udris 1981). This approach extends far beyond the ergonomic stress-demand concept (Müller 1984).

Social Support: A Multifacetted Approach

The concept of "social support" was developed in social epidemiology and social resource research.

The scientific knowledge available on social support processes allows, according to Badura (1981), the following hypotheses:

1. Social help and support can contribute to the prevention, elimination or early recognition of chronic stress *(hypothesis of prevention)*

2. Adequate and competent social help and support, either already available or specially mobilized, can neutralize possible psychological or physiological consequences of chronic or acute stress *(hypothesis of neutralization)*
3. Through social help and support recovery from illness is more speedily achieved *(hypothesis of coping)*

Social support can consist of psychosocial help from a trusted person who mobilizes the mental resources of the individual, thereby helping him or her to overcome emotional stress. Further support includes practical, financial and material assistance as well as information aimed at improving cognition. A number of studies have drawn attention to the role of mental processes in the perception and evaluation of stressful situations and their influence on the coping behaviour of individuals and groups (Caplan et al. 1982; Ulich 1983). The term "social support", however, usually remains limited to psychosocial assistance or emotional care.

Support systems are categorized as follows: family or neighbourhood; organized lay help or self-help groups; religious communities or churches; professional and official aid. At the workplace, members of both the formal and informal contact structure are included.

For effective support, however, personal relationships, even supplemented by a certain degree of interaction, are not sufficient. It is important that the person should feel accepted and understood and perceive the support as helpful.

The Company Doctor: A Source of Social Support or Stress?

To what extent, if at all, can the company doctor act as an effective source of social support for the prevention and neutralization of stress and for coping with stress? Or could doctors themselves represent a stress factor against which social support is necessary?

To answer this question, it is necessary to examine first the legal obligations of the company doctor and his duties within industrial organizations. Three functions can be singled out in the Federal Republic of Germany, which are very similar in many European countries.

First, the company doctor operates within the framework of a contract based on the personnel policy of the company concerned. In this respect he/she carries out medical fitness examinations, i.e. decides if an applicant should be given a certain position or, alternatively, if an employee should retain his/her workplace. Historically, this relationship between the company doctor and the employer represents the oldest tradition in occupational medicine, the doctor's function being to solve personnel problems in accordance with the policy of the organization.

Secondly, the company doctor carries out work-oriented physical examinations in line with the accident insurance regulations and partly also with those of the government. Such examinations are required when workers are,

or will be, employed in situations where they are exposed to risks of a chemical, physical or biological nature or engage in other dangerous activities. It is true that these medical examinations serve to protect employees against illness. Nevertheless, it is also clear that the main intention is to protect accident insurance companies against claims for financial compensation arising from occupational illness or accident. These examinations enable the company doctor to influence conditions at the workplace. If it is established, for example, that the prevailing working conditions endanger the health of the person under consideration, then the company doctor can make such employment, or its continuation, subject to an improvement in working conditions.

If the company doctor establishes that a health risk remains despite improved working conditions or because the risk cannot be avoided for technical reasons (e.g. working in the cold), the employer must not employ, or continue to employ, the worker in this risk situation until the danger to health has been eliminated, and the fact confirmed by the company doctor.

In the company doctor applies these powers of intervention, he may come into disagreement with the employer or the employee, or even with both simultaneously. He should therefore be prepared for conflict. The outcome will depend, to a great extent, on his independence. Such independence is not simply a matter of acting freely in applying the law on work safety. Nor is reliance on the doctor's conscience and professional obligation to secrecy sufficient. A clear formulation of the professional role is needed. Otherwise, preventive action will depend on the strength of personality of the company doctor.

Thirdly, the company doctor advises the employer on all matters of occupational health protection. In the Federal Republic of Germany this is outlined in the 1974 law on Health and Safety at Work which stipulates that company doctors are required to: (a) examine employees and establish a medical diagnosis, (b) investigate causes of work-related illness and make suggestions to the employer for appropriate preventive measures, (c) ensure that all employees observe safety regulations and (d) instruct them on accident and health risks and on the use of equipment and procedures designed for their prevention.

In principle, therefore, the company doctor has the opportunity to help the company cope with stress and to organize social support. Such support includes: exposing the working conditions which give rise to chronic or acute stress; informing the persons affected and the management of such risks and suggesting possible countermeasures; raising the level of awareness of all persons concerned so that they are able to detect health risks; identifying resources available to overcome these risks; and taking necessary action.

Structural obstacles, however, and ignorance regarding occupational health problems, hamper opportunities for preventive intervention. On the one hand, the management regards employees as objects for medical investigations and subjects for instruction and behaviour regulations. On the other

hand, in the prevailing occupational health system, employees cannot make use of their capacity to recognize stress and to identify problems relating to health. Yet, national and international studies (Bagnara et al. 1985; Dürholt et al. 1983) have shown the level of experience and the potential for change which exist among personnel.

A Restrictive View of Health

Company doctors usually approach health problems through the concepts and scientific background of occupational medicine, which provide a very limited understanding of the relationship between work, illness and health. Causality is strongly determined by a unidimensional cause-and-effect definition derived from a mechanistic view of the world. The dogma of a specific etiology is dominant and concepts of sociopsychosomatic illness are inexistent.

Currently, in the Federal Republic of Germany, any new orientation towards the understanding of sociopsychosomatic illness is frowned upon. Occupational stress is regarded as having only a secondary influence on illness, if any at all. When a psychosocial cause is conceded for a chronic illness, then it is ascribed to the faulty behaviour of the individual. Knowledge and concepts from social epidemiology and stress research are accepted very hesitatingly. Yet, one cannot ignore the latest advances in social epidemiology and psychosomatic medicine nor the findings of sociological, psychological and psychophysiological stress research recorded in specialized scientific magazines (Rutenfranz 1983; Hernberg 1984; Funke and Tiller 1985; Kentner and Valentin 1986). There is also a growing awareness of these problems at the political level.

The restricted viewpoint of occupational medicine is reflected in the safety regulations which have significantly influenced the training and role of company doctors. Physicians are trained as clinicians and are generally well acquainted with scientific methods of enquiry into the effects on health of noxious agents at the workplace. Yet, if a company doctor is to provide social support for coping with stress, he needs basic knowledge in sociology and psychology, skills in defining and handling problems, and a capacity for communication. Current medical studies do not develop such competencies and training programmes for doctors who wish to specialize in occupational medicine do not allot sufficient time for the study of these subjects.

Structural obstacles result from the institutionalized form of activity of the company doctor. In large companies, the doctor is employed on a full-time basis. In small and medium-size organizations, doctors work either part-time or are made available by an accident insurance company, a technical surveillance association or a commercially run organization. In this case, the doctor is only present in the company for a few hours each week. This makes it hardly possible to design and implement a plant to combat work-related illness and stress. Two other factors greatly affect the outcome of the

company doctor's work, namely the attitude of management and their personnel policy and whether union shop stewards and staff associations are willing to commit themselves to support efforts to overcome stress and make the workplace more humane.

A Person with Three Hats

The opportunity for the company doctor to play an advocacy role in health is made even more difficult by the fact that he/she combines in principle three functions: he acts as an employee of the organization, as a representative of the accident insurance and as a source of information and advice on dangers at the workplace and their elimination. This results in opposing demands and role conflicts.

To be accepted as the "health attorney" of the staff, the company doctor needs the trust of the employees and of those who represent their interests within the company. Yet, such trust rarely exists when the doctor is also involved in the selection of staff. In this connection, a question needs to be raised: can the company doctor-employee relationship be equated with the normal doctor-patient relationship? The latter is based on trust: the patient has confidence in the medical competence of the doctor and his oath of secrecy in respect of third parties. As a result the patient is prepared to divulge information of a private nature since he assumes that no personal disadvantage will ensue.

In the relationship between company doctor and employee/applicant, the same feeling of trust may not exist. This relationship arises through the employer and is completely dominated both by the dependent state of the employee/applicant vis-à-vis the employer and the fact that the company doctor is appointed by the organization concerned. The main concern here is not the diagnosis and therapy of a sick person but a medical judgement on the physical suitability of the employee/applicant for the job offered by the company. The medical decision can have disadvantageous social consequences for the employee/applicant. Industrial medicine thus becomes in itself a cause of stress.

Independence: A Decisive Factor

How does the company doctor react to a situation in which he has ambivalent roles and where his professional autonomy and authority are questioned? Unfortunately, research on this subject is lacking, just as it is on the scope and trends of occupational medicine itself (Rosenbrock 1982).

In general, what happens is that the company doctor restricts himself to the activities for which he has been essentially trained, namely, the diagnostic examination of employees.

Does this mean that the company doctor is fundamentally unable to provide personal or social support? Certainly not, but it is important to

pinpoint the structural limits to such an option and to recognize that institutional barriers exist. Otherwise, no preventive social and health policy will succeed.

As may be expected, a number of firms have developed measures for overcoming stress through social support by the company doctor. This is particularly the case where worker participation has reached an advanced stage and where there is minimal threat that jobs will be lost. But the effectiveness of the company doctor should not depend on favourable labour market conditions or on the strong representation of employee interests, not to mention the need for a certain heroism on the part of company doctors themselves. Structural provisions must make such constructive activity the rule rather than the exception. In this respect independence is decisive.

Positive and encouraging examples of institutional regulations ensuring the independence of the company doctor exist in various countries (Bagnara et al. 1985). Dismissal or transfer, for instance, should only be possible through a committee of company doctors. It may also be worth considering whether the company doctor ought to conduct medical examinations of job applicants.

It is true that social support is provided by company doctors whenever demands are compatible with their personal medical perspective and professional qualifications. Doctors have learnt to give advice to individual employees and to mediate with management or social insurance bureaucracy. They are also able, within the limits given, to support and promote coping strategies on an individual or group basis. However, opportunities to influence stress-inducing working conditions at the central, structural and situational level must be rated as rather minimal. While the company doctor has some authority in matters relating to the reduction and elimination of specific physical, chemical or biologically noxious agents, the same cannot be said with regard to the problem of multiple stresses and their long-term consequences.

A New Concept of Occupational Medicine Is Needed

If occupational medicine is to become effective as an institution of social support, then a new definition of its objectives will be necessary, based on the following criteria:

- A holistic approach
- Promotion of health instead of combating illness
- Concentration on working conditions, not merely on the persons employed
- Development of a humane working lifestyle
- Involvement of the employees concerned on a voluntary basis, with due consideration given to their experience

- Consultation and involvement of those concerned in the definition of stress and how it may be overcome, as well as the organization of working procedures
- Independence of professional experts
- Strengthening of the cooperation between experts and employees
- Combination of occupational health protection policies with a community-oriented primary health care policy (WHO 1978), legitimized in a democratic manner and which is neither medically oriented nor centred on the doctor (Labisch 1985).

Only when occupational medicine has broadened its outlook on health will it be able to intervene effectively with regard to the prevention and neutralization of stress and to provide adequate means for coping.

Managing Stress in the Workplace

H. Milz

In recent years a lively scientific and political interest has arisen in possible work-related stress reduction programmes. Their starting points were mainly at the higher levels of management; for some time now the German word *Managerkrankheit* has been in common use in studies on type A behaviour and "workaholics" (Friedman and Roseman 1974).

These studies refer to constant ambition and tension, hectic work without breaks, physical and mental overtaxation with corresponding psychophysical breakdown. "Professional burnout" is also in use as a concept, although mainly for service, social and therapeutic professions, e.g. doctors, psychologists, teachers, social workers, firemen (Maslach and Zimbardo 1982).

Various concepts have come into general usage in everyday language that describe the potential of behavioural strategies aimed at reducing tension in working and private life. The expression used most is *"stress management"*, i.e. learning to deal consciously with stress. *"Adaptation"* and *"coping with stress"* also refer to a change in interaction between the individual and his environment. The concept of *"stress inoculation"* doubtless goes furthest in that it refers to counterconditioning strategies for the conscious use of relaxation techniques prior to or during a specific stress situation.

Stress Factors and Subjective Responses: A Complex Interaction

With regard to the "working world", the sequence involved in health promotion should be clear. The social and political task of reducing or eliminating structural stress factors in the workplace or the work process is a top priority. Otherwise, discussion of behavioural changes and stress reduction programmes can easily turn into an ideological coverup of genuinely existing external dangers. In that case the emancipatory and sensible appeal to the individual's sense of responsibility or, better, coresponsibility for his own health runs the risk of becoming a subtle variant of the old "blame-the-victim" strategy. Work-process-related stress factors can only be reduced to varying degrees and many work processes, particularly in the services and social services sectors, will continue to involve a number of potential stress factors.

Most scientific analyses concentrate their attention on the identification of stress factors and the quantification of their possible consequences. They refer to the objectivity of existing risk factors and their effects on "man as a biomachine", i. e. as a normed biological structure. Their interest is oriented towards a specific aim as well as towards the formulation of general statements regarding the possible pathology of stress and risk factors (Schmidt 1983).

Stress management concepts can be oriented both towards specific aims as well as towards specific processes. Target-oriented concepts are aimed at the elimination of stress factors in the environment such as lowering levels of toxic chemical emissions, reducing noise levels and changing the mechanics of machines or work sequences (stress factor management). Process-oriented concepts are aimed at bringing more awareness into human interaction and its subjective psychophysical response to work-related stress. Knowledge regarding the possible pathology of stress factors is helpful, but not sufficient to perceive one's own subjective responses. Individual willingness, conscious interest and the sharpening of one's own perceptions of subjective psychophysical reaction processes are prerequisites for the individual use of the potential advantages of stress-reduction programmes.

Stress management means focusing attention on subjective responses. Concepts of this kind can only be prescribed to a very limited degree, since the constitutive and crucial element involved is active perception and willingness to change on the part of the individual concerned. The various components of this concept can be described as follows: the determination and assessment of personal stress, the gathering of information on the relative importance of the various stress factors; assessment of relaxation possibilities; cognitive strategies for a new definition of learning process and targets; the assessment of problem-solving approaches; a review of schedules and time sequences; changes in eating and exercise habits.

This list of components indicates that what is involved is not just learning a specific stress reduction technique, but rather a conscious change in work and lifestyle. This may often be the reason for insufficient acceptance of such concepts. Horn (1983) pointed out that individual health promotion is only meaningful in an emancipatory sense when it is integrated into a sociocultural reflection of and change in the type of social evaluation given to human work potential.

A meaningful analysis of work-related stress is only possible by constructing individual profiles which include sociocultural background.

Lazarus described four general responses to the experience of distress (Selye 1976):

- *Direct-active (change)*
- *Direct-inactive (avoidance)*
- *Indirect-active (communication)*
- *Indirect-inactive (e. g. as a result of illness)*

Stress management strategies involve the first three of these responses. A concept that is often used in this context, "locus of control" (Assagioli 1982), is not without its problems. It is intended to point out the fact that when there is a strengthening of consciousness and awareness it may be possible to shift the external locus of control towards a more strongly self-determined control of one's own life, an "internal locus of control". Without wanting to detract from or deny the potential contributions made by such concepts, they fail to be anything more than humanistic or idealistic strategies if they do not have sociocritical and ecological elements. This is a phenomenon often encountered when dealing with various models offered by the holistic health or holistic medicine movement in the United States.

Developing Self-Awareness

Whenever we attempt to describe the target of stress reduction programmes, concepts such as the promotion of self-esteem and self-confidence, self-control, self-observation and self-preservation are of central importance.

They all refer to a personal and individually different learning process aimed at promoting diversity and the investigation of possible choices, consciously taking into account the experience of committing mistakes. The emphasis on learning as a process is given priority over premature orientation towards specific goals. This makes it clear that certain stratagems or techniques aimed at reducing stress may be unified. However, the overall goal of stress management cannot be to normalize responses, but instead to promote the diversity of and the individual differences by appropriate coping strategies.

The "self" is an expression of the psychophysical whole of the human being and the latter's awareness of this. Awareness is not only a process involving pure analysis, intellect or critical judgement. It is also a process of self-perception. It involves both elements contained in the dual organization of the human neocortex, i.e. left-hemispheric ego-oriented analysis, on the one hand, and right-hemispheric self-oriented holistic perception and intuition, on the other (Sperry 1968).

Developing self-awareness and self-confidence means coming into contact with oneself and being oneself, discovering and observing both the biological and psychic sides of one's life, as well as the continuous interaction between the two. It is aimed at enabling the individual to adapt as autonomously and flexibly as possible to demands placed on him by his environment, to learn and assess various behavioural options and consciously to initiate changes.

Thus far the possibilities for self-perception and self-development in the work process have been greatly restricted. In addition, in view of prevailing economic problems and interest, particularly in a time of high unemployment, these dimensions have been largely ignored. For a number of years now, the concept known as "humanization of the working world" has been

present among trade union demands. However, it refers almost exclusively to the shaping of the external work process or agreements on working hours.

The United States Experience in Stress Management: What Are the Lessons To Be Learned?

As a result of the social and medical insurance structures in the United States, there has been a cautious opening up to strategies oriented more towards the general promotion of health. A growing number of major corporations and some medium-sized companies have established health management programmes. Thus far the initiative for programmes of this kind has been taken mainly by individuals in top or middle management, as well as by company doctors or company executives in charge of safety. Only very few health initiatives have come from the ranks of lower-income employees or the trade unions (Fielding and Breslow 1983). More than 500 companies currently employ full-time fitness directors under a general concept ranging from crisis management to prevention and health promotion.

Pelletier (1984) refers to the fact that in the United States, too, it was not until the economic disaster caused by sky-rocketing costs for medical care that attention was given to demands for humanization of work and promotion of general health. The additional stress deriving from alienation and dissatisfaction with the work situation is expressed in the growing amount of employee sickness and absenteeism.

Health promotion in the work process has to be worthwhile for both sides. Improved job satisfaction and improved productivity go hand in hand. Lower deductions for company medical insurance schemes and corporate health maintenance organizations are intended to provide economic incentives for employees, raise production figures, reduce time taken off and lower employee welfare expenditure – all factors that are of advantage to companies. The beginning of a health-promoting deal on the basis of social partnership has been initiated in the United States mostly without questioning organizational structures or circumstances of ownership.

The aim is to increase job satisfaction as well as to reduce *helplessness* and a lack of recognition for work done. These goals are to be achieved by quality circles, problem-solving groups and "design committees who combine human and technological needs" (Pelletier 1985). Communication and a spirit of cooperation between economically unequal partners is to take the place of collective confrontation and individual manifestations of work stress in growing numbers of cases of illness. A "brave new working world", an idealistic and visionary concept, could be imagined from a European standpoint, if there were not solid economic interests on both sides.

To cite an example that is grist for the mills of all socially oriented critics, one of the most outstanding and best-known programmes is the "Quality of worklife programme" being implemented by General Motors in 95 of its 130

subsidiaries. The president of the corporation, F. James McDonald, is an enthusiastic promoter of the programme, which has served to improve relations between company management and the trade unions as well as employee morale.

In a recent interview McDonald noted that the "Quality of worklife programme" had achieved a number of major successes and that it is possible to change employee attitudes. McDonald indicated that he was enthused by its potential (Witzenburg 1981).

The focus of the GM programme is on attitudinal change and the improvement of morale. If improved profits are the only objective pursued by quality groups, then the programmes are doomed to failure. A new respect for all employees can only be brought about by greater employee co-determination.

In view of urgent employee health promotion tasks it would appear necessary to subject these American developments to frank and careful assessment with an eye to developing European strategies. The different sociopolitical conditions in Europe require a number of significant "translations" and modifications ... "Most of the existing programmes are relatively isolated from the overall context of the corporation. The result is that coffee breaks, with the deleterious effect that excessive caffeine has upon the central nervous system and cardiopulmonary functions, exist side by side with jogging programmes; corporate dining rooms and vending machines supply excessive amounts of refined carbohydrates, undercutting both dietary and exercise programmes and so on" (Pelletier 1984).

As a result of contradictions of this kind many "partialized" and isolated programmes have been relatively ineffective and costly. They result in fewer savings and profits than would have been possible with complex, holistically oriented programmes aimed at carefully changing the overall organizational structure in different dimensions.

It must be guaranteed that participation in such programmes is voluntary and that there will be not repression or discrimination against those employees who do not take part in such a programme. Any health promotion programme ordered from the outside or from on high is almost doomed to failure, since two crucial elements are missing on the side of the persons concerned, i.e. individual interest and learning.

Movement: An Autidote to Stress

Regular physical exercise programmes are attracting increasing attention in public debate in health promotion. At the top and intermediate management levels, particularly in the United States, a genuine "fitness craze" has broken out. Activities of this kind are doubtless very meaningful, both from a physical standpoint and with regard to the promotion of relaxation. In the leisure-time sector this has manifested itself above all in the growing popularity of such activities as jogging and aerobics. Exercise programmes

designed to improve the supply of oxygen to body tissues, cardiopulmonary functions, various metabolic processes, etc. usually require investing a fair amount of time in sports activities. However, regular indulgence in physical exercise results in a considerable release of pent-up tensions and energies, enabling the body to reestablish physical and psychic equilibrium.

The planning of company-owned sports facilities or the organized use of public facilities by inhouse groups is a top priority in United States health-promotion programmes. Long-term sports activites are only possible in the framework of leisure-time activities. They do not provide an answer to the problem of how a damaging accumulation of tensions and unused energies can be prevented in the work process.

"Coffee breaks" are primarily meant to provide employees with an opportunity to get a bite to eat. They are not generally used as a means of bringing about significant relaxation. From a physiological standpoint a break would be necessary after eating to allow digestive processes to begin. Instead, the individual's strength is again fully mobilized for the work process. Under these conditions a meaningful utilization of the energy potential contained in the food eaten is not possible. It is more likely that a quick meal of carbohydrate-rich foods will be followed by a short phase of excessive energy and then by another phase of energy deficiency, e. g. reactive hypoglycaemia (Williams 1971). This may have a negative effect on mental and physical achievement, resulting in concentration problems and an increase in the risk of accidents. A double-stress situation can arise as a result of cumulative tensions and reactive hypoglycaemia.

The question needs to be answered as to whether other coffee-break arrangements that would make it possible to interrupt the work process at shorter and more flexible intervals might provide a significant contribution to health promotion. Given the considerable complexity of work organization in many companies, changes of this kind are difficult to implement and require intricate planning.

In view of the increasing occurrence of degenerative diseases of the muscular and skeletal systems, particularly chronic rheumatic ailments and spinal problems, considerable importance is attached in preventive medicine to a more conscious analysis of movements and the training of movements in the work process. Continuous one-sided use of the individual locomotor system causes local consequences in terms of wear and tear and general consequences in terms of postural and structural changes in the body as a whole (Barlow 1983; Feldenkrais 1949).

Any movement of any part of the body has consequences for other parts of the body. Any movement of the hands has an effect on the arms, shoulders, legs, spinal column, hips, etc. Anyone who spends most of his working time in a sitting position places a strain on his spinal column and influences thorax and diaphragm mobility and breathing.

General health promotion programmes need to focus on the overall organization of human movement. The training of movement and coordination is important. It makes a difference how I carry out a movement, how I lift a

heavy object or a person (e.g. in the case of nurses). If I work long hours at a typewriter or a computer terminal, it makes a difference whether or not I notice tensions in the shoulder and neck area, am able to loosen up or make use of other physical movements in order to stretch or relax may entire body at relatively frequent intervals, i.e. if work organization and the arrangement for breaks allow this.

How does a person react who sits at a computer terminal and suddenly discovers an error or has to make an important decision, i.e. experiences a stress situation? What "fight-or-flight" options are open to him? An intellectual response and minimal finger movement are the only actions called for and permitted in this situation. There is not opportunity to use the energies made available to the body. They cannot be eliminated by physical activity. The body's regulatory mechanisms are required to find other, often pathological forms of energy elimination or these energies and tensions accumulate.

The promotion of general physical exercise, the possibility of moving the body differently at relatively short intervals when work involves one-sided movements and the training of the perception of movement (e.g. the outstanding method developed by the Israeli physicist Feldenkrais) are important factors both with regard to reducing danger to health and with regard to promoting better health in the workplace. Working at full tilt every minute of the day does not help promote productivity. Indeed, it tends to reduce it. And, what is more important from our standpoint, organizing work in this way represents a considerable hazard to health.

Relaxation – But How?

Television commercials make myriad use of the stereotyped recommendation to "sit back and relax" before going on to praise, the virtues of some product. Whether in connection with consumer goods, entertainment, exciting events, alcohol or other drugs, relaxation has become a significant concept in the leisure-time industry. The latter seeks to satisfy the needs of people who are modern-day versions of the figure Charlie Chaplin portrayed in his film "Modern Times". They are locked into defined time and motion sequences, relatively helpless cogwheels in a large production or service machine, the overall structure of which the individual is hardly aware, let alone being able to help determine it. After completing schools and military service our latter-day "Modern Times" figures, normed as they are, function without serious appreciation or perception of their own roles.

Relaxation is first of all a mechanical concept, combined with the necessary act of decoupling, separating, detaching oneself from situations, forms of stress and habits that generate tension. The most important way of relaxing continues to be that of keeping the number of triggering factors for health-endangering chronic tensions (stress factors) as low as is humanly possible. However, stress is not generated only by objective factors. Subjec-

tive components also play a role. The subjective experience of tensions can be denied or repressed. It can accumulate and then manifest itself in the form of specific ailments. However, it can also be used to train and develop the individual's own perceptive abilities, which can then be used in a defensive role against overtension whenever needed. Joint resistance on the part of those affected is the basis for necessary external, organizational, structural, communicative, social or ecological changes.

The training of one's own perceptive abilities can be used to get to know oneself better, to study other options for subjective response and individual action, to avoid hypertension and to strive consciously for relaxation.

The difference between tension and relaxation is easy for everyone to understand. You can consciously tense a muscle but you cannot arbitrarily relax it, i.e. in response to an order. If you want to relax a muscle then you have to "let go" – you have to take an active role in initiating a passive process. Relaxation is not something that can be prescribed. That is to say not entirely. With the help of steadily rising alcohol consumption and tranquillizers people are succeeding in reducing tensions "on order" by paying the price of "non-controllability" for the affected individual who reacts slowly and apathetically, at best with detachment and disinterest (Schirovsky 1984).

A remark by Gerda Alexander might serve to lend more meaning to the concept of relaxation in the ongoing debate on health promotion. She pointed out the fact that relaxation does not imply a completely amorphous and slack inability to act, but rather finding one's way back to oneself, coming back into contact with oneself, the permitting and experiencing of a psychophysical "tone" appropriate to the situation (Alexander 1976).

From a psychophysiological standpoint relaxation is the quest for ways of enabling the body to reachieve a homeostatic equilibrium and a free flow of energy. The primary objective in this context is a return to the situation that existed prior to the occurrence of tension.

However, this is not everything. Although living systems characteristically seek homoeostasis, there is also the factor of *"heterostasis"*, the striving for new and unstable states, i.e. the process of becoming.

"Being well presupposes a certain measure of orderliness in the whole" (Jacobi 1983) and this whole represents an interactive play of forces between cognitive, autonomous and motoric processes in our body. Insights brought about by recent research, particularly in the field of neurophysiology, show that a close interrelationship exists between unconscious and, as such, autonomic processes, on the one hand, and cognitive processes accessible to learning and conscious action, on the other. It follows from this that considerable potential exists for the conscious influencing of body functions that were long thought to be autonomic. This has been backed up by research in the biofeedback area. Damage to these functions of the body is responsible for the majority of psychosomatic ailments. The concept of "increased self-control" takes on a positive meaning in this context. However, its uncritical use reflects the danger that, after the domination and subjugation of nature

in the outside world, there is a desire to control mechanistically the inner workings of human nature.

"The emphasis in occidental culture is on control of the somatic nervous system and cross-striate muscle tissue. This stands in strong contrast to Far Eastern practices which attach great importance to control of autonomic functions, including control over pain" (Birbaumer 1977). Relaxation can be taken as a metaphor for a reorientation in education, involving the development of the non-verbal contemplative and creative right hemisphere of the brain, alongside the analytic and linguistic dominance of the left hemisphere.

Educational models of this kind would be aimed at the promotion of a conscious perception of external stimuli and inner emotions. The goal of relaxation is to promote attention and interest as well as to sharpen the senses. Conscious admission and permission are the prerequisites for coming more into contact with oneself and for dealing in a more healthy manner with the polymorphic and constantly changing requirements of one's environment. The image behind the word "independence" is being able to stand on one's own feet without support from others. To be able to do this we must be more aware as to how to stand on our own feet and, at the same time, waste as little energy as possible. Heinrich Jacobi viewed the promotion of relaxation as the development of what we call "antenna behaviour". Behaviour of this kind signifies connecting with a task and with oneself in such a manner that we learn from the two. This learning process can help make it possible for us to find other meaningful approaches and modes of behaviour in everyday life and in the working world.

The inclusion of relaxation exercises in breaks would doubtless be a significant contribution to general health promotion. We know from China that the work forces of entire factories jointly engage in *T'ai Chi* exercises before beginning work in the morning or during breaks. *T'ai Chi* combines meditation and movement. A similar function would be fulfilled by relaxation exercises after work, i. e. that often quietening down and attempting to call to mind and become aware of the stress and experiences of the day in order to be able to detach oneself from them.

The specific technique that might be used (e. g. autogenic training, relaxation à la Jacobsen, yoga, *T'ai Chi*, meditation, and where the differences, advantages and disadvantages lie, cannot be discussed in detail here. This will depend largely on the subjective characteristics and preferences of those who use these techniques. Steady and persevering exercise without making conscious efforts and without expecting immediate success are general prerequisites for the effectiveness of all the different techniques.

In a way similar to what Birbaumer describes for therapies, the following potential advantages of relaxation exercises might produce a learning effect that would have a positive influence on health promotion, i. e. modification of heightened autonomic excitement, reaction stereotypes, self-perception, self-control, disturbance-specific attitudes, as well as social interactions (verbal and non-verbal) (Birbaumer 1977).

IV Approaches to Health Promotion at the Workplace

Introductory Remarks

Traditional activities to promote health in the workplace are concerned above all with remedying shortcomings in care, with the more efficient organization of occupational health centres and with the structural context of health care for workers through company physicians.

Although a theoretical outline of the future occupational health promotion policy can be given, it must be admitted that occupational practice still needs much development, particularly as the necessary awareness must, in many cases, first be promoted in experts and workers.

Examples of projects as well as suggestions for the design of programmes make it clear that the key features of the health promotion policy (holistic view, socioecological approach, positive concept of health, self-organization of the work situation) have so far been identified only in certain areas.

Workers are still too often made the subject of medical studies, lectures and behavioural norms. Also, the approach to disease causation in occupational medicine is still shaped unduly by a single-dimension, cause-effect concept. It is necessary to go beyond exclusively medically/scientifically oriented approaches, which, for instance, are reflected in the concept of specific risk factors and generally lead to the adoption of preventive measures directed only to the elimination of specific risk factors or hazards.

Holistic and socioecological models of health promotion in the workplace should show the links between the different general stressors, the specific reaction patterns of individuals, their stress management behaviour and their life situation.

Experiences of Success

M. Weinstein

Approaches to lifestyle change in the working world range from policy and legislation affecting society as a whole to individual behavioral modification programs at the worksite (Weinstein 1985). Examples of these approaches are given below:

1. Legislative policy
   a) Norwegian industrial democracy policies (Emery and Thorsrund 1976; Gardell and Johansson 1981)
   b) Quality of working life policies (Trist 1981)
   c) United States objectives for the nation (US DHEW 1979)
2. Community health education (Kickbusch 1981)
3. Organizational development
   a) "Excellence" programs (Peters and Waterman 1982)
   b) Corporate cultural change (Deal and Kennedy 1982)
4. Occupational safety and health
   (Levi 1978; Cox and McKay 1981)
5. Worksite wellness programs
   a) Control Data, Johnson and Johnson
   (Naditch 1981; Fielding 1984)
   b) Health risk appraisal – risk factor reduction (Milsum 1984)

A Dynamic Interdependence

Some approaches to lifestyle change in the workplace directly assault personal health habits, such as company-wide bans on cigarette smoking or incentive programs that encourage exercise (Fielding 1984). Others are indirect, such as policies that encourage and reward employee participation in decisions that directly affect them, especially with regard to work scheduling (Trist 1981).

Historically, at least three different domains have been concerned with health in the workplace: occupational health and safety, workplace wellness programs, and quality of working life. These domains are converging on a common paradigm, which views the worker and his work in dynamic interdependence within an ecological framework (Weinstein1985).

In general, each field is extending its breadth of interest. Systems approaches like organization development are extending their traditional

focus on team building and group performance to include stress management; individually focused occupational health and employee assistance programs are discovering the need for primary and secondary prevention efforts through education and training.

In the United States, insurance companies are becoming a major force in the lifestyle arena. Their interest, of course, is in reducing the cost of sickness claims. Thus, Blue Shield offers a Stay Well Plan that annually returns a portion of unused benefits to the policy holders as an incentive to reduce unnecessary medical utilization. It also provides insurees with consumer guides to medical care and presents periodic educational updates on seasonal medical conditions to employees. Related projects are being offered in the United States through health maintenance organizations and hospitals. The Midpeninsula Health Program near San Francisco, for example, provides extensive health education on self-care and lifestyle change to its subscribers as a way of both improving health and reducing costs. A recent study of 300 participant families versus a control sample in the state of Ohio found significant reduction in health service utilization among the experimental group relative to control.

In an invited address to the Beyond Health Care conference in Toronto in 1984, Fred Emery pointed out that the healthy workplace is one that fosters a feeling of dignity and pride, while an unhealthy workplace fosters shame and humiliation. Emery would also make "Health Impact Statements" a requirement for any new business proposal.

In 1976, Norway revised its Work Environment Law covering occupational health and safety. Article 12 of that law gives workers the right to take complaints to a Labor Court whenever they feel they were being subjected to indignities in the workplace. To date, only two cases have been raised for judicial decision.

Finally, a word about lifestyles and health promotion in the nonworking world. High rates of *unemployment* obviously decrease the availability of employees for worksite health promotion programs. Studies indicate, however, that unemployed persons are at high risk for health problems, particularly where the economic consequences of their unemployment are severe and the individual is unable to structure his time effectively (Kirsh 1983).

While focusing on the working world, it is important that we do not ignore the needs of people who were once part of it and who, as a result of unemployment or retirement, have fewer resources with which to pursue healthier styles of living (Moss and Lawton 1982; Roadburg 1985).

Experiences of Success

Health promotion and lifestyle change programs are an expanding feature of the corporate world. Are these programs effective? Are they worth the cost?

The evaluative literature on workplace health promotion programs is growing and, for the most part, positive (Weinstein 1983; Fielding 1984). According to a summary of results released by the Metropolitan Life Insurance Company in the Unites States:

1. Workplace *high-blood-pressure control* programs are effective in controlling employees' hypertension. (Community high blood pressure control rates are currently around 30% while control rates at Westinghouse Electric Corporation and the Universities of Maryland and Michigan range from 68% to 98%.)
2. *Smoking cessation* programs at the work site have shown impressive results. For example, the Owen Corning Fiberglass Technical Center has showed a drop from a 70% to a 12% smoking rate; Upjohn Company has achieved a 40% quit rate; Metropolitan Life Insurance Company achieved a rate of 35% off smoking for a year and an estimated savings of US $ 345 for each ex-smoker.
3. *Cholesterol/weight reduction* programs at Metropolitan Life achieved a 10% drop in the cholesterol level of 680 participants and an average 5-kg weight loss for 130 participants.
4. A *fitness program* at Metropolitan's Canadian office resulted in a reduction in sick days claimed annually for 100 participants (4.8 sick days for participants and 6.2 days absent for nonparticipants), although one must be cautious in cases where selection biases may account for the results.

Two of the best-known health promotion programs in the Unites States are Control Data's, "Stay well Program" and Johnson and Johnson's "Live for Life". I will briefly review some of the basic omponents of these programs.

In order for any health promotion program to succeed, it needs the joint support of the management, the employees, and the unions. No program that I know of has ever succeeded in the long run without that support. Therefore, it is very important to establish strong contacts at the very top levels of the organization and with the senior union leaders.

Typically, a health promotion program in the United States and Canada includes, first, a health screening component, often computerized, which allows employees to complete a brief questionnaire that yields information on their risk factors and then to discuss with someone the meaning of these results. Risk factors detected often include nutrition, fitness, stress management, and smoking. These checkups may be in addition to regular physical examinations or hypertension screening programs or may be tacked on to occupational health and safety programs. All these activities take place in company time.

The second characteristic is that classes are offered to individuals who score high on certain risk factors. Participation is voluntary. In the case of Control Data, classes can be taken in groups or on a self-help basis using programmed instruction on a computer. Managers tend to avoid group situations and prefer the computer. But everybody has the choice. Programs

are also offered to families. So far, 25 000 of Control Data's employees have been covered by these programs. This is not just an individual risk factor approach. There is an opportunity for the work group itself to change the environment, i.e., to redesign the physical work space, improve the food in cafeterias, and make suggestions for work organization.

John J. Creedon, President and Chief Executive Officer of Metropolitan Life, has suggested that corporate policy makers support health promotion programs, encourage employee self-care, and reach out to the community to encourage similar commitments. Despite these claims of success, one cannot conclude that a good health promotion program that focuses upon individual employees is a substitute for good management. Indeed, without the commitment and continued support of top management, such programs will fail to fulfill their expectations, lowering staff morale (for an excellent discussion of these issues see Brennan 1981).

What About the "Work Style"?

There is a significant gap at present between health promotion industry claims and the solid scientific data to support the validity of its "products," e.g., weight control, exercise programs, stress management (Kasl 1986). Indeed, I suspect that, given the need for programs in the face of market demand, and the need to take action, either real or perceived, in the working world, this will always be the case. Indeed, why should the research gap be any narrower in relation to health promotion than it has been in relation to previous innovations in medicine and public health, be it computer tomography, scanners, vaccination, pasteurization, or coronary bypass surgery?

Approaches to lifestyle change in the work place assume that lifestyles can be defined and that they affect health. Most, however, focus upon only the health style, not on the *workstyle*. That is, most focus upon teaching individuals and groups how to eat better, smoke and drink less, manage stress, get and keep fit, but seldom pay much attention to the actual job itself. Some health promotion efforts do go beyond individual skills to encourage groups of employees to modify their work environments in relation to risk exposures. For example, employees in Control Data's Staywell programs have worked together to get their cafeterias to offer more nutritious foods and to institute smoking regulations. In other settings, employees have gotten together to hold fitness classes, and have assumed greater and greater responsibility for becoming group leaders and for scheduling classes.

In fact, the technology is now in place to assess individual (or group) risk factor levels. This technology can also deliver risk factor reduction/lifestyle education/health promotion programs in an interactive mode using laser and video disks; tailor programs to individual needs; alter the program's content on the basis of performance; evaluate program costs and effectiveness; and conduct systematic follow-up. A colleague in Vancouver is involved in

developing the software for this type of product; another has formed a company to develop and distribute a series of products designed to help people monitor and change health risk behaviors ranging from excessive exposure to the sun's ultraviolet rays to teaching women how to conduct effective breast self-examinations. Yet, in most high technology programs the job itself is ignored.

A Broad Health Approach Is More Effective

A recent study of corporate health promotion programs in the United States pointed to several important trends which are discussed by Pelletier (see following paper). To me, it is significant that:

- Physical fitness programs, which were the initial focus of health promotion, are decreasing in emphasis and stress management programs are increasing at a fourfold rate per year
- There is an increasing tendency to reward health practices by employees with benefits like lower medical premiums, particularly in the United States, and special bonuses and awards
- Experimental groups show better results than controls in terms of decreased smoking, decreased stress, weight loss, and increased morale

But, most importantly, a multiple-risk factor approach has been proved to be less expensive and more cost-effective than a single-factor approach; programs that combine nutrition, stress management, and other factors are more effective than those that tackle only one health problem.

A Parcourse for Health Promotion Programs in the Workplace

K. R. Pelletier

Medical costs in the United States now stand at over US $1 billion/day and are rising. Estimates are that these costs will amount to over US$1 trillion by 1990. Underlying these figures are a number of equally astounding factors which may make the US$1 trillion estimate conservative. First of all, these figures represent the medical costs of treating diseases which are referred to as the chronic "afflictions of civilization" or "the modern plagues" including heart disease, cancer, lung diseases, and upwards of 90% of all disability and death.

As people grow older these diseases increase, and this is of particular concern in the United States, where the number of people over age 65 will more than double in the next 50 years and the number of people over 85 will triple in the next decade. If medical costs are excessive now, the graying of America will create an impossible cul-de-sac in the near future. Secondly, these costs are medical costs per se since less than 5% of current expenditures are in health promotion. In fact, the description "health care system" is a misnomer since the system actually functions as a "disease management industry", which treats conditions after they have occurred. Finally, there is no doubt that the afflictions of civilization can be substantially reduced or perhaps eliminated through health promotion programs since the incidence of these chronic diseases is far more affected by lifestyles, nutrition, stress, and the environment than by medical intervention (Goldberg 1978; Health Works Northwest, 1984; McLean 1979; O'Donnell and Ainsworth 1984; Parkinson et al. 1982; Pascale and Athos 1981, Pelletier 1977, 1979, 1984; Shostak 1980; Warshaw 1979). Given these factors, it makes little sense for countries to allocate a disproportionate share of their resources to treat diseases which can be prevented at less cost and human suffering.

Italian physician Bernardino Ramazzini, considered the founder of occupational medicine, once observed, "Tis a sordid profit that's accompanied by the destruction of health. Many an artisan has looked at this craft as a means to support life and raise a family, but all he has got from it is some deadly disease." That was written in 1705. More recently, individual concerns over personal health have grown into a significant cultural and economic influence, with a remarkable increase in health promotion programs in the workplace. Clearly, the greatest opportunity for implementing a true health care system rests with business and its unique relationship with its employees.

Research on 200 Corporate Health Promotion Programs in the United States

Despite the growth in the number of corporate health promotion programs, from less than 20 in the late seventies to over 500 at the present time, there have been virtually no efforts to evaluate the efficacy of such programs or to chart their future direction. To research this trend, three national foundations funded a 3-year (1981–1983) study of over 200 corporate health promotion programs. It was undertaken by the Division of General Internal Medicine of the University of California School of Medicine in San Francisco, with the author as director and principal investigator. The study was designed in cooperation with Willis Goldbeck, President of the Washington Business Group on Health, and Jonathan E. Fielding, of UCLA and President of US Corporate Health Management, to answer several basic questions: (1) what companies were doing for the health promotion programs; (2) were there any data regarding the effectiveness of health promotion programs; (3) how much did the programs cost and what were the sources of funding; and (4) what were the most likely areas for health promotion in the decade ahead?

Participants in the study included Xerox, IBM, Johnson and Johnson, General Mills, Pepsico, General Dynamics, Wells Fargo Bank and other intermediate size programs, such as the excellent one of Scherer Brothers Lumber Company in Minneapolis, and the innovative Mendocino County school system in northern California. Based on the study, several important general findings are clear:

1. There are approximately 125 studies which purport to demonstrate "cost-effectiveness" but only half are valid in design or data analysis. At present, "cost-effective" studies are limited but indications are that programs do save money, decrease absenteeism, reduce claims and disabilities, as well as serve as elements of recruitment and overall employee morale.
2. Limited or simple factor programs (i.e. exercise or hypertension screening or any other single factor approach) are more expensive and less effective than multifactor or holistic health promotion programs.
3. Virtually all small and intermediate-size companies, as well as a growing number of large ones, are oriented more toward sharing existing resources (health clubs, YMCAs, spas, or schools) than toward building facilities and hiring in-house staff.
4. Sources that initiated and run health promotion programs are (a) personnel department, 35%; (b) top management, 20%; (c) safety group, 18%; (d) medical department, 14%; (e) health benefits, 7.4%; (f) employees, 1.3%; and (g) unions, 0.2%.
5. Major areas in which programs are being developed in the next decade are (a) stress management, which is *four times* greater than the second closest area; (b) physical fitness, which was first a few years ago but

continues to decline as a major emphasis; (c) hypertension screening and behavioral management; (d) alcohol and substance abuse; (e) smoking; (f) nutrition and weight control; (g) cancer screening; and (h) programs specific to a particular workplace such as "backsaver", cardiopulmonary resuscitation, or accident prevention.

Overall there is a significant trend toward the recognition that employees need encouragement, education, and "health incentives" ranging from pay increases to "well leave" days if sick leave is not used. Also, there is a trend toward copayment plans and weighting medical deductions according to the presence or absence of known risk factors such as smoking, so that lower-risk employees pay out less in medical deductions. Although there are precendents for this practice in existing insurance companies, it represents a controversial but rapidly emerging trend. Healthy individuals will be rewarded. Those who continue to indulge in hazardous practices, despite programs and incentives to facilitate change, will be paying more of their higher medical bills.

These trends represent a fusion between health promotion and more judicious use of medical care by individuals and organizations. Health promotion programs are the links between preventing disease and the resulting costs which show up in employee benefits and in the cost of every product. Perhaps a unique note of optimism resides in the fact that health promotion efforts can be linked directly to both human and economic benefits. Results of this study were published in the book *Healthy People in Unhealthy Places: Stress and Fitness at Work* (Pelletier 1984), which includes the background information for the study, detailed results, appendices of resources and participants, as well as profiles of model programs ranging from Xerox to Scherer Brothers. Collection of data from other companies is an ongoing project.

At present we are taking the next step toward refining the questionnaire, continuing data collection, expanding our data base to include new programs, and acting as consultants to corporations and organizations interested in developing and improving their health promotion programs. One long-term goal is the creation of a Center for Workplace Health Promotion at the University of California School of Medicine, supported by two of the funding foundations. Such a center would provide individual employees, work groups, and employers with an objective basis for planning and implementation. While the primary responsibility for optimum health and longevity resides in the voluntary efforts of each individual, it is equally important to emphasize the environmental, social, economic, and workplace determinants of health as we move toward the realization of healthy people in healthy places.

Three Projects Address Deficiencies

Throughout the course of the study, it became increasingly clear that there were major obstacles to the development and evaluation of demonstrably effective health promotion programs. These major deficiencies are: (1) there was no ongoing interaction between corporate providers of health promotion programs and a reliable source of objective information on what was the state of the art in program development; (2) needs assessments, if used at all, were minimal and nonstandardized so that programs were developed on perceived rather than actual needs and data were not comparable between programs; and (3) there was no systematic planning guide for the development and evaluation of programs.

To address these issues, the following steps have been taken:

1. A 3-year program is now in progress at the University of California School of Medicine involving 13 corporations with headquarters in the San Francisco Bay Area; this program will be described below.
2. Health Works Northwest of the Puget Sound Health Systems Agency in Seattle, Washington, has designed an excellent *Health Promotion Needs Assessment Manual* (1984); developed under a grant, it is a standardized assessment created in conjunction with employers in the Seattle area and is highly recommended as an integral part of the "Parcourse" outlined in this paper.
3. Since there was no adequate planning guide and since program managers had little reading time, we decided to create a brief, practical planning guide. To make it as accessible as possible, the author met with Richard Cunningham, President of a company which offers an 18-station exercise course.

Based on those meetings, the author secured permission to use this 18-station format as a guide checklist which enumerates the essential stages characteristic of successful health promotion programs. For example, one planning stage or "station" is "VII. Finances," which lists a minimum of 15 ways in which health promotion programs can be financed. Perhaps a program manager had only thought of five or six possible financing approaches so the station can assist the manager in seeing other possibilities. This stepwise checklist of critical planning stations is the essence of the Parcourse for health promotion outlined in this paper.

Since the Parcourse is an essential element in the ongoing program at the University of California in San Francisco, it is helpful briefly to describe the program before detailing the Parcourse itself. The Behavioral Medicine Unit of the Division of General Internal Medicine at the School of Medicine has received funding for a 3-year development and assessment program in health promotion in the workplace. Under the direction of Albert R. Martin and the author, the research project involves a unique collaboration between the Department of Medicine and 13 San Francisco-based corporations.

This project will proceed over 3 years and began on 1 January 1985:

Year I: Develop a coalition of University and corporate representatives through a series of "needs assessment" and structured planning programs over the 1st year.

Year II: Implement and evaluate mutually agreed upon programs in health promotion with the criteria that these be workable in any business or organizational environment and that results be applicable on a national basis on a self-care model emphasizing employee leadership.

Year III: Conduct full-scale, longitudinal studies. Emphasis will continue to be on the development and evaluation of practical programs in health promotion for business, industry, and other organizations including government and school systems.

Overall, this program is a pragmatic extension of my previous study of over 200 corporate health promotion programs to determine the most promising areas of research. Among the areas to be considered in the present study are: behavioral-medical management of hypertension, dietary and nutritional counselling, stress management, toxic exposure regulation, and smoking cessation.

Among the companies participating in the program are: Bank of America, Safeway, Levi-Strauss, McKesson Corporation, Crown Zellerbach, Pacific Telesis, Shaklee Corporation, Pactific Gas and Electric (PG&E), Bechtel, Wells Fargo Bank, Chevron, and Hewlett-Packard. Results of this 3-year project will be pragmatically to determine which health promotion programs can work most effectively in the business environment and *how* such programs can be effectively developed in a practical, cost-effective manner. Finally, the results of this 3-year project will be to disseminate this information to business and other national organizations. Once initiated, such programs will be self-sustaining as well as a source of financial support for an ongoing program of research and evaluation to improve the delivery and efficacy of health promotion programs.

A Parcourse for Health Promotion

This Parcourse has been a valuable planning tool in the development of effective, successful, health promotion programs at maximal dollar effectiveness. It is presented here as a practical guide consisting of 18 planning stages or "stations", with each station containing a checklist of guidelines used in successful programs. The 18 stations are as follows:

I. Starting Point Health Promotion Program (HPP)
II. Organizational Factors and Corporate Culture
III. Top Management
IV. Middle Management
V. Program Objectives and Needs Assessment

VI. Cost Containment Strategies
VII. Finances
VIII. Administration and Management
IX. Health Promotion Program Components
X. Evaluation and Timing
XI. Methods and Materials
XII. Eligibility
XIII. Facilities and Resources
XIV. Implementation
XV. Successful Health Promotion Program
XVI. Incentives
XVII. Benefits to Employees
XVIII. Benefits to Employers

I. Starting Point

Talk with organizations and companies which already have health promotion programs (HPPs). Ask about employee participation, costs, results, and areas they would change if they had to do it over. Analyze current medical and insurance expenditure through reviewing records. Determine present and projected medical care patterns of expenditure. Identify specific high-cost areas. Determine which (if any) conditions might be successfully impacted by HPPs. Discriminate which conditions cannot be impacted by health promotion efforts.

Realistically assess if the organization should start to develop and operate an HPP. Specify the company's goals and motives for such a program. Anticipate that some administrators are unconvinced of HPP benefits either to employer or employee. Specify the preliminary key factors that need to be considered during the actual HPP design process. Seek limited consultations. Recognize the concern over "regulation" and that HPP programs may enable outside individuals or organizations to dictate to business what they can or cannot do for themselves or their employees. Be as specific as possible in addressing all of these concerns in a manner appropriate to your unique workplace environment.

Reasons To Start

1. Limit high costs of medical care
2. Implement occupational safety and health regulations
3. Improve public image of corporation
4. Make corporation more desirable to employees
5. Interest by a particular company executive
6. High incidence of certain health problems in company
7. Premature loss of key executive
8. Improving overall employee health
9. As a competitive edge with comparable corporations
10. For the health benefit of key executives

11. Side effects
12. Reduce premature coronary artery and heart disease
13. Improve employee morale
14. Product line reinforcement (e.g., a "healthy" product)
15. Reduction or elimination of toxic substance exposure
16. Reduction of white collar environmental problems (i.e., noise, poor lighting, lack of privacy, air quality, or proper use of video terminals)
17. Reduce accidents on the job
18. Reduce employee turnover
19. Limit disability claims and lost time

Advantages of Workplace Health Promotion Programs

1. Lower costs compared with medical facilities
2. Access to people and time
3. Stability of the working population
4. Willingness of the working population to participate in occupationally sponsored programs
5. Existence of management and organizational structures
6. Ability to conduct several interventions simultaneously
7. Strong social support networks

See details for employees (station XVII) and employers (station XVIII).

II. Organizational Factors

Determine stated or operational philosophy of the organization regarding employer and employee health policies and practices. Articulate the "corporate culture" and its implications for any HPP development. Seek board endorsement and support.

Program design needs to be consistent to achieve the relevant organizational goals. Initiate, modify, and expand the planning of the HPP at the appropriate time in the life cycle and operational cycle of the organization. Minimize adverse effects of business operations.

Orientation Decisions

1. Examine corporate culture areas such as physical environment, policies, and social attitudes as they impact on health areas
2. Consider policy changes such as instituting no-smoking policies, instructing managers to be involved in and promote HPP efforts, or set policy of flexible work schedules to permit employee participation during work hours or not
3. See where program will fit in the organization structure
4. How it will be linked to other operating departments
5. How it will be financed
6. How much outside vendors will be used
7. Operating policies for the program
8. Who will be eligible to participate in the program

9. Clarify the specific degree and focus of support required
10. Measure or estimate the current level of support
11. Determine the best method to develop the additional support required
12. Predict the major obstacles and resistances factor to overcome in developing the program
13. Select the most likely departments and individuals to be involved in developing the program
14. Assess role of changes in physical environmental such as hazard reduction, toxic exposure elimination, noise abatement, removing cigarette and junk food vending machines, or constructing HPP facilities such as a shower room or a relaxation/quiet area
15. Consider the various combinations of community and organization resources that can be used to address these areas of concern

III. Top Management

Support at all levels is important, but support from top management is essential for the program to be most effective. Top management needs to be committed, participating in and selling the program. Demonstrate top-level commitment to the success of the program. If your company's executives are enthusiastic promoters of the program, middle management and hourly employees will usually follow their example. Involve members of the top management who are currently involved in HPP activities either personally or within the organization.

Role of Top Management

1. Present a case for adequate funding
2. Develop effective supervision of the program director and personnel
3. Promote the program through both formal and informal indications of support on an ongoing basis
4. Provide financial support for the program
5. Provide administrative assistance through facility maintenance, financial management, access to communication channels such as newsletters, and active in program supervision
6. Encourage employees' participation in the programs by flex-time, time off from work, group activities such as "health runs," or other methods to improve access
7. Work closely with personnel, benefits, medical departments, or other groups which may already be involved in HPP activities
8. Act as role model by participating in the program

Support Should Be Measured at Three Levels

1. Top management
2. Middle management
3. General employee base

IV. Middle Management

Middle managers are the final gatekeepers to the employees' participation in the program. Determine how middle managers can facilitate, encourage, and monitor employee participation in the program. Middle management is literally in the middle between top administration which may approve program participation at the same time they are demanding increased productivity or other specific outcomes.

Program development can have a major impact on middle management operationally linked to the program: how does it affect managers responsible for benefits, facilities, training, and employee health? New programs may increase the power base, threaten their turf, increase their workload, or expose the quality of their work.

Involve all levels of employees in planning and implementation as soon as possible. Assess if employees want HPP activites and which ones. What other areas of employee benefits are of greater importance to them? Be certain that general employees would participate in the HPP if they were offered.

Potential Problem Areas

1. Monitor the effects of the HPP on: team building, trust levels, communication, productivity, responsibility, cooperation, competition, and power
2. Budgetary constraints or program too costly
3. Administrators waver in their commitment to programs over time
4. Red tape can obstruct HPP since some businesses require layers of decision making in order to provide ongoing involvement in program
5. Organization does not believe such efforts will save money
6. Lack of top management clarity on how all members of the organization are to support the program
7. Unions are resistant to HPP and focus on traditional medical plans
8. Work force is highly decentralized or dispersed
9. High employee turnover
10. Ambiguity on the commitment by the organization to support long-term positive changes, both systemic and the HPP per se
11. Unanticipated labor and management issues which might influence the outcome of the program need to be addressed on an ongoing basis
12. Employees do not want program or would not participate in significant numbers in any case
13. Other: specify

V. Program Objectives and Needs Assessment

Most HPP objectives can be categorized under two headings: (1) management objectives and (2) health objectives. Management objectives may include reductions in health care costs, enhanced image, or improved productivity (see station XVIII). Health objectives address the level and areas

of health change desired such as stress management (see station XVII). Management and health change objectives are not always achieved through the same program. Design and the relative priority of the two will certainly impact the focus of the program.

Design the HPP effort based upon both individual and organizational needs, goals, and tasks. Finalize a comprehensive needs assessment of the working population. People to be affected by the program need to have a significant role in planning and implementation. Be sure program goals are realistic and attainable.

Management of Program Objectives

1. Increasing productivity
2. Reducing absenteeism
3. Reducing illness
4. Lowering medical costs
5. Lowering health insurance costs
6. Improving delivery of health care
7. Other: specify

Planning Scenario

1. Top management states HPP goals and available financial and organizational resource; constraints and limits are clearly stated.
2. Program addresses specific areas discovered through the needs assessment and reflects consensus of employees at all appropriate levels (Health Works Northwest 1984).
3. Program elements (see station IX) are selected specifically to achieve the stated program goals.
4. Form a design group comprising employees from all levels who will be affected by the program.
5. A procedure is stated for input from employees not included in the original design group.
6. Consultants are retained for specific program areas and limited overall guidance to the design group.
7. Conduct a feasibility study or pilot project.
8. Insure confidentiality of all employees (whether participants or not).
9. Eliminate "blame the victim" from the HPP pilot; encourage employees to take responsible, informed role for their own health while recognizing the limits of individual efforts.
10. Evaluate pilot program with frequent feedback to top management.
11. Refine proposed program and outline specific HPP content, timetable, and evaluations for the actual HPP to be implemented.

IV. Cost Containment Strategies

New HPP programs do not necessarily mean more money expended. Examine existing medical and insurance costs and benefits. Seek alternative cover-

ages. Often it is possible to reallocate funds from *medical* costs into *health* programs.

1. New medical plans
2. Preferred Provider Programs (PPOs)
3. Independent Practice Association
4. Medical Claims Review
5. Outpatient medical care (e.g., 1-day surgery)
6. Labor, hospital, and consumer relations
7. Self-insured programs
8. Serve on hospital boards
9. Build health planning agencies
10. Health benefits to unions
11. Increasing employee contributions to medical benefits
12. Financial rewards to employees for staying healthy
13. Medical self-care programs (e.g., cardiopulmonary resuscitation – CPR)
14. Extended care facilities/hospice
15. Second opinion programs
16. Inappropriate utilization reviews
17. Home health care
18. Psychological and stress management programs
19. Review Professional Services Organization (PSROs)
20. Health Systems Agencies (HSAs)
21. Health Maintenance Organization (HMOs)
22. Hospital admission review program
23. Medical expense accounts
24. Ongoing analysis of medical claims data
25. Membership in medical cost containment coalition
26. Other: specify

VII. Finances

Who will pay for the program? Employer should not assume that all financial support for the program must come directly from the company's general operating fund but should be prepared to support the program if other sources are not secured. The primary source of support for the program should eventually come from the savings they produce.

Programs need a financial basis in order to assure effectiveness. Set a budget. Include capital expenses, incidental expenses, overhead, and personnel costs for the first year. Keep financial guidelines realistic. An incremental approach might be better than on overly ambitious new program at the start.

Funding Sources

1. Employer pays total cost
2. Employer and employee share costs in a copayment model

3. Direct contribution from employer
4. Direct cash support from, participants (memberships or fee, for service)
5. Cafeteria style benefits (employees choose from an array based on age and perceived needs)
6. Underwriting from grants or fund raising
7. Saving accrued from medical care costs
8. Union dues
9. Insurance company
10. Community health group
11. University research and demonstration unit
12. Employees themselves
13. Payroll deductions
14. Other: specify

Program Overhead and Operating Expenses

1. Time off from work
2. Ongoing management supervision
3. Developing effective programs requires both time and money, even if the money required correlates to staff time in planning
4. Program design
5. Facility design
6. Facility construction
7. Renovation costs – employers have no budget for modifying the work environment either to rid it of hazards or to build fitness and showering facilities
8. Equipment purchase
9. Additional programs
10. Program improvement
11. Space rental
12. Staff
13. Supplies
14. Maintenance
15. Utilities
16. Other: specify

VIII. Administration and Management

The department responsible for the HPP should have a positive image. Pair the program with the department most closely responsible for achieving the organization goal the program is designed to achieve. Other departments such as communications, public relations, and plant management are important to the ongoing operations of the program and should also be linked to the program. Participation of the employees in all departments is critical to the growth and survival of the program. Linkages need to be established to line managers and directly to employee groups. The manager supervising

the program director should be well respected, supportive of the concept, a good role model, and have sufficient time to provide strong support for the program during its development.

Determine Administrative Responsibility for HPP

1. Key executive
2. Department of occupational health
3. Special unit: specify
4. Someone in company's general administration: specify
5. Benefits or personnel department
6. Special interest group, i.e., preretirement programs
7. Employee assistance program
8. Safety group
9. Medical department
10. Director of corporate health and/or health promotion
11. Director of Human Resources Development (HRD)
12. Other: specify

Most Programs Managed by

1. Top management
   - Independent department
   - Benefits management
   - Education and training
   - Employee health or medical department
3. Facilities management
4. Employee association

Characteristics of Successful HPP Management

1. Adequate financial resources
2. Capable program director
3. Supportive middle management
4. Presence of good role models
5. Appropriate allocation of time and money to program components
6. Commitment to slow, deliberate developmental programs
7. Commitment to evaluation
8. Commitment to comprehensive programming
9. Access to top decision makers in program development
10. Ongoing involvement of participants in program operations
11. Coordination of programs with other organizational entities
12. Affiliation with successful programs in other businesses
13. Adaptation to changing needs and circumstances
14. Visibility and publicity

IX. Health Promotion Program Components

Develop HPPs that will have the greatest impact on health care costs. These include: stress management, alcohol control, smoking cessation, hypertension control, and prevention of lower back problems. Be certain that any program has addressed the personal, occupational, familial, social, and environmental determinants of health. Comprehensive or holistic health programs which are well integrated throughout the organization are less costly and more effective than single-component, panacea programs. Determine whether or not a prepackaged program will be used or a special one developed for the unique organizational circumstances.

Be aware of professional "turf" issues. Professional groups compete among themselves as to who is best qualified to plan and implement programs: psychologists, nurses, social workers, physicians, benefits personnel, public relations personnel, health educators, and physiologists. No one person or group has "the" answer. Experts give conflicting advice on how to maximize health and confusion abounds. Recommendations of sound health behavior vary from expert to expert. Be demanding, have their expertise fit your needs, not the other way around.

Program Components

1. General health education
2. Smoking cessation training
3. Nutrition counseling
4. Weight control program
5. Stress management
6. Mental health counseling
7. Physical fitness training
8. General physical exams or multiphasic testing
9. Health screening for specific disorders
10. Prevention of specific diseases
11. Immunization
12. Health hazard appraisal
13. Occupational safety and health
14. Hypertension screening
15. Off-job safety for employee and dependents
16. Low back problems
17. Physical rehabilitation for long-term disability
18. Drug/alcohol abuse programs
19. Cancer risk education
20. Cardiopulmonary resuscitation (CPR) choke saver
21. Improvement of functional status *despite* illness (asthma, low back disability, heart disease, chronic pain)
22. Personal finances
23. Personal computer use
24. Medical self-care such as breast and testicular examinations or child care

25. Appropriate use of medical care system to limit excess, unwarranted utilization
26. Seat belt use and child personal safety seats (both company and personal car)
27. Vision screening or intraocular pressure
28. Recreational, health programs in soccer, softball, bowling, or aerobic dancing
29. "Parcourse," gym, or exercise facility
30. Other: specify

X. Health Promotion Program: Evaluation and Timing

Design an evaluation and program assessment plan. Scientific evidence and data of benefit to employers and employees will facilitate program adoption. Measuring the outcome of program objectives is necessary to justify program benefits to employers and employees. Criteria and expected standards of success are needed to assist program developers in determining program worth.

Develop methods to track the impact of the program on health care costs. Create a realistic timetable. Determine when employees will be given time to participate. Evaluate the program periodically and change it if it is not meeting the company's needs. Critical reassessment of the programs insures that the HPP is reflecting the priorities of employees and management.

The biggest obstacle to effective HPPs is the "quick results syndrome." Both employers and employees tend to expect dramatic program results in a short time. This is not realistic.

Stepped Outcome Measures

1. *Short-term (3–6 months)*
   - Primary value is to individual participants
   - Physiological measures (i.e., reduced blood pressure, weight loss, stopped smoking, improved diet and nutrition)
   - Coronary risk factor score reduced
   - Health hazard appraisal (lifestyle questionnaire)
   - Testimonials and case studies
     Muscle tone and flexibility increased
2. *Intermediate (1 year)*
   - Primary value is to the management of the department level involved
   - Association of HPP to corporate products especially health products
   - Absenteeism level decreased
   - Improved recruitment of key personnel
   - Attitude and morale of work group increased
   - Self-confidence and self-image of individuals enhanced
   - Improved "functional status" of employees who have disorders such as low back pain, asthma, or other conditions (not disease cure)
   - Plus, longer-termed effect upon the short-term measures above

3. *Long-term (minimum 3–5 years)*
   - Primary value to corporate management (long enough to impact upon statistics of health costs)
   - Reduced claims and workman's compensation
   - Cost-benefit analysis
   - Assessment of cost containment measures
   - Productivity increased
   - Organizational effectiveness
   - Decreased medical and/or life insurance premiums
   - Integration into and influence upon corporate culture

See stations XVII and XVIII for other outcome measures to be considered under this stepped outcome model.

It Is Not Realistic To:

1. Expect no relapses to prior poor health behaviors
2. Reverse significantly deteriorated health conditions in less than 5 years
3. Expect major improvement in health conditions without significant and sustained effort
4. See major reductions in medical care expenditures within a few years
5. Expect absenteeism or tardiness rates to drop off
6. Evidence increased job output from all participants in the program
7. Anticipate 100% participation and no dropouts

XI. Methods and Materials

There is no need to "reinvent the wheel." Numerous state agencies, national associations, low-cost private organizations, and other corporations have created readily available health promotion materials.

Methods and Materials Used in These Programs

1. Posters, newsletters, flyers
2. Leaflets or pay envelope inserts
3. Lectures
4. Participation programs or educational classes
5. Individual counseling
6. Group sessions
7. Referrals
8. Follow-up
9. Health screening
10. Film/slides
11. Special lectures by well-known health professionals
12. Health fairs
13. Weekend retreats
14. Voluntary health screening *without* feedback or follow-up

15. Company sponsored "smoke-outs" and no smoking contests or days
16. Peer guidance and peer run programs with all of the above materials
17. Other: specify

XII. Eligibility

There are concerns that employees who are evaluated as less healthy or who do not participate in programs will suffer discrimination or other work-related liabilities. Information gathered as part of the HPP program must not be entered as part of a personal record. All data must be confidential. Address potential ethical and legal issues.

Little attention is given to appropriate activities for all employees who wish to participate in programs, i.e., the disabled, older employees, or those with chronic ailments. Some employers offer the program to executives or salaried staff only; line or hourly workers do not have access to programs. Consider possible assessment of individual mortality and morbidity risk for cardiovascular disease, stroke, cancer, or other risk through a health risk appraisal tool or other assessment measures which would then be linked with a risk reduction program. Any medical screening or test results should be shared with the employee's personal physician. Employees should agree to this through informed consent.

Groups Eligible To Participate in These Programs

1. All permanent company employees
2. Only certain employees
3. Dependents
4. Retirees
5. Other: specify

Employees Eligible To Participate in These Programs

1. Men
2. Women
3. Under 30
4. 30–50
5. Over 50
6. Pretirement
7. Racial or ethnic minorities only: specify
8. Executive board
9. Upper and middle management
10. Secretarial and clerical
11. Blue collar
12. Other: specifiy

XIII. Facilities and Resources

Determine facility needs of your participants. See what the community can offer. Use community resources whenever possible. Health promotion programs do not have to be expensive or in-house. The local YMCA, high

school or university physical education departments, parks, school yards, beaches, and some private health clubs often have the resources and facilities to instruct employees. Local chapters of the American Cancer Society, American Heart Association, and Red Cross are other valuable resources. Seek endorsement and support of the Chamber of Commerce, regional business groups, Governor's Council on Health and/or Fitness, or local medical society. Involve local health resources in planning. Have equal time and facilities for men and women.

Employers do not appreciate the need to have program coordinators trained in education program development, implementation, and evaluation – as well as in other technical and health disciplines. Be sure that program facilitators are adequately trained in health education and human development techniques. Avoid hiring high-cost specialists and look toward underutilized health professionals with sound training such as nurses, exercise physiologists, and physical education instructors. Develop a people-oriented, qualified staff. Activities should be noncompetitive. Individuals can compete against their own performance, not against other participants in the program.

Facilities

Determine the advantages and disadvantages of a chosen location and facility.

1. Off-site facility–program organized by outside agency
2. Off-site facility--program organized by the employee group
3. On-site facility–program organized by outside agency
4. On-site facility–program organized by employee group
5. Community health agencies to whom referrals are made
6. Community physicians to whom referrals are made
7. Community YMCA or YWCA
8. Voluntary or not-for-profit organizations such as the American Heart Association, the American Cancer Society, or the Red Cross
9. Public health agencies or other government agencies
10. Local hospitals and for-profit health promotion providers
11. Other: specify
12. Will the company pay for outside services?
    - Yes
    - If "yes," what percentage of the total cost?
    - No
13. No on-site facilities but space to conduct education seminars and fitness activities facilitate employee participation.

Easy Access by Program Participants

1. Convenient location
2. Convenient hours

3. Visible programs
4. Supportive work setting
5. Stocking vending machines or cafeteria with healthy foods and diet information

XIV. Implementation

The goal of the implementation phase is to make the transition from the program design or plan to the successfully operating program. Use a good marketing approach. Develop a staff adequate for your goal. Develop a strong activity program. Organized activities draw 50%–80% more participation than loosely formed ones.

The program must be volunatry. Good health habits cannot be mandated. More creativity is necessary for coordinators to solve some of the developmental problems in program implementation. Unoriginal or boring designs are one of the most frequent problems in program implementation.

An effectively planned and managed implementation plan is as important to the overall success of the program as an effective program design:

1. Determine the components that need to be implemented
2. Define the steps required to implement each component
3. Specify the major milestones and the timetable for each of the steps and how they relate to other components being developed
4. Enumerate the resources including funding, space, technological assistance and people required for each step
5. Publicize the progress monitors and measures of success

XV. Successful Health Promotion Programs

Be sure that the program deals with specific health problems relevant to the participants' work-site and personal needs. Determine how the program will adequately motivate individuals' responsibility for long-term attitudinal and behavioral change. Explicitly state how the program will emphasize free choice, participation, open communication, trust, and direct experience. Sustain employee participation since employees who discontinue participation make it difficult to convince employers of program need and funding.

Characteristics of Effective Programs

1. Management support and commitment
2. Organization's readiness to back HPP
3. Political and true issues successfully addressed
4. Participant involvement in program design and delivery
5. Sound program content
6. Adequate funding
7. Capable staff and management
8. Creative and innovative programming
9. Comprehensive or holistic approach with multiple interventions
10. Periodic assessment and clear feedback on results and progress

11. Opportunities for all employees of all health levels
12. A supportive and fun environment
13. Supportive corporate culture

XVI. Incentives

Incentives need to be clearly stated and sufficient to motivate participation. Determine the kinds of incentives which will be used and why. Publicize your efforts. For the program to succeed it has to have the interest and enthusiasm of employees. Use company newsletters and magazines for articles about the program and use posters and announcements on public address systems to build interest.

Include employees' families whenever possible. This will generate more interest in weekend or after-hours exercise. Since most family members participate in the company's group health plan, their improved health may have a favorable impact on the group's claims experience. Prepare employees and dependents well in advance of the program's beginning. Use a variety of media to present the program including small group discussions.

Representative Incentives

1. Recognition in the company – publicize participants by photographs or names in company newsletter
2. Training in self-help skills
3. Financial rewards keyed to specific programs
4. Time off to participate in health promotion activities
5. "Health" days or "wellness" leave
6. Extra pay for nonabsentees
7. Paid time during work days for program participation
8. Insurance premium reductions and rebates
9. Release time policies – employees participate in programs during work hours rather than before or after work
10. Health club memberships
11. Rate medical insurance deductions by risk (low-risk employees pay less than high-risk individuals)
12. Rate life insurance premiums by risk
13. Rewards for getting other employees to participate
14. Prizes for signing up in a specific program
15. Certificates or recognition awards
16. Warm-up clothing or other athletic equipment and clothing with clothing logo
17. Other: specify

XVII. Benefits to Employees

The same factors which determine an individual's quality and quantity of health are the same for the larger or incorporated body. HPPs benefit both individuals and organizations. When health promotion is perceived as a benefit it is necessary to negotiate its place in the total benefit package.

Demonstrable Benefits for Participants

1. Employees have been retained who might otherwise have lost their jobs
2. Physically healthier
3. Better able to deal with stress
4. Happier and improved self-esteem
5. Learned to cope with specific problems, e.g., overweight, smoking
6. Detected certain diseases, e.g., hypertension
7. Improved job satisfaction
8. Improved mental and physical wellbeing
9. Improved employee morale
10. Greater clarity of thinking and creativity
11. Financial rewards or pay increases
12. Decreased "cut-throat" competition
13. Increased employee and departmental cooperation
14. Improved job performance without excess effort
15. Less "workaholic" behavior
16. Less "burnout" and cynicism
17. Decreased hospital and medical utilization
18. Less disability and sick-leave with more well-leave
19. Other: specify

XVIII. Benefits to Employers

Few definitive studies exist. Assessments are costly and may exceed program costs. Reports of benefits of worksite health enhancement programs are beginning to emerge. A 1979 survey of 34 companies with fitness programs found that 60% believed program benefits exceeded program costs, while the remaining 40% were unable to tell. A number of firms have reported intermediate program benefits that include those noted below (Pelletier 1984).

Demonstrable Employer Benefits

1. Medical crises and special risks reduced
2. Medical conditions and health practices improved
3. Overall medical care costs reduced
4. Increased corporate productivity
5. Decreased absenteeism rates
6. Decreased employee turnover rates
7. Lower insurance rates for medical coverage
8. Better corporate image and visibility as a concerned employer
9. Better community public relations
10. Reduced disability claims and lost time
11. Reduced medical claims and/or hospitalization
12. Reduced disability costs
13. Lower workmen's compensation
14. Greater employee satisfaction

15. Improved employee morale
16. Reduced accidents on the job
17. Improved employee/employer relations
18. Better-caliber employees attracted
19. Sharpened competitive edge
20. Improved company recruitment potential
21. Decreased tardiness
22. Publicity for products related to corporate image
23. Reduced illness and premature death of key personnel
24. More appropriate use of medical services
25. Other: specify

Selected Cost-Effective Studies

1. *New York Telephone*
   - Breast cancer screening of 23 482 women saved US $ 269 000.
   - Colon-rectal screening saved US $ 85 000.
   - Stress management and meditation saved US $ 268 000.
   - Cardiovascular fitness program saved US $ 103 000.
   - Alcoholism has an 85% rehabilitation rate and saved US $ 1.56 million!
   - Smoking cessation impacted with US $ 645 000 saved on cardiovascular and US $ 400 000 on lung diseases.

   Total of US $ 2.7 million saved in employee absenteeism, disability, and treatment costs in 1980.

2. *Canada Life*
   - Study in 1981 by University of Toronto and compared it with North American Life Insurance, Inc.
   - Saved US $ 35 975 in medical costs.
   - Saved US $ 231 000 in employee turnovers from 15% down to 1.5%.
   - Reduced absenteeism by 22%.

3. *Johnson and Johnson*

   "Live for Life": Nine company sites are participating in the Johnson and Johnson program while four sites are acting as program evaluation controls. The preliminary results of the Live for Life program show a significant improvement or positive change from baseline for those employees participating in the program. The drop in smokers was nearly four times higher for the participant group than for the control group. Absenteeism and alcohol problems decreased markedly in the participant group, while they actually increased in the control group.

4. *Kennecott Copper and Equitable Life Assurance*

   Kennecott Copper reports a 5.5 to 1, and Equitable Life Assurance Society a 6 to 1, return on dollars spent to provide alcohol and mental health services as an employee benefit.

5. *Campbell Soup Company*
   Campbell Soup Company estimates a total cost-savings of US$245000 over a period of 10 years from its colon-rectal cancer screening program.

6. *General Motors*
   - Began EAP in 1972 and produces a 3:1 savings
   - Lost time down 40%
   - Sickness and accident claims down 60%
   - Grievances down 50%
   - On-the-job accidents down 50%
   - Saved a total of US$280 million/year!

7. The savings come in the form of reductions in insurance usage, disability, absenteeism, leaves, and turnover changes, and increases in productivity, and improved employee attitudes and incentives.
8. Chrysler Corporation and Campbell Soup Company discovered that their medical-related costs were one-third what they had been before starting in-house hypertension control programs.
9. Two years after Kimberly Clark instituted a weight control program for employees, it experienced a decrease of US$160 in disability premium per participant.
10. Exercise participants at Northern Gas Company of Nebraska used one-fifth as many leave days as the nonparticipants after 6 months in an exercise program.
11. Employee absenteeism dropped from 2.7% to 0.7% within 2 years after Scherer Brothers Lumber adopted an incentive system for wellness program participation.
12. One Toronto Canada insurance company saved an estimated US$175000 in wages after initiating rigorous 30-min exercise classes several times a week. Absentee rates decreased 60% for men and 39% for women.
13. After offering four or more health promotion programs for their employees, 1500 major employers reduced their health care costs per person from US$1115 to US$806, according to a Health Research Institute Study on Fitness and Preventive Health.
14. For every US$1 that a group of 12 companies invested in employee assistance programs, they received US$1.36 in returns, according to a study by Johns Hopkins University.

Conclusion

This concludes the "Parcourse for Health Promotion Programs in the Workplace" planning and evaluation guide. Clearly, health programs in the workplace involve the fundamental redesign of medical benefits, integration into the corporate culture, a high level of management commitment and support,

a broad employee base into areas of functional status so that individuals with a disorder can still benefit and improve daily functioning, as well as health promotion program components. No one element is sufficient and all are necessary to create a true health care system capable of eliciting and sustaining health of the growing and aging population into the twenty-first century and beyond.

Activation at the Workplace Through Educational Processes

H. Leymann

In this paper, I would like to demonstrate that attempts to "activate" employees – i.e. to *enable* them to play an active role, at various levels, in improving their work environment – will not be very successful unless the work situation is altered simultaneously to provide more opportunities for participation. From the material presented, it will be seen that the reforms necessary in the area of work organization are by no means just minor, cosmetic changes.

The examples cited are taken from projects which focused on activation in the work environment in Sweden. Theoretically, activation can only take place if participation is possible – whether the aim is to bring about improvements in the work environment or comanagement. In the Federal Republic of Germany, for example, these aims are combined in a single concept, while in Sweden they are two separate issues for negotiation between employers and employees.

Improving working conditions only with respect to safety has no effect at all on psychosocial stress if participation is excluded from the process. It can be assumed, therefore, that very little will be achieved in terms of activation if the objective is limited to devising methods to ensure compliance with safety regulations.

Example 1: The Need for Participation

In a joint project of the Central Education Department of the Swedish Federation of Trade Unions (LO) and the Education Institute of the University of Stockholm a study was made of the experiences of employees in their work situations (Sköld 1979; Stockfelt 1983).

What do people learn from their work situations? It was shown that the kind of learning and "insights" they develop is by no means always the result of deliberate educational efforts on the part of the firms or society. It is more often the result of experience acquired in certain situations. People also draw logical conclusions from negative life and work situations and these are then internalized through learning processes.

Sköld (1979) and Stockfelt (1983) describe the results of learning as "positive" when the employee can put these results to concrete use. They describe them as "negative" when they lead to passivity and when the employee thus becomes controlled and influenced by others. "Dynamic"

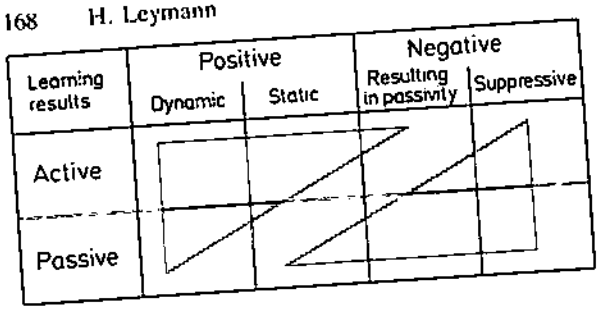

Fig. 1. Schematic representation of different types of learning in the everyday work situation

learning is achieved by the employee through an active investigation of his environment; conclusions drawn in this way, in Sköld's opinion, are changeable and their validity can be re-examined at any time. In "static" learning, on the other hand, notions become firmly ingrained in the form, for example, of dogmas.

Learning which results in passivity is the outcome of situations in which the employee feels obliged to conform in order to protect himself from the influences of the organization. Sköld (1979) calls this kind of learning experience "suppressive" if it leads the employee to identify with these negative influences and to convey them to his colleagues. While "active" learning can have a direct effect on the individual's behaviour at any time, "passive" (or "latent" learning can only have this effect under certain conditions. Figure 1 shows Sköld's model of learning in the everyday work situation.

Sköld (1979) maintains that a large number of people are exposed to working conditions such as those represented in this model: passive, static and leading to passivity (the hatched field on the right). On the other hand the situation of employees who work independently is, in his view, dominated by other characteristics: learning is active and dynamic (the hatched field on the left). Seligman (1975) made similar discoveries with respect to the psychological effects of working conditions that encourage passivity; he called the phenomenon "acquired helplessness".

Organizational structures, and a constant lack of opportunity to participate in even the most minor decisions, lead to passivity. Any attempt to activate people must be considered with this fact in mind. It would appear futile to initiate activation programmes without first examining whether social structures do not place insurmountable obstacles in their way. Activation programmes must be combined with changes in the work organization so as to provide greater opportunities for participation. I will come back to this point later.

Example 2: Obstacles to Activation

Another attempt towards activation was made by the research team of the University of Stockholm and the LO with road workers as its target group (Sköld et al. 1978). As in many other such experiments, it was difficult to

hold discussions about the need for change. This is usually due to the fact that blue-collar workers are far less apt to analyse problems than white-collar workers, either because they lack daily practice in this intellectual exercise or (and) because their jobs give them little opportunity for such practice.

In this study, researchers used practical aids to help workers become aware of problems and at the same time provided structural assistance with the analysis of problems. It was shown that the use of an aid as simple as a polaroid camera, for example, was extremely helpful. In this way, the problems were visualized and it was easier to discuss them in groups.

What the researchers hoped to achieve in terms of participation was specified as follows:

- Employees learn to analyse their work environment, using their personal work experiences as a basis.
- Participants in the discussion become aware that they can actually contribute towards improving their environment.
- Workers realize that the systematic, collective sharing of knowledge and experience is worthwhile.
- The firm supports very actively efforts at encouraging workers to develop their own ideas about possible changes.

In attempts of this kind it has been repeatedly shown that the role of the researcher (who is both teacher and project leader) is crucial to the progress of the project. If he acts too much like a "boss", he can counteract the learning process and hamper the activity of the workers through overeagerness. A case in point is the role assumed by Einar Thorsrud in his projects in Norway, namely that of the boss spurring the workers on: such an approach had the disadvantage that there was seldom anyone who could take over this role and various processes stagnated the minute the social scientists withdrew.

In fact, the part played by sensitive adjustment to educational influences is underestimated in many experiments to promote participation. People who have worked for long periods of their lives in subordinate positions, or even in suppressive work situations, have usually developed a survival strategy of "knuckling under" and reacting passively. In such cases, it is hard to achieve a high degree of activity.

Example 3: The Change Process Determines the Nature of the Activity

Another example of an educational method designed to produce activity is provided by Wrene's (1979) experiment in Finland. Wrene's aim was to help workers develop the ability to control and improve certain risk situations in their jobs. For the purpose, he conceived simplified measuring instruments, easy to read and which the workers could use to produce personal stress profiles.

Wrene's (1979) educational strategies were the following:

- Elaborating methods for reporting the results of inspections of the work environment so that even the workers could interpret the results by themselves
- Pretesting suggestions for improvements in the form of full-scale experiments, so that employees would be in a better position to make a sound choice
- Encouraging workers to think of improvements that could be made in their own work place, the intention being to use this kind of "detail improvement" as training for more complicated suggestions affecting the firm as a whole
- Developing measuring instruments that would be simple to handle and easy to read
- Creating opportunities for workers to discuss problems relating to the work environment during work time
- Starting on a small scale (e.g. with the workplace of individuals), so that workers would become familiar with the way structural changes can be brought about; only following such experiences would larger, common problems be tackled

Activation here was seen as an educational process in which the aim was to create learning situations: use of simplified measuring instruments; use of full-scale models instead of scale drawings and mathematical formulas; provision of time for discussion to consolidate the acquired learning; small-scale improvements in individual workplaces to increase the workers' self-confidence and enable them gradually to make use of their new knowledge.

It should be mentioned that Wrene's work was broken off after about a year by order of the management, which was becoming uneasy at the growing awareness and self-confidence of the workers.

Inducing Change Through a Socioeducational Approach and Learning

Experiments of this nature all have one particular characteristic in common: educational methods are used to encourage the formation of groups where experiences can be discussed. Through dialogue and the exchange of experience awareness is created and common problems are identified.

Once workers have thus achieved greater awareness, they continue to hold regular discussions about ways in which they can influence their work environment and bring about changes. It is at this point that workers start wanting to take on an active role. Such activity, however, can very easily be prevented if the firm itself allows no scope for it.

In an analysis of research in the field of work safety in Sweden, I have shown (Leymann 1982b, and 1985b) that this *development* of activity is in no way enough by itself. Various evaluation reports of safety campaigns

show that independent activity peters out when workers repeatedly find that their will to influence their work environment meets with resistance on the part of their superiors. The problem of activation thus has two dimensions: first, activation itself and, second, keeping up the level of activity by appropriate measures on the part of the company. This, however, implies genuine participation in decision-making.

The factors involved in activation can be summarized as follows:

- The cognitive processes of perception and the elaboration of concepts form the psychological basis of awareness.
- These cognitive processes can be reinforced by group communication processes (e.g. Leymann 1982a or Sköld's experiments mentioned above).
- The process of discovery (= learning) can be assisted by the individual's participation in exchanges of experience with trusted people (social support).
- The social and psychological structures of the environment can accelerate or stifle this process (e.g. Argyris 1982).
- An educationalist, leader or "change agent", can be an important mediator of these processes (e.g. Rogers 1961; Argyris 1982; Schein 1969).

It is clear that a distinction must be made between two different concepts of "being active". While in one case it means acting on one's own initiative, in the other – i.e. in the eyes of a person in authority – it means nothing more than the carrying out of instructions by a subordiante. The difference is considerable, and at the same time reflects the dissimilar outlook of people as a result of the socialization process.

If the "liberating" process of learning is to take place, what objectives should we have in mind in developing designs for the organization of work? Social microprocesses such as I have described place high demands on such designs, especially on the readiness of the employer not only to allow participation but actively to promote it. Special knowledge is, however, required in order to outline designs that will meet such objectives.

When safety engineers and safety representatives were asked for their views regarding the activation of employees (Leymann 1981), their answers showed that they thought activation could be achieved by giving information, instructions or orders. They made no distinction therefore between recommended or compulsory activity on the one hand and *inner motivation to be active* on the other.

Any attempt to induce change by socioeducational means entails working with two groups: on the one hand the employees, who should be encouraged to become active, and on the other hand the management, training staff and other personnel in positions of authority, whose idea of activation and the means of achieving it must be changed. I would like to illustrate this problem with an example from Swedish research into work environments.

An Experiment in Collaboration with Trade Union Safety Representatives

A nationwide project aimed at developing working patterns based on the theories of activation (Leymann et al. 1985) was carried out by our research team with the Swedish Union of Construction Workers.

The regional safety representatives of the Swedish unions (RSOs) have a legal responsibility to supervise firms with less than 50 employees. They have three functions: (1) to inspect the work environment and negotiate improvements; (2) to ensure that firms deal on a regular and systematic basis with work environment problems; and (3) to activate the employees so that they – in principle – make the visits of an RSO unnecessary. The situation in the small firms is such that the time of the RSO is almost completely taken up with inspection duties.

The purpose of our experiment was to develop (1) systematic working procedures and (2) ways of activating the employees. It was no problem for the RSOs to take part in the development and implementation of systematic investigation procedures. Since they were very experienced in union matters and very well informed on work environments, this was an easy task. It was more difficult to develop ways of activating the workers. For one thing, the RSOs have an authoritative role when it comes to applying systematic procedures; yet, activation requires participation and in small firms some restrictions are under the control of the employer alone.

The difficulties involved with the activation process occurred at several levels.

First, the fact that employees are not used to taking part in decision-making, compounded with their repeated experience that their opinions are not wanted, represented a major obstacle. When people have no opportunity to influence their work situation, passivity sets in. We finally discovered an area where the RSOs could assume control of the situation without encroaching upon the authority of the employer in determining the degree of employee participation. This area concerned the existing cooperation between employees of individual firms and the RSO. By the very nature of their work, RSOs tend to take over responsibility for supervising and negotiating improvements in the work environment. What opportunities for participation did employees have in this respect, and could RSOs promote such participation? Here, it was very difficult for the RSOs to put themselves in the role of teachers and to encourage employees to act independently. The RSOs tended to assume that activity would result from the mere supplying of information.

Another aspect of the problem was related to the organizational structure of the union. We found that the success of the educational process was less dependent on educational discussions between researchers and trade unionists (RSOs) than on a particular institution of the union, namely the annual meeting at which RSOs and trade union officials in charge of work environ-

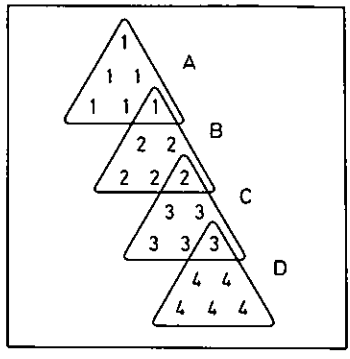

Fig. 2. The socioeducationally guided participation chain. In this figure, *A* represents the union with its official in charge of work environment questions *(1)* who sits on the executive committee; *B* represents the RSOs' conference *(2)*; *C* represents the meetings of local safety representatives *(3)* with whom the individual RSO has contact in his district; and *D* represents the building site where the local safety representative holds discussions with his colleagues *(4)*

ment matters discuss current problems and take joint decisions. The form of these meetings corresponds exactly to what I defined earlier as a socioeducational process: dialogue, exchange of experiences, specification of common problems, participation in decision-making and active roles by the participants themselves. An equivalent "learning result" arising from a "learning situation" does not take place, however, at lower union levels.

If local safety representatives (under Swedish law, firms with more than five employees must have one) had the opportunity of taking part in similar learning situations, more activity could also be expected on their part. And if the individual construction workers also had the opportunity of being involved in this process, they would also become more active and more concerned about their own work environment (provided of course that this was not undermined by inflexibility on the part of their employers) (Fig. 1).

A schematic representation of a chain of educationally guided participation procedures is provided in Fig. 2. This will be tested in the next phase of our research project.

Three Key factors in Activation

When we study the results of this experiment, which is nearing conclusion, the following aspects of socioeducationally guided participation stand out as being of particular importance:

1. Employees need to be helped to become more aware of their environment so that RECOGNITION of risks at work is easier. If learning effects are to be achieved, this help must be provided. It does not, however, replace the work of specialistis in the firm's health department.
2. Experience and knowledge can best be consolidated when they are discussed collectively, in group situations. The optimal way of PROCESSING knowledge (and this is an established fact in adult education) is through dialogue on an equal basis. Time must be set aside during work hours for this purpose.

3. Activity and interest in cooperation can only be kept alive through genuine participation, i. e. employees must be able to play an active role in improving their environment. An important educational phase is therefore CONVERTING knowledge into practice.

Activation is shown in this analysis to be a difficult undertaking, since it involves participation on a number of differnt levels.

An Action-Oriented Project in the Timber Industry

R. Kalimo

One of the largest wood-processing companies in Finland has asked the Institute of Occupational Health for its support in launching a health-promotion and stress-prevention programme in the company. This proposal was in line with the plans of the Institute to undertake action-oriented research in the field of occupational psychology.

The initial negotiator of the company was the chief occupational health physician, who acted in close collaboration with the management, staff groups and the occupational safety sector.

An action-oriented project was launched, which is still ongoing. The strategic steps of this project are described below.

Investigation of the Need and Feasibility of an Action-Oriented Project

A pilot study was carried out as the first phase of the project to identify possible problems in the work conditions and stress-related health problems among staff. The study revealed that there were problems and that action was needed. Furthermore, the organizational circumstances and climate were favourable for such action.

Strategic Planning: A Participatory Approach

Negotiations involved the management, staff groups and labour unions. The participation of all groups concerned was considered essential. A coordination and action committee and a technical research team were nominated with this principle in mind. Additional financing was obtained from the National Social Security Institution and from the Occupational Safety Fund.

Increasing Readiness for the Action-Oriented Project

Occupational health personnel and safety personnel were trained during a 2-day course on the subject. The main lectures were published in the staff journal, as well as other information on the project.

Collection of Information on the Pre-Action Situation

Three main sources of information were used for getting information on work conditions: a questionnaire, the job description technique and company statistics. The questionnaire covered factors such as employment conditions, variety, autonomy and responsibility at work, time constraints, cooperation, leadership, organizational climate, appreciation of work and competence.

The questionnaire also included items on job attitudes, motivation, job satisfaction, stress reactions and health status.

All permanent staff, i.e. about 12000 employees including the management, took part in the survey. The company considered it necessary, in view of possible changes in work conditions, that every member of the staff should have an opportunity to take part in the initial reporting.

Measures Proposed at the Workplace

Training of the Management. One necessary precondition for action research in a company is awareness on the part of the management of (a) the impact of psychological and social factors on the health of workers and (b) of the variety of possible measures and the principles behind them. Accordingly, the entire management and supervisory staff were to participate in a 1-day training session on these issues.

Corrective Measures. Only the general principles of various interventions were outlined before the actual survey of work conditions was undertaken. Action to be considered included development of optimal work conditions through a long-term process, and development of occupational health services.

On the basis of the survey results, final plans for action will be drawn up by representatives of the management and staff, safety personnel and occupational health specialists. Researchers will participate, but only as consultants. The main target groups will also be defined after the survey. The aim is to create "experimental" units and controls.

Evaluation

Measures for improving working conditions and moulding company policy accordingly take time and money, and create expectations among the management and staff. There is only little information available on the effectiveness of such measures. Evaluation of the outcome of interventions is perhaps the greatest problem in action-oriented research. Uncontrollable events may take place in the organization during the course of a project and thus the drawing of conclusions may be difficult.

In this study, the outcome of the actions undertaken will be evaluated on the basis of direct questioning of the workers' own assessment, changes in health indicators and health behaviour during the intervention period, and the comparison of "experimental" and control groups and units.

A Place Where You Like To Work: Colonia

Colonia Insurance Inc.

> A house must be like a small town
> or it is not a house.
> *Aldo van Eyck*

The Colonia Insurance Inc. in Cologne has just built a small town for its administration – not in the centre of the city but at the edge, within a green area which offers recreational facilities. Before the new building was constructed, the offices of the administration were dispersed in several buildings all over the city of Cologne.

The management considered it was important to bring back under one roof the 2000 employees of the administration. Taking into account the needs of the company and those of the employees with regard to the quality of their workplace, the board of Colonia invited a number of architects to present a design which would meet the expectations of both groups. Finally, the design chosen reflects the philosophy of the Dutch architect Aldo van Eyck. The new headquarters is not just another skyscraper, which often more or less represents the company's self-image of power, wealth, and influence, but a small town or rather a village to which the employees travel each morning to live and work. The architectural ensemble documents the philosophy of combining work and life rather than disconnecting them.

This is also true with regard to the integration of the constructions in the natural environment. Within the 63000 m^2 area that the company owns, 23000 m^2 are kept as a green area, and 12000 m^2 as public places and ways. The green area is open to people residing in the nearby suburb of Holweide. Thus, a linkage exists between the community and the company, which does not exclude itself from public life. The cars of the employees are parked underneath the building so that the environment is not spoiled by parking lots.

The facade and the roof are built with materials which reflect the small town concept, e.g. red bricks and copper, but nothing which could be considered as aggressive like aluminum; at least, this is the assessment of the architects. The entire complex consists of five buildings of a similar size and a larger one. None are more than four stories high. All the buildings are grouped around an inner court yard and connected to each other, although they function independently. The lighting and ventilation of the rooms are mainly natural.

The design of the buildings reflects the "philosphy" of the company which tries to: facilitate the integration of employees in the company; enable social communication within and between each level of administration; provide high-quality workplaces at all levels; and intensify the information flow between all employees and departments, including the promotion of personal communication between employees rather than increasing paperwork. It is also expected that the architectural ensemble will have a positive influence on the identification of employees with their company.

While the outside design of the buildings is dictated by the idea of environmental integration and social perception, the inner architecture focuses on the quality of the workplaces. In this design, health-related aspects were given priority, the term "health" being taken in the broad sense of WHO's definition and reflecting physical, mental *and* social wellbeing. The design of furniture and the decoration of rooms, i.e. green plants, carpets, the colour of the wallpaper, etc., was carefully studied with a view to reducing job-related stress and improving the health status of employees.

The windows, which can be opened easily, are small with white wooden frames. Not one workplace is more than 6.5 m away from a window so that natural light is used extensively and artificial light is kept to a minimum.

Although the rooms are so-called "group rooms" and vary between 393 m^2 (= 29 workplaces) and 430 m^2 (= 31 workplaces), they are carefully designed to ensure the privacy of each workplace. This was in large part achieved by using flexi walls and certain materials which keep the noise level to a minimum. Workplaces are grouped according to various work zones, which are linked together within the group room. Communication between the employees of the same group room is mostly from person-to-person rather than by telephone or memos. This is partly facilitated by the fact that there are no personal secretaries attached to any workplace; instead, there is a central secretariat in each building where all the service work is carried out (e.g. typing, filing, mailing, computer work). In other words, the organizational structure of the company was totally changed on the basis of economic, administrative and social considerations – and the design of the buildings reflects these new concepts.

On each story of each building a recreational zone and rooms for relaxation are available. For all the personnel, there is a central restaurant, a cafeteria and a shop with 800–1000 food and non-food products. Outside the office complex, there is a hall which can be used for sports activities and meetings. On the floor above, a pub and a meeting room are open every workday in the afternoon; there, the employees are invited to stay for a while after work or after they have participated in some sports activities like bowling, tennis or gymnastics.

Indeed, Colonia is a place where people like to work – and live.

Health Promotion Through Courses on "Slimming – But Sensibly"

R. Mann-Luoma

A training programme for overweight employees of a corset factory, entitled "Slimming – but sensibly", was launched in 1984 by the Sickness Fund of the Triumph Company, the Kritische Akademie Inzell (KAI) and the Triumph management in cooperation with the nutrition department of the Federal Centre for Health Education (FCHE). It was run simultaneously with other projects promoting physical exercise as well as a change in nutrition in company canteens.

The project started with the training of employees of the company as course leaders. Then, with the support of the company's sickness Fund, these course leaders conducted overweight training courses for company members and their families. In the meantime, the project has become so well accepted that it now runs without further support from the FCHE.

Project Partners

The project was carried out for employees working in corset manufacturing and involved four different factories in the Triumph Company. Full support was given by the company management.

The project was originally initiated by the KAI. This academy is an educational and recreational institution which was founded in 1963 on the basis of a collective agreement between the Textile and Clothing Union and the Workers Association of the Corset Industry. According to this agreement, the Employers' Association pays a percentage of the gross wage and salary to the Foundation for the Promotion of Education and Recreation for Employees in the Corset Industry. To fulfill its task, this foundation then established the Kritische Adademie Inzell. With regard to the Triumph Company project, the KAI paid for the professional release of personnel to be trained as course leaders and covered their travelling costs.

The nutrition department of the FCHE provided the concept, the pedagogical approach, the training experts and the course programme, as well as the course material. In addition, the FCHE covered the costs both for the training of course leaders and for the course material.

The Sickness Fund of the Triumph Company was actively involved in the model concept and took over the organization, the promotion and also the financing of the training courses for the personnel, including payment of a fee to the course leaders.

Aims of the Project

The Triumph corset factory employs mainly women as seamstresses, an occupation which is predominantly sedentary. Their standard of education is usually low, their attendance at school being limited to the minimum compulsory level with or without the final examination. Research shows a distinct tendency towards overweight among women of this educational level [Deutsche Gesellschaft für Ernährung (German Nutrition Society 1980)]. It is not surprising, therefore, that overweight should be a common characteristic of the staff employed by the Triumph Company.

Reducing this overweight problem was the primary objective of all the partners in the project, each one having, however, some specific aims as well. The company management wanted to reduce the sickness rate and to document its social responsibility towards its staff. The Company Sickness Fund wanted to reduce the costs resulting from a risk factor such as overweight (Henke et al. 1986). The FCHE wanted to reduce the threshold of resistance to such courses found usually among workers of a lower educational level compared with those with an average level of school education (Institut für Markt- und Werbeforschung 1983; Bertenburg and Mann-Luoma 1985).

"Slimming – But Sensibly"

The FCHE has been running a training programme entitled "Slimming – but sensibly" since 1980. It is a group programme for overweight adults who not only wish to lose weight but also want to improve their eating habits. The programme is based on behaviour therapy methods and techniques and is offered, on a countrywide basis, by various institutions active in the field of public health. Up to the present, more than 10000 courses, with an average of 10 participants/course, have been run.

The programme was developed on the basis of comprehensive scientific studies (Reiss et al. 1975, 1976; Ferstl et al. 1978). As a result:

- It is based on methods of behaviour change which have been successfully applied in behaviour therapy.
- It provides training in groups, with specially trained instructors, and uses group dynamics to achieve behaviour change.
- It aims in particular to strengthen a sense of personal responsibility by enabling participants to become aware of their particular dietary habits and to change them; furthermore, special emphasis is laid on a varied and well-balanced diet.

The course is carefully structured and includes:

- Behaviour observation
- Analysis of behaviour
- Behavioural change

- Monitoring of the degree of change
- Stabilization of the altered behaviour

For each participant, the course lasts 6 months. This lapse of time was selected as lasting success is unlikely to be achieved in a shorter period. The stable reduction of overweight is, after all, the principal aim of the programme.

Since emphasis is placed on personal responsibility, participants are asked to determine themselves the behavioural changes they want to achieve, e.g. how much is to be lost; the limit of the calorie intake; what steps towards behaviour change they want to take; and what support will be needed to achieve these ends. Here, the members of the group and the course leaders have, of course, a supportive function.

A special nutrition timetable, adapted to individual requirements, enables participants to allocate their calorie intake to the various food groups. This ensures a well-balanced diet while allowing for wide-ranging individuality in food choices (special dietary habits, such as whole food or lactovegetarian diets, are permitted).

To prepare course leaders for their task, briefing seminars lasting 4 days are organized. These seminars are run by two instructors. The learning experience of the participants, who are stimulated by group dynamics, role playing and the gestalt approach, is kept in the foreground (Bertenburg and Mann-Luoma 1985).

The Concept: A Cooperative Method

In 1982, the KAI, in cooperation with the Triumph Company Sickness Fund and a commercial source, began organizing health weeks. To quote the KAI: "The aim of the health weeks was to influence lifestyles in such a way as to prevent specific health problems; health-conscious behaviour was to be achieved through information and education as well as the detection and elimination of risk factors".

During these health weeks, particular risk factors such as smoking, stress, body weight and insufficient physical exercise were discussed. Employees were then selected to take part in health weeks in the various factories of the Triumph Company according to their particular health risk.

These health weeks were heavily criticized. The staff disliked the stigmatization of the participants and the pressure underlying these measures. When assessed in the long run, the success of the health weeks was very modest, especially when viewed in relation to the costs incurred. It was against this background that the director of the KAI consulted the FCHE.

Description of the Model Project

The planning of the project took the form of joint discussions between all the partners along the following lines:

1. In the beginning, interventions would be limited to the risk factor "overweight", and this for two reasons:
   - Overweight represents a major problem among staff members.
   - Experience shows that the training programme "Slimming – but sensibly" is very well accepted; there was good reason therefore to hope that in the long run the course could be run on an independent basis (IMW 1983).
2. The chief measure was to be the training of about 20 company employees as course leaders for the FCHE programme; these persons were to carry out the "Slimming – but sensibly" courses in close contact with the company; the courses were to be offered in all the factories; the course leaders were to be supported and supervised on organizational aspects by the company and the Company Sickness Fund, and on programme content and expertise by the FCHE.

The FCHE had the task of developing a training concept which would take into consideration a number of special conditions and in particular the fact that:

- The future course leaders had no experience in psychology, adult education or nutrition; normally, course leaders have appropriate training or experience in at least one of these fields.
- The future course leaders were acquainted with the participants beforehand and, quite often, also had a working relationship with them.
- The participants were acquainted with each other.

This was not to hamper, however, the application of the basic principles of the training concept, namely:

- Self-determination with regard to the learning contents of the training course, although within a precise framework.
- Ability of the course leaders to guide the participants into developing a sense of personal responsibility, in respect both to their own problems as individuals and to the group.

In view of the more complex situation, the training period for the course leaders was extended by 2 days and the number of training instructors was doubled from two to four. The instructors were chosen on the basis of experience in the following areas: nutrition, behaviour therapy, role-playing, gestalt therapy, systemic family therapy, family therapy, kinesitherapy and industrial psychology.

The instructors agreed on a strongly action-oriented concept which would make it possible to deal more effectively with the subject matter, its inherent

conflicts as well as its areas of common interest, and would lead to the development of models for future courses.

Connection to Other Projects

Although initially only one risk factor was to be taken into consideration in this project, connections were to be established with two other projects:

- "Gymnastics at the workplace": this project was developed by the KAI and integrated successfully, quite some time ago, into the normal company routine.
- "Eating out for working people": this is a FCHE project dealing with ways of improving the nutrition situation of working people.

Project Implementation

Course Leader Training

Altogether 18 staff members, comprising 13 women and 5 men from the company's factories in five different locations, took part in the training measures. The participants had been selected jointly by the KAI and the Company Sickness Fund. The majority were actively involved in the union and were regarded as "opinion makers" in the company.

All the courses were characterized by certain problems which emerged at the beginning owing to false expectations, to misinformation and to fears concerning the new roles that course leaders were to assume. The concept of the training, however, proved to be sufficiently flexible – as well as the instructors and the participants – to allow such problems to be overcome. In fact, a relationship of trust soon developed between all the persons involved and the later success of the project is certainly due in large part to the positive outcome of the training course for the leaders.

Course Implementation

While the training proceeded, a number of measures were agreed upon in order to facilitate the course implementation, for example:

- Each course was to be presented to factory workers by course leaders working in pairs; therefore, each leader was looking for a partner during the training period.
- A member of the Workers Association was given time off to coordinate this project.
- A training instructor assisted the course leaders whenever they presented the courses at meetings of the Workers Association at other company factories.
- A mutual exchange of experience was scheduled to take place following the first course phase.

Early in 1985, it was possible to start five courses. As they progressed, it became evident that the course leaders were quite capable of guiding the groups and motivating the participants. Frequently, however, they referred back to the instructors in order to clarify various problems and questions. The instructors agreed, therefore, to supervise the course leaders during this initial phase. On conclusion of the first courses in September, the results were presented to the press, which gave an impressively large amount of publicity to this initiative. This media support, together with word-of-mouth publicity in the factories, made it possible to deal with the second phase without any special effort. In almost all companies, new courses were organized. Thus, it became possible – as confirmed in the following years – to run these courses on an independent basis.

Results

During the 2 1/2 years since the project began, altogether 31 courses have been run. From the initial 18 course leaders trained, 9 are still active today. One course leader has already led eight courses and the others between two and three courses each. This corresponds to the expectations, when one takes into account that the courses are carried out parallel to normal working activities.

Unfortunately, there is no precise evaluation of the progress and success of the courses. However, from the reports of the course leaders (a semistandardized report is made for each course), several positive remarks may be made as to the success of the courses, namely:

- The number of dropouts is lower than in other courses.
- The weight reduction achieved lies around 9–10 kg, which is just slightly below the average weight loss in other courses.
- The participants themselves express a high degree of satisfaction with the course and the results achieved; according to the course leaders, many participants continue to lose weight after the course; as the course leaders (in contrast to other courses) continue to see participants at the workplace, such statements appear to be very credible.

It ought to be emphasized that the structure of the participants in these courses is quite unusual: first, there is no overrepresentation of persons with higher school education; and second, the participants, being mainly women, have the double burden of a full-time job in addition to their household duties.

Discussion and Outlook for the Future

In general, the project partners can be satisfied with the results obtained so far. At least they have succeeded in establishing a company-oriented preventive health care activity with regard to overweight, in a company whose

employees have more problems of this nature than any other branch of industry. The project was equally promoted by company management and the union and it has definitely been possible to cover a much wider circle of persons.

During discussions with course leaders, however, it was very often evident that there was a lack of support at middle management level. In many cases, unnecessary problems were created for the course leaders at their workplaces. This culminated in some course leaders being refused permission to take part in the last seminar organized in January 1986 to exchange experiences. The course leaders find themselves helpless in the face of such difficulties. It would be useful if the project partners could urge the company top management to intervene.

The number of trained and active course leaders in the company is certainly not sufficient. More staff members should be trained as course leaders, since, particularly through natural fluctuations, the number of course leaders available will otherwise decrease as time goes on.

It should also be noted that the courses are gradually becoming more and more independent from the company. Because of internal company difficulties, some course leaders have tried to find other institutions for teaching the course, in order to ensure its continued availability. This is a tendency which the project partners, at company level at least, are unlikely to find satisfactory.

On a positive note, there were no difficulties in integrating the project "gymnastics at the workplace", which has been used by many course leaders. The link-up with the project "eating-out for working people" failed, however, to materialize for reasons that lay outside the project itself. It is particularly encouraging to note that the risk factor "smoking" is now being tackled by the same project partners according to a similar concept.

It is to be hoped that the excellent cooperation of recent years will continue. Attempts should therefore be made to bring home, in no uncertain terms, especially to the middle management, both the opportunities and the need for preventive health care within the company. This could be done through cooperative seminars.

As the FCHE is currently trying to apply the concept of "Slimming – but sensibly" in connection with treatments at health resorts and since the KAI is also directly involved in this area, the opportunity for new cooperation is evident.

Research into the Feasibility and Impact of Health Promotion in the Work Setting*

H. Noack

A long-term research programme on health promotion in the work environment is being initiated by the Department of Social and Preventive Medicine of the University of Berne with the support of the Swiss National Science Foundation. The aims of the first phase, which is to start in the spring of 1986, will be twofold: firstly, in a population of two industrial and service organizations, it will investigate trends in cardiovascular risk and health as well as individual, social and environmental factors associated with such trends; secondly, it will introduce health promotion through health courses into the work setting and evaluate both its acceptability and results.

The second phase, which is to start 2 years later, will introduce structural changes in working conditions and the work process and go more deeply into evaluation.

This paper outlines the major research questions, research design and methods of this programme. It presents the underlying working model, discusses important theoretical considerations and gives a brief account of the concepts and variables included in the first phase of the study.

Research Questions, Design and Methods

Our research programme addresses two main questions:

1. To what extent do physical and physiological factors, lifestyle characteristics, psychosocial distress and coping variables, as well as the modification of such factors, account for subsequent changes in cardiovascular risk and indicators of health?
2. How far is health promotion feasible within work settings and to what extent do worksite interventions influence cardiovascular risk as well as morbidity and perceived health?

In view of these questions the research design includes two interconnected studies in the first phase:

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* The multidiscplinary research team of the study comprises: Dr. Horst Noack, Dr. Roland Lüthi, Dr. Ueli Grüninger, Peter Küng, Ursula Neuenschwander, Elisabeth Niemeyer, Martin Werner and Fredy Zulauf.

1. An observation study of about 1000 male and female employees aged between 20 and 65 years and representing a wide range of occupational grades; the study will be carried out in several sections of two organizations, a power plant and a large retail chain which partly runs its own food production; half of these sections are located in or near Berne and hence in an urban area, the other half in a predominantly rural area.
2. An intervention study involving approximately 40%–50% of that population. Data collection and interventions will take place during working hours. In the observation study several cardiovascular and physical parameters will be measured (e.g. serum lipids, blood pressure, body mass index), and a number of lifestyle characteristics, stress and coping variables, sociological and sociocultural factors will be assessed through interviews and questionnaires. This will take place at four points in time: at the beginning of the study, about 8 months later (intervention and control groups only) and after 2 and 4 years. Registered nurses are being recruited and specially trained for this task.

Employees participating in the programme will receive a personal letter containing the most important information about their cardiovascular risk, instructions helping them to interpret this information and relevant advice about possible ways to reduce this risk, including advice to see their doctor if indicated. Employers will receive statistical information on health and health-related factors collected in their own organization. All necessary precautions will be taken to protect personal and institutional data.

In addition to feedback about important health-related variables, specific health courses of eight weekly 75-min sessions will be offered to a random sample of employees. They represent the key element of the intervention study. Three such courses – a general health information course, a nutrition course and a relaxation and coping course – have been developed and tested on volunteers (employees of a small firm, patients from general practitioners and housewives). Course designers and instructors are adult educators, dieticians and psychologists. Courses are to be supervised by a person experienced in group dynamics and health education.

Both employees at elevated or "high cardiovascular risk" and employees at other risk levels or "low cardiovascular risk" will be invited to health courses. The high-risk group comprises individuals scoring approximately above the 60th percentile of a risk score distribution. The composite risk score used is based upon total cholesterol, diastolic blood pressure and reported amount of tobacco smoked daily. The low-risk group comprises all individuals below that risk score. The high-risk group and 30%–40% of the low-risk group will be randomly divided into an intervention group and a control group. A random third of the intervention group will be assigned to each of the three courses. High-risk individuals have a two- to threefold greater chance of attending a health course than low-risk individuals. This relatively complicated research plan was chosen in order to prevent identification and labelling of high-risk employees.

The second and main phase of the research programme is planned to begin in 1988. One of its objectives is to compare not only groups of individuals attending health courses with control groups, but also "intervention organizations" with "reference organizations" serving as controls. In addition to the health courses, intervention organizations will be encouraged to introduce structural changes (e.g. in working conditions or in the work process itself). In reference organizations assessment only will take place, whereas in intervention organizations data will be collected on the organization's involvement in health promotion, in addition to the assessment of cardiovascular risk factors, subjective health, morbidity and psychosocial variables.

Underlying Working Model

Based upon the relevant literature a working model was developed which attempts to integrate biological, psychological, behavioural and social factors and processes (Fig. 1).

According to this model, cardiovascular risk factors and risk constellations – for example, a particular pattern of elevated total cholesterol, elevated blood pressure, high body mass index and psychosocial distress – represent important outcome variables of the study. It is assumed that risk factors and risk constellations tend to develop in the course of particular "health careers" over a relatively long period, frequently beginning in childhood or adolescence. It is also assumed that health careers and cardiovascular risk constellations can be modified.

Relevant epidemiological, psychosomatic and social science research suggests that several physical factors, lifestyle characteristics, distress and coping variables, as well as sociocultural and social factors, tend to contribute to the development of cardiovascular risk constellations. The same factors and similar processes may well account for different levels of health, especially with regard to subjective or perceived health.

The following explanations describe and illustrate the working model in more detail.

1. Our model assumes that individual predisposition (or "vulnerability") plays an important role in the development of cardiovascular risk constellations. Certain physical or physiological factors, such as elevated cholesterol and blood sugar level, elevated blood pressure and increased body mass index, tend to indicate cardiovascular vulnerability. This vulnerability may be due to genetic factors (e.g. family predisposition) or to an acquired low threshold for stressful psychosocial stimuli, due, for example, to synergistic activation of the two stress axes, the sympatheticoadrenomedullary system and the pituitary-adrenocortical system.
2. Lifestyles that are well known to be potentially damaging to the cardiovascular system, and to health in general, are characterized by high intake of calories, consumption of excessive amounts of saturated fat and

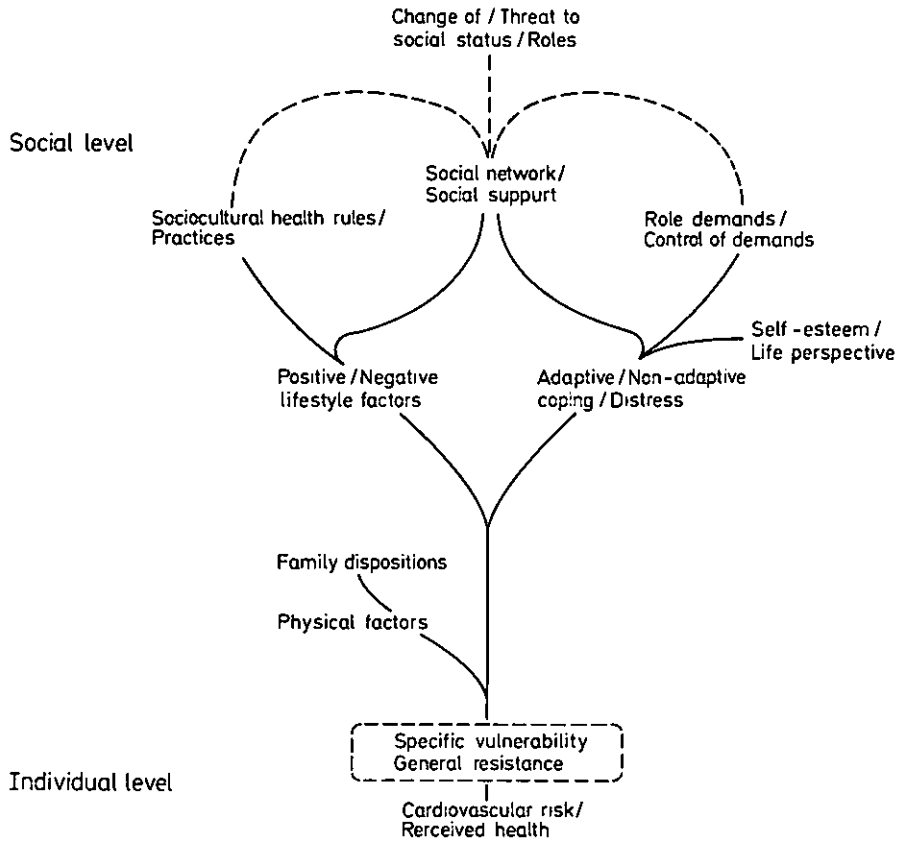

Fig. 1. Working model integrating social, behavioural and biological factors

cholesterol, salt and also alcohol, low levels of physical activity and insufficient recreation and relaxation. Such negative health behaviours tend to be social behaviours which are shaped and sustained within particular social networks and which reflect specific sociocultural rules.

3. Particular patterns of non-adaptive coping that tend to lower thresholds for potentially health-damaging stimuli may involve both an active mode of coping with stressful situations (e.g. fight – flight reaction) and a passive mode of coping with such situations ("conservation" – withdrawal reaction). Whereas the active mode tends to be associated with feelings of anger, hostility and anxiety, the passive mode corresponds to experiences of depression, helplessness and submissiveness. For this reason, this two-dimensional coping pattern has been referred to as active distress.
4. Non-adaptive coping patterns associated with negative emotions and, in particular, patterns of active distress tend to be frequent in situations which individuals experience as highly demanding (in physical, psycho-

logical and social terms) and over which they feel they have little control. Such situations can exist in occupational as well as in social and community settings. The more pronounced the subjective discrepancies between situational demands and coping resources, the more likely will these situations trigger non-adaptive coping responses. Extensive social networks and adequate social support as well as adequate self-esteem and a positive life perspective can serve as effective buffers against non-adaptive coping. Coping careers characterized by chronic distress, failure of adaptation, lack of social support and low self-esteem are expected to be frequently associated with elevated cardiovascular risk and low levels of general health.

5. Change of social status or social roles (e.g. due to acute life events) or a threat to social position (e.g. because of expected unemployment or marital breakdown) may produce excessive social demands which individuals are unable to control or cope with, especially if sufficient social support and an adequate self-concept are lacking.
6. Besides cardiovascular risk and morbidity, the working model is also assumed to account for differences in level of health, for example, differences in overall wellbeing, perceived energy, life satisfaction or physical, mental and social functioning. Good health is postulated to be associated with general resistance to health-damaging influences and low specific vulnerability. Obviously, health is dependent upon particular constellations of physical factors, liefestyle characteristics, adaptive coping as well as social demands and also social support and sociocultural practices.

For each of the broad theoretical concepts included in the working model, a number of variables have been specified. Whereas variables such as height and weight are directly measured, others such as serum lipids are measured in the laboratory. Most variables, however, are assessed by a 30-min interview and a questionnaire with some 40 questions or scales.

Concluding Remarks

The objective of our current work is to evaluate and improve the instruments developed. We are also collecting interview data on the health courses in order to develop a standardized evaluation instrument.

We hope that some very practical guidelines may develop out of this research and influence the promotion of health in the working world.

Health Circles in a Steel Plant Prove an Effective Approach*

W. Slesina

Psychosocial stresses and static physical demands are of growing importance in the working world.

There are numerous indications that psychosocial stresses such as time pressure, responsibility for safety and conflicts with colleagues and executives can influence negatively the physical and mental wellbeing of employees. These factors can contribute to chronic illnesses affecting the cardiovascular, gastrointestinal or musculoskeletal systems. Yet, psychosocial stresses associated with work and the health risks they entail receive little attention.

It must be recognized that some basic methodological and practical problems are involved. Chronic illnesses like those mentioned usually result from the interplay of many factors such as heredity, lifestyles and working conditions. The work stresses constitute only one group of risks among others. Therefore, it is rather difficult to determine which working conditions are relevant to these illnesses and which preventive measures would be suitable.

To help clarify these problems, two approaches have been developed by the Institute of Medical Sociology of the University of Düsseldorf. The purpose of the first is to identify unhealthy psychosocial and physical working conditions in a plant. The second approach is of a practical nature: its objective is to develop preventive measures and health-protective job designs.

Workplace Epidemiology

The first approach aims to detect working situations where stresses are strong and illness rates higher than average. In other words, to identify jobs where workers are exposed to increased health risks.

Following are some results of a study in a steel plant (Table 1). Only German workers who had been 2 years or longer in the plant were taken into consideration. In this population we found 3.5% of workers with chronic cardiovascular illnesses, 4% with chronic gastrointestinal illnesses and 5% with chronic back illnesses:

* The concept was jointly developed by Prof. Christian von Ferber and Prof. Willi Pöhler together with members of the plant and the research group, which comprises Dr. Liselotte von Ferber, Dr. Wolfgang Slesina, Franz-Rudolf Beuels, Dr. Irmgaard Lorenz and Reinold Lochert.

Table 1. Prevalence rates of chronic illnesses for selected groups of jobs exposed to similar stress

Groups exposed to similar stress	*N*	Cardiovascular illnesses (%)	Gastrointestinal illnesses (%)	Back illnesses (%)
German employees	2831	3,5	4	5
Smelters	39	0	2	14
Crane operators	137	5	6	4
Foremen	95	14[a]	2	1
Mechanics	91	0	8	3
Drivers	72	3	9	4
Cold steel rollers	42	2	12[a]	3
Age-standardized prevalence rates*				

* $P < 0.05$

- In the group of *smelters* the rate of chronic back illnesses was significantly higher than average in the plant; the working conditions of the smelters are characterized by strong physical and psychosocial demands as well as factors such as heat and draught.
- In the group of *foremen* the rate of cardiovascular illnesses was significantly higher in comparison to the overall rate; in the group of *crane operators* we found slightly higher rates of cardiovascular and gastrointestinal diseases; in both groups of foremen and crane operators, strong psychosocial stresses dominate and combine with physical inactivity and sedentary work.
- Increased rates of chronic gastrointestinal illnesses were also found among drivers, workers assigned to cold steel rolling and mechanics; these three groups are confronted with strong psychosocial stresses.

How can we proceed from such risk indicators to practical prevention? With this question in mind, we have developed an approach which is currently being tested in the steel plant. It should be mentioned that this approach could also be applied without a preceding risk analysis.

Health Circles: The Key to Involvement

The fundamental principle underlying the intervention is to use the knowledge of all groups directly or indirectly concerned with work stresses and work-related health problems. The basic units of the intervention are health circles or project teams, which normally consist of eight to nine members: three employees (e.g. two crane operators and one member of the ground crew), the foreman, the company physician, a safety engineer or an ergonomist, a member of the works council, the plant manager and a member of the research group who chairs the meetings.

Table 2. Procedure in the health circles

1. Teamwork Members of the health circle define the highly demanding work situations	*2. Questionnaire survey* (including all workers) on the relationships between work stresses and psychosomatic complaints
3. Survey feedback The relationships between stresses, strains and psychosomatic complaints are discussed and specific in the health circles	
4. Suggestions for action: Possibilities of changing the demanding work situations (health-protectice job design) are discussed in the health circles	
5. Implementation of proposals	

For two workplaces, namely those of crane operators and mechanics, health circles have been established: four teams with crane operators and three teams with mechanics. As mentioned, both groups had increased rates of chronic illnesses. Each circle had a 1-h meeting every 3 or 4 weeks. In total, 12 meetings were held by each team.

The tasks of these health circles were twofold:

1. To describe specific working situations which contribute to specific health complaints
2. To discuss and develop preventive measures for such situations

The sequence of the 12 meetings was structured as follows (Table 2):

1. *Identifying risks through team work* – As a first step, a set of rules for cooperation was agreed upon in order to give each circle member equal participation status. Such rules are necessary because of the rather heterogeneous structure of health circles: lay people and experts as well as workers and executives are all involved. Once the rules were established, the workers were asked to describe situations which they considered as demanding and problematic. Of special interest to the circles were situations reported as highly demanding by several employees, e. g. by several crane operators.
2. *Questionnaire survey* – Next, the relationships between demanding or problematic work situations and psychosomatic complaints were explored. A questionnaire was distributed to *all* the persons concerned, in this instance, the crane operators and mechanics of the plant. These employees were asked to indicate the psychosomatic complaints they experienced and in which working situations.

3. *Survey feedback* – The data collected were collated and made available to the circles, where they were discussed. Work-related complaints which were frequently mentioned in the survey and further emphasized in the circles were given priority attention.
4. *Suggestions for action* – The next step called for preventive measures to be suggested and discussed.
5. *Implementation* – Finally, the proposals of the health circles were examined from the viewpoint of financial, technical and organizational feasibility, and implementation was initiated.

What Were the Results?

Each circle defined on average about 100 situations as strongly demanding or as otherwise problematic. About 60 situations for the crane operators and 50 situations for the mechanics can be said to be demanding for the group on the whole, not only for the individual. For example, the crane operators defined the (a) *concentration* requirements and (b) *conflicts* with colleagues as very demanding.

Here are some examples of situations which represent high *concentration demands*:

- The crane operator often has to pour the melted, glowing steel into the converter; this is especially dangerous because of obstructions of view; the operator may miss the converter and injure his colleagues.
- Obstructions of view exist also when the operator has to move backwards, when he picks up the container, or when he is blinded by strong sunlight.
- Poor visibility also exists when the crane operator arranges the ingot moulds in cooperation with the ground crew.

Conflicts with colleagues arise when diverse or contradictory signs are given to the operator. This happens in particular when signs are given simultaneously by five or six colleagues.

In the survey as well as in the circle meetings, these and other demanding situations were connected with specific health complaints by the workers (Table 3). For example:

- *Concentration* demands and *time pressure* frequently lead to blood congestion in the head, headaches, nervousness, irritability and neck pains.
- Problems with colleagues or executives frequently lead to stomachache, nervousness and irritability.

These results were then discussed in the circles and the questions were clarified step by step: which of the work phases requiring concentration or proving to be particularly demanding are typically followed by specific complaints, or which of the cooperation problems resulting in conflicts are typically followed by specific psychosomatic symptoms?

Table 3: Relationships between work stresses and psychosomatic complaints among crane operators

Demanding situations	*Psychosomatic complaints*
situations demanding strong concentration e.g.: – when the steel is poured into the converter – when the ingot moulds are arranged	blood congestion the head headache nervousness irritability
time pressure e.g.: – the ground crew puts – pressure on the crane operator	neck pains
conflicts with colleagues or executives e.g.: – carelessnes of the ground crew – contradictory signals of the ground crew	stomachache nervousness irritability

Table 3. Relationships between work stresses and psychosomatic complaints among crane operators

Each team developed 30–60 suggestions for improvement. The following are some of the proposals made by the crane operators to change their working situation:

- Introduction of mirrors, monitors, better lighting, non-reflecting glass to reduce the accident risk as well as the capacity of concentration.
- Other proposals include: more and better safety instructions for the workers of the ground crew to reduce risky situations and resulting conflicts; colleagues of the ground crew should be given experience of working with the crane operators to gain a better understanding and increased empathy for the problems of the crane operators.

Several proposals have already been implemented and further proposals are under study.

A Positive Outcome

The health circles offer the possibility to identify working situations which lead to psychosomatic complaints in a plant and constitute health risks for the employees. Moreover, the circles provide a suitable basis for developing preventive measures and contributing to health-protective job designs. This approach seems to be transferable to other types of enterprises.

V Shaping Our Future

Introductory Remarks

What will be the working world in the year 2000? Moving away from the work-based society is a probable long-term trend. This trend will be accompanied by increasing mechanization and computerization of work and marked by a division of society into two groups: the employed and the unemployed.

In this way, the number of unemployed members of the population as a whole will rise. The employed will increasingly emerge as an elite within society, earning a high income. The unemployed will, however, be safeguarded by a guaranteed income. There will probably be a new form of organization of work life marked by decentralization, community orientation and reintegration of homes and workplaces. Alongside highly specialized, centralized large organizations, small, decentralized work forms such as neighbourhood work communities or work in the home will become increasingly important. In this context workers will exercise more control over the work and there will be a general democratization of the economy. All in all, unconventional work forms (neighbourly help, self-help, unpaid work), decentralized workplaces (work at home) and the service sector will be of increasing importance in the future.

To what extent can models for health promotion in the workplace take these trends into consideration? What steps should be considered *now* regarding alternative futures for work and, alongside, alternative futures for many other aspects of life all closely linked to work?

What would a healthier future be like and what can be done to bring it about are the main questions to be kept in mind in developing health promotion strategies.

Scenarios for Lifestyles and Health

J. Robertson

Who can do what to help people to improve their health in the context of lifestyles? How can individuals and communities be helped to make the healthier choice the easier choice? In the context of developing a long-term strategy for health promotion, the answers to these questions must be framed in a 15-year time scale at least.

Over such a period many things may change. No one can be certain what will change and in what direction. One view is that a period of accelerating change has already begun that will lead in 20 or 30 years' time to as big a transformation of society and of people's values and ways of life as the industrial revolution. But whatever view one takes, proposals (for enabling and encouraging people to adopt healthier lifestyles) that pay no regard to the possibilities of change may well prove ineffective and misleading. This is where scenarios come in.

In this paper I shall describe what scenarios are and what is their relevance for lifestyles and health. I shall outline three scenarios for the future of industrialized societies, draw attention to changes in personal values that may affect lifestyles and health, and summarize three scenarios for the future of health care. Finally, I shall suggest a role for scenarios in a strategy for health promotion, and make a specific suggestion.

But first, two brief points of definition. First, I take "lifestyles" to mean the ways people live – no more, no less. People can live in healthier or less healthy ways. The aim is to enable people to live in healthier ways. Second, I have limited this paper to the future of today's mature industrial societies, and the ways of life of people in these societies. Scenarios are relevant to other societies also, e.g. Third World societies, but these would be rather different scenarios from the ones outlined in this paper.

Scenarios, Values and Social Environment

A scenario is a description of a possible path of future development. It is a "possible future". It may be a purely qualitative description of the future in words and images, or it may also include quantitative projections attributing numbers to key variables at given dates. In theory, since the future is infinitely uncertain an infinte number of scenarios can be put forward, and

some futurists have used computers to generate a very large number of possible future projections.

For practical purposes, however, a much smaller number of scenarios is normally used to cover all the important possibilities. For example, business corporations sometimes find it sufficient to draw up *three* alternative projections based on high, medium and low economic growth; this limited range of possibilities may help them to examine the eventualities likely to be most important from their point of view. One current study of the future of health policy by Bezold and Carlson 1984 is based on *four* possible futures for the United States: "Decline and Stagnation", "Disciplined Society", "Continued Growth" and "Transformation". These correspond fairly closely to the last four of the *five* scenarios that I have proposed elsewhere (Robertson 1978): "Business-As-Usual", "Disaster", "Authoritarian Control", "Hyperexpansion" (HE) and a "Sane, Humane, Ecological" (SHE) future. In the following section three of these are outlined: Business-As-Usual, HE, and SHE.

Apart from Business-As-Usual, a scenario of this kind will often be based on the possibility that some existing trend (or set of trends) will become more dominant than the rest. The HE scenario, for example, projects forward into the future the existing tendency for people to become increasingly dependent on powerful technologies, organizations and specialisms. The SHE scenario, on the other hand, projects the tendency for people to react against this growing dependence and to seek self-fulfilment through self-reliance and mutual aid. And the Disaster scenario projects the tendency – also becoming more marked – for this increasingly dependent way of life to break down.

It is unlikely that any one scenario will come about in every detail. The actual future is more likely to contain features from different scenarios. Scenarios simply provide a more or less systematic way of imagining and working out possible challenges, possible opportunities and other possible relevant developments in the future, as background to decisions about one's concerns, whether these be to do with health, food, transport, employment, business, politics or any other aspect of life. Apart from highlighting possible eventualities, scenarios can also help to clarify which of today's trends and tendencies should be regarded as favourable to the purpose in hand – which, in this case, is the encouragement of healthy lifestyles.

Values

So a scenario is a possible future. It is not necessarily a prediction or probable future. Nor is it necessarily a desired future.

But desires and values cannot be ignored. For one thing, different scenarios will imply a greater or lesser degree of change in today's dominant values. For example, one recent study (Martin and Mason 1984) on the

future of leisure and work used social attitudes as one variable and economic growth as the other. Four scenarios were thus generated:

Conventional success	= high economic growth	+ conventional values
Frustration	= low economic growth	+ conventional values
Transformed growth	= high economic growth	+ transformed values
Self-restraint	= low economic growth	+ transformed values

Possible futures for health, no less than possible futures for work, must pay regard to possible changes in values. Health has some connection with people's values. It also has some connection with whether and to what extent people's values are in harmony with their way of life and with the environment in which they live.

There is a second important point about values. It is now well understood that when any of us think about the future we are bound to be influenced by our own values. This means that each of us is likely to be more interested in, and favourable to, some possible futures than others. People who claim to be objective in their approach to the future may be trying to conceal their own bias, but not necessarily. They may be quite unaware of it. This is particularly likely to be true of people whose bias reflects the dominant culture of the time – which today means scientists, professionals and government officials, among others. In the present context, many of us are probably still unaware of how far our values limit our ideas of what a healthier future might be like and how it might come about. Discussion about the desirability and feasibility of different scenarios can help to make our values explicit, and open our minds to other possible values and other possibilities of which we were previously unaware.

Social Environment, Values and Health

To throw light on the prospect for healthier lifestyles we have to consider possible changes in three main areas: the environment in which people live, the values which influence their lifestyles, and the place given to health in their lives and in the life of their society. The three following sections deal with these three areas separately. But separating them is to some extent artificial, so a word about the connections between them is appropriate here.

The environment in which people live plays a large part in determining their lifestyles. At the same time, their own values and preferences to some extent shape their lifestyles and thereby help to shape the environment in which they and other people live. The balance of this interaction – i.e. the extent to which people's environment determines their lifestyles and the extent to which people actively shape their environment – may differ from person to person. There is a subjective element in this, as well as an objective one; some people *feel* greater freedom in relation to their environ-

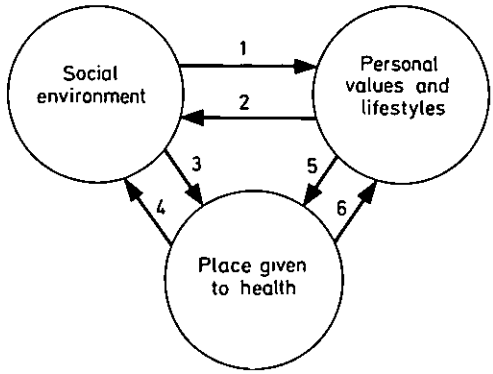

Fig. 1.

ment than others do. People's experience in this respect has some relevance for their health.

This active/passive balance between people and their environment also differs from one society to another. It is one of the many things that may or may not change. So it will feature differently in different scenarios for the future. For example, if the mass consumption society of the late industrial age continues to exist, most people will probably continue to feel that comparatively uniform lifestyles are imposed upon them by society; whereas another possibility for the future is that society will offer a wider variety of norms than today, so that more people will experience greater freedom to choose their lifestyles for themselves.

Similarly, the place which we give to health in our lives, as compared with our other concerns, may differ from person to person; and the place which a whole society gives to health may differ from society to society. In late industrial societies, health tends to be given a secondary place and to play a passive role. Personal concern with health is usually in response to ill-health; and our so-called health services and health professions are mainly employed to deal with injury, sickness and disease. A changed society and a changed set of personal values might put health in a primary position, and give top priority to creating and maintaining good health. A shift in that direction is one possibility for the future. In that scenario the achievement of good health would be given higher priority than today. Considerations of health would play an active part in decisions about work, housing, planning, energy policy, economic policy and other aspects of life.

The three following sections should, therefore, be understood as linked as shown in the diagram, with the arrows indicating the direction of influence between one sphere and another. In today's industrialized societies arrows 1, 3 and 5 are strong, and arrows 2, 4 and 6 are weak. In a possible future society in which health requirements strongly influence personal lifestyles and the social environment, and in which personal values strongly influence the social environment, arrows 2, 4 and 6 would be stronger, and arrows 1, 3 and 5 would be weaker.

The Social (and Physical and Economic) Environment

Table 1 contains in summary form, the outlines of three scenarios for the future of industrialized societies: "Business-As-Usual", "Hyperexpansionist" (HE) and "Sane, Humane and Ecological" (SHE). As well as reflecting different possibilities, they also reflect different values, the values of the HE and SHE scenarios being strongly opposed to each other. According to its own standpoint, each of the three scenarios takes an optimistic view of the future. Proponents would say that each offers possibilities of healthier lifestyles to many people. Proponents of HE and SHE would strongly maintain – against each other – that according to their concept of a healthy society, their scenario offers the best prospect of a healthier future. Actually, the majority opinion of scientists, industrialists, policy analysts and academics who are professionally concerned with the future still favours this scenario.

As I have said, the HE and SHE scenarios are based on two powerful but opposing trends, evident in today's industrial societies. HE represents an accentuation of the dominant tendency to greater dependence on organization, technology and expertise, while SHE represents a change of direction in accordance with the emerging tendency to emphasize personal values, self-help and local (family and community) mutual aid. Business-As-Usual assumes that, while these two opposing tendencies will no doubt continue to operate, neither will prove strong enough to change today's way of life very significantly.

The actual future will no doubt contain elements of all three scenarios. Nevertheless, in deciding how to promote healthier lifestyles, it will be helpful to consider: what are the main opportunities for healthy lifestyles, and the main threats to them, that each scenario offers? What approach to health promotion, therefore, does each scenario suggest? Which scenario is likely to be the most conducive to healthy lifestyles? Which, therefore, should be preferred?

Comprehensive answers to these questions cannot be attempted here. But, for purposes of illustration, we may look briefly at what will happen to work in each of the three scenarios. Imagine some of the differences in lifestyles and patterns of activity that these different futures for work might imply for men and women, old people and young people; and consider what some of the health implications might be. For example, in the Business-As-Usual scenario, a top priority for healthy lifestyles will be the existence of full employment and, in its absence, special provision for health needs of unemployed people and their families; in the HE scenario a top priority will be the availability of healthy leisure occupations for non-workers; and in the SHE top priority will be the availability of work space and work facilities in people's homes and local neighbourhoods.

It is not necessary to outline the negative scenarios, "Disaster", or "Decline and Stagnation", or "Frustration" in any detail here. The health implications of a negative scenario are quite clear: "declining health services" would be required to cope with the worsening problems of societies

Table 1. Lifestyles and social change: three scenarios

Business-As-Usual	HE (Hyper-Expansionist)	SHE (Sane, Human, Ecological)
Work		
Full employment can be restored, and employment will remain the dominant form of work. Other activities (e..g. housework, family care, voluntary work) will continue to have lower status. Sharp distinctions will continue to exist between education for the young, work for adults and retirement for the old; and between work and leisure.	Full employment will not be restored. All necessary work will be done by a skilled elite of professionals and experts, backed by automation, other capital-intensive technology and specialist know-how. Others will not work. They will merely consume the goods and services provided by the working minority – including leisure, information and education services. Society will be split between workers and drones (Kahn 1977; Bell 1976).	Full employment will not be restored. Work will be redefined to include many forms of useful and valued activity in addition to paid employment. Paid and unpaid work will be shared around more equally, e.g. between men and women. Part-time employment will be common. Many different patterns of working will be possible, according to people's circumstances and preferences. Households and neighbourhoods will become recognized workplaces and centres of production. Young and old will have valued work roles. Work and leisure activities will overlap (Robertson and Pritchard 1981)
Money Incomes		
Paid work will continue to be the primary source. Society will continue to provide a basic income to people who fall outside this norm, but such people, if of "working age", will continue to be stigmatized as exceptions.	The skilled working elite will be highly paid. Proponents of this scenario have not yet worked out through what channels everyone else will receive an income. From dividends, after nationalization of all production? Or from benefits financed by high taxation? Or as wages from menial jobs?	Society will pay everyone a basic income as of right, e.g. enabling them to choose how they will divide their time between paid and unpaid activities. People who do not need this extra income because they earn more on top of it will have it taxed back automatically, either by income tax or by expenditure tax or by a mixture of the two.

Technology

New technologies will continue to be developed for their own sake, because scientists and design engineers find them challenging, and because industries and governments hope they will prove profitable and that people can be persuaded to use them. There will also continue to be opposition to many new technologies on the grounds that they may be dangerous, explotative, wasteful, polluting and socially undesirable or unnecessary.

Even more effort and resources than at present will be channelled into the development of new technologies. It will be accepted that all problems have technical solutions, and that top priority should always be given to the technical approach, including the development of new forms of expertise and reliance on the decisions and advice of experts. Opposition to this approach will become weaker. Technology will be master.

The development and diffusion of certain types of new technologies and new skills will have high priority. These will be technologies and skills which enhance the capacities of people to do more for themselves and one another, and reduce their dependence on outside systems, organizations and professional expertise. In particular, small-scale (including microprocessor) technologies will greatly expand people's capacities to work for themselves and one another in their own homes and localities (McRobie 1981; Toffler 1980). The scenario is not antitechnology. Technology will have an important role, but as servant.

Economy

Economic growth can be restored. Creation of wealth by industry and commercial services can continue to support publicly financed social services. Industrialized economies will remain centralized, and big business and publicly owned corporations will retain their dominant role. Formal economic activity will continue to be the only kind that really matters, and informal economic activity will remain unimportant.

Economic growth will only be achieved by concentrating on high technology production and by marketing highly professionalized services. The wealth thereby created will meet society's needs. Formal economic activity will become even more dominant. Multinational business will have an even more dominant role.

The most important areas for economic growth and social progress will be in the informal economy (Robertson 1978; Robertson and Pritchard 1981). People's energies will be released to create wealth and welfare for themselves and one another in their own households, neighbourhoods and localities. The effect of so many people finding satisfactory occupation in this way will remove many existing obstacles to the efficient functioning of the formal economy. Within the formal economy, local-small-scale enterprise will be the main growth sector. Localities will become more self-sufficient economically and less dependent on outside employers and suppliers.

Table 1. continued

Business-As-Usual	HE (Hyper-Expansionist)	SHE (Sane, Human, Ecological)
Planning and Housing		
Urban industrialized patterns of lifestyle, employment and movement will continue to be the norm. Residential and work locations will remain in separate zones. Planning regulations will continue to assume that people use their homes for leisure and consumption activities only. Houses will continue to be designed that way. The land, premises and equipment, that people need for their work, will continue to be provided by employers.	The coming of the leisure society and the information age will help to reshape the built environment. People will have more leisure time to spend at home, at local leisure facilities (swimming pools, sports centres, etc.) and on trips away from home. The provision of new leisure (including education) facilities will make big new demands on space. What precisely this will mean, for example in old inner city areas, is not yet clear.	As more of people's work, leisure, learning and caring activities centre on their homes, neighbourhoods and localities, new demands for space and facilities will arise there. Today's house designs, zoning arrangements and planning regulations will become inappropriate. More people will participate in planning and building their own houses and environment. There will be more shared, multifamily households and clusters of houses, including housing cooperatives. More people will need land, premises and equipment for their own work. Residential densities will fall, in the old city centres as elsewhere, and the tendency will be toward more dispersed patterns of settlement countrywide.
Transport		
Traffic and transport patterns will continue much as they are today.	A decline in travel between homes and places of work will be matched by a rise in travel for leisure.	A decline in travel between homes and places of work will only be partly matched by a rise in travel for leisure (Adams 1981).

Energy Patterns of energy use and energy development will continue much as at present. Changes will mainly be prompted by adjustment to price changes and the balance of supply and demand.	Demand for energy will continue to grow. Dependence on capital-intensive, centralized, high technology sources of energy (e.g. nuclear power) will grow. A few centres of energy production will supply the whole populace of energy consumers. A "hard"energy path will be followed.	Less energy-intensive patterns of working, living and transport coupled with conservation and more efficient ways of using energy will reduce demand for energy. Energy production will be more decentralized. There will be a tendency to greater energy self-sufficiency in regions and localities – and even, to some extent, in households where energy conservation, heat pumps, solar panels, etc., will reduce the need for energy brought in from outside. A "soft"energy path will be followed (Lovins 1977).
Food Patterns of food production, processing distribution and consumption will continue to be dominanted by agribusiness farming, industrial manufacturing and the distribution of processed and packaged foods through supermarket chains to standardized consumers.	As for Business-As-Usual, but with more emphasis on new agricultural and nutrition technology. For example, more productive strains of animals and crops will be developed; beneficial elements (e.g. vitamins) will be added and harmful ones (e.g. fats) will be removed as a normal aspect of food-manufacturing and processing. People will eat out more often; fast food chains will be part of a food service industry expanding in response to the growing "leisure market."	There will be, as for energy, a tendency to greater food self sufficiency. More people will grow food, either as small farmers, part-time farmers and smallholders, or (for themselves) in their own gardens and allotments. Food production will be more decentralized and food distribution chains will be shorter. Food cooperatives will become more numerous. Home cooking will be the norm. Multifamily purchasing and feeding arrangements may become more common (Lappe and Collins 1979).

Table 1. continued

Business-As-Usual	HE (Hyper-Expansionist)	SHE (Sane, Human, Ecological)
Education and Learning		
As at present, education will take place in educational institutions at the hands of professional educators. It will continue to be primarly for young people, before they enter the age bracket in which they will be expected to have a full-time job. Its main aims will be to provide them with the credentials to get and hold down a job, and to socialize them into what will remain a mass-employment, mass-consumption society. Main criteria of a good education will continue to be the certificates and diplomas that one can show for it, and the jobs which it opens up.	Education will divide into two main branches. The first will qualify a person for a high-status job as a member of the technocratic and professional elite. This kind of education will have high status. The second branch will teach people how to use their leisure. Its status will be somewhat lower. Both types of education will, in principle, be lifelong. In the high-technology, leisure society of the information age, education will be one of the biggest growth industries. Openings for professionally qualified, expert educators will greatly expand.	Education will be for capacibility. It will help people to learn life skills of all kinds – physical, intellectual, interpersonal, emotional. It will be geared to a pattern of living in which most people expect to have part-time employment and also to undertake a good deal of useful, rewarding activity for themselves and their family and neighbours. It will recognize that people often learn better from doing things with experienced people than from receiving classroom instruction from professional educators (Hemming 1980).
Principles		
Mass employment, mass consumption. Dependence on institutions for work and for goods and services. Obligation to be employed. Organizational values, masculine values, antropocentric values. Interventionists, instrumental mode of action. Analytical, reductionist mode of thought.	Mass leisure, mass consumption. Continued dependence on institutions. Increased dependence on technology and experts. A schizophrenic society: the working elite will be hard-working, responsible and highly motivated; the masses will enjoy leisured irresponsibility. Technocratic values dominant, including even greater emphasis on organizational, masculine, anthropocentric values, etc.	A shift towards self-help and decentralization in production of goods and provision of services. Reintegration of people's work with other aspects of their lives. This brings new meaning to life. Personal values, feminine values, ecological values. Experiential mode of action. Intuitive mode of awareness.

suffering from "declining health". This possibility cannot, of course, be ruled out. But, for present purposes, it is enough to recognize that a more positive future will be necessary if we are to create healthier societies and a healthier way of life for people.

Nor have I thought it necessary to outline here in any detail the "Authoritarian Control" or "Disciplined Society" scenario – in which regulation and the provision of goods and services directly by government will play the central role in society. It is not difficult to imagine some of the implications for health and lifestyles in a society of that kind. But actual examples of such societies exist today, and for the present purpose it seems better to treat this scenario as a variant of Business-As-Usual. Whether the dominant role in society should be played by commercial organizations in the so-called private sector or by government organizations in the so-called public sector is the central issue of everyday politics in today's industrialized world, which – the Business-As-Usual scenario assumes – must continue to be dominanted by organization of one kind or the other.

Values and Lifestyles

Scenarios for values and lifestyles are fraught with conceptual problems. What do we mean by values, and how do they relate to beliefs, perceptions, assumptions, attitudes, opinions, preferences, hopes and fears? How do values affect people's behaviour? Although these questions have no easy answers, forecasters and planners in business and public policy, and academics in the social sciences, nevertheless accept that some understanding of personal and societal values is necessary in studying the possibilities for social change. Here are some examples of recent findings in this field.

SRI International has for many years been studying the values and lifestyles of Americans in the context of business marketing (Mitchell 1983). Three of their main categories for consumers are: *Need-Driven, Outer-Directed,* and *Inner-Directed.* The consumption habits of the first category are determined by their need for basics and their lack of money; those of the second category are determined by their need to belong, to emulate the trend-setters, and to be seen as achievers; and those of the third category are determined by their need to express themselves, to experience and participate, and to be societally conscious – for example by supporting "such causes as conservation, environmentalism and consumerism".(A fourth category, *Integrated,* is for the "rare people who have it all together. They wield the power of outer-directedness with the sensitivity of inner-directedness". But there are not many of these paragons and they cannot be identified empirically!)

An important finding of these studies is that a shift is taking place from outer-directed to inner-directed values. The following lists are presented to suggest the nature of this shift.

Past Symbols of Success

- Fame
- Being on *Who's Who*
- Five-figure salary
- College degree
- Splendid home
- Executive position
- Live-in servants
- New car every year

Present Symbols of Success

- Unlisted phone number
- Swiss bank account
- Connections with celebrities
- Deskless office
- Second and third home
- Being a vice president
- Being published
- Frequent world travel

Future Symbols of Succes

- Free time any time
- Recognition as a creative person
- Oneness of work and play
- Rewarded less by money than by respect and affection
- Major societal commitments
- Easy laughter, unembarrassed tears
- Philosophical independence
- Loving, and in touch with self

The message is reasonably clear, even if the focus on *symbols of success* suggests something about the values of the people by whom and for whom these studies were carried out.

In a recent book, Yankelovich (1982) of the American opinion-polling firm Yankelovich, Skelly and White, confirms this shift away from (in his terms) instrumental, materialistic, technological, self-denying values to values centred around self-fulfilment. The new values, he says, are based on the need for activities that have value in their own right and on the idea that people have value in themselves. In another recent book, Elgin (1981) (formerly a researcher at SRI) discusses the "whole pattern of practical changes that a growing number of people are making in their lives ... This innovative way of living is termed Voluntary Simplicity". Elgin estimates that some ten million persons in the United States were wholeheartedly exploring a life of voluntary simplicity in 1980, and that this could well "become the dominant orientation for the majority of the adult population

of many Western developed nations by the year 2000. The "emerging world view" associated with voluntary simplicity, which Elgin contrasts with the "industrial world view", is very similar to the value system implied by the SHE scenario – see the previous section.

The emerging self-fulfilment values identified by SRI, Yankelovich (1982) and Elgin (1981) are reinforced by the emergence of environmental values and feminist values. Recent studies of attitudes towards the environment and the human relationship to nature suggest that a shift is taking place in many industrialized countries; we are moving away from the dominant Western world view that quality of life depends on materialism, industrialism and human domination of nature towards the values of a "new environmental paradigm" (Dunlap 1980). Women's studies and the growth of the women's movement (in the broadest sense of that term) suggest that a powerful shift may be beginning to take place away from a masculine mindset and system of values, until recently unrecognized and unquestioned, towards a more feminine (or perhaps androgynous) way of structuring perception and evaluating activity. More people are perceiving that present human crisis – arms race, third world poverty, exhaustion of natural resources, destruction and pollution of the biosphere, mass unemployment, diseases of civilisation and so on – as a crisis of masculine values. Meanwhile, increasing numbers of men in Western industrialized countries are no longer willing to give higher priority to their employment and other outside ambitions and commitments than to their family role at home.

So far as the more fortunate classes concerned this shift in values was no doubt prompted at first by the experience of material security. In the United States of the 1960s, the young people – who are today's middle-aged – were the postscarcity generation. They took for granted that their material needs would be met, and their aspirations shifted to the non-material aspects of life. However, in the 1970s the limits to further economic expansion on conventional lines began to close in, and it was not long before the industrialized world, including the United States, faced the prospect of neoscarcity. Assuming that the shift from the old masculine, technological, materialist values to the new feminine, ecological, non-materialist values continues, this will only be partly because the new approach has come to seem desirable. It will also be partly because it has come to be accepted as necessary.

My own forecast is that this shift of values will continue. But the process is likely to be confused. If economic and employment prospects continue depressed, some people may experience a revival of material priorities and give even higher priority to having a well-paid job and the consumer lifestyle that goes with it. As a recent European/North American report on the changing expectations of society suggested, there is likely to be increasing diversity in the values and aspirations of different persons, different groups and – to some extent – different countries. For one thing, development of a greater variety of communications media will help to show people many different possible lifestyles, in contrast to the dominant set of standards communicated by the mass communications of the mass consumption socie-

ty. Naisbitt (1982) for his part identifies "ten new directions transforming our lives", some of which (e.g. institutional help – self-help) appear to be supported by value shifts that are contradicted by others (e.g. national economy – world economy). There could also be a growing polarization of value systems and a deepening division between those who hold to the old masculine, technological, materialistic values and those who have adopted the new more feminine, more ecological, non-materialist values. In other words there could be growing opposition between those who support the HE and SHE scenarios outlined in the previous section.

This discussion of the future of values and their possible effect of people's lifestyles over the next 15 or 20 years is necessarily brief and inconclusive. The important point is that changes in values will have implications for health. One view is that a society in which the values of self-fulfilment, ecology and feminine consciousness were dominant would be more likely to promote healthy lifestyles than a society dominated by instrumental, technological, masculine values. But the opposite view is no doubt possible too.

Health – Priority and Practice

In this section I outline three scenarios for health, and relate them to possible changes in the social environment and in values which have been discussed in the preceding two sections.

In a Business-As-Usual scenario for health, health will continue to be given a comparatively low priority both by society collectively and in people's personal lives. Instead of regarding the creation of a healthy society and the enjoyment of a healthy personal life as top priority goals, we shall continue to attend to health only when it goes wrong or when risks of it going wrong (i.e. health hazards) become apparent. In other words our approach to health will continue to be remedial and to some extent preventive, but not positively promotive. Our so-called health services will continue to be primarily sickness services, and people who take a positive approach to their personal health will be exceptions to the norm.

There will continue to be debate and argument between those who support the two variants of the Business-As-Usual scenario – i.e. those who maintain that health and medical services should be provided by the state as a public service and those who maintain that they should be provided privately and be largely financed by personal medical insurance. In the Business-As-Usual scenario this argument will continue to be the central issue in the field of health policy.

The feasibility of a Business-As-Usual scenario for health is, however, coming increasingly under question. In some countries (e.g. Britain, Sweden), recent developments and studies cast doubt on the possibility and desirability of continuing to expand publicly financed health and medical services to keep up with unlimited demand. An important study on "Care In Society" by the Swedish Secretariat for Futures Studies (1982) concluded

that the present crisis of care is a crisis both of results and of expenditure, and that a new approach is necessary – based on providing people with good living conditions, harnessing their active participation, enabling them to take personal responsibility for mutual care and to control the caring professionals. In others (e.g. United States) it has become apparent that, when health and medical care is financed by medical insurance, its escalating costs are even more difficult to control than when it is financed by the taxpayer. So, partly for financial reasons, and partly because more attention is now being given to the causes of ill-health and to people's capacities for making and keeping themselves well, alternative scenarios to Busines-As-Usual are taking shape. The two most significant of these correspond to the HE and SHE scenarios described above.

The HE scenario for health is centred on the advancement and use of medical technology to solve health problems. It corresponds to the scenario based on the "Routine Utilization of High Technology Medical Care" (American Council of Life Insurance 1980). Genetic screening will help to eliminate genetic diseases and handicaps, and make it easier to prescribe occupational and lifestyle choices best suited to the individual physical makeup of each newborn child. Organ transplants and spare parts banks will make it possible to repair the human body and keep it in good operating order throughout life. New drugs will control mental health, cure mental illness and prevent cancer, obesity, addictions, senility and viral diseases. Computer monitoring will ensure that patients comply with the medication prescribed. Computerized medical records, containing all the physiological, emotional, social and economic details of each person's life, will enable physicians, surgeons and other medical and health technologists to deal quickly and effectively with their patients' problems. People, will be able to relax in the knowledge that their health will be well cared for, so long as they trust the experts and follow their advice – not only about medication and treatment but also about their diet, their work, their leisure activities and other aspects of their lifestyle. In this scenario, in short, the health care system will belong to the medical profession, and more and more problems will become subject to medical treatment. Health-promoting behaviour will probably increase somewhat, but the enhanced dominance of the professional medical attitude to health care will ensure that remedial and, to a lesser extent, preventive emphases remain strong.

The SHE scenario for health, on the other hand, is centred on personal and social responsibility, and a positive concept of health. It corresponds to the views of the Swedish Secretariat for Future Studies on Health Care outlined above, to the scenario on "Individual Responsibility for Personal Health and Wellbeing" (American Council of Life Insurance 1980) and to the concept of health promotion (WHO-EURO 1984). People will take personal responsibility for their own health; they will discharge this responsibility in a spirit of individual self-help and cooperative mutual aid; and they will actively insist that society provides a health-promoting environment for themselves and other people to live in. Interest in nutrition and

environmental public health will become widerspread. The psychosomatic aspects of health will also be given much higher priority. The causes of illness-inducing stress will be tackled. People's capacities for self-understanding, self-reliance and mutual support by such means as meditation, biofeedback, counselling and group therapy will be systematically developed. People will learn to accept and manage better than they do now the stressful transitions in their lives, including mid-life transitions and death itself. Small-scale information technology will be used to enable people to diagnose and monitor themselves, and to decide for themselves when they should call for professional medical advice or help. The emphasis will be on wellness rather than disease. Wellness-enhancing behaviour will become habitual for both individuals and groups. The focus of medical research will shift from disease to wellbeing, from the sick to the healthy, with the aim of discovering what wellness is and how it is achieved. The status of women in health matters will rise. The SHE scenario for health will emphasize nurture and care, in contrast to the heroic interventionism of the HE scenario. The feminine/masculine balance both in the makeup of the individual person and in society's values will be perceived as an important factor in good health.

Health scenarios corresponding to the breakdown scenario of Disaster (or Decline and Stagnation) have also been drawn up in recent years, as have health scenarios corresponding to Authoritarian Control (or Disciplined Society) (American Council of Life Insurance 1980). But I need not say more about them here. I have said enough already to show that the priority we shall give to our health, and the approach we shall take to health care, are open questions for the future; and that the possibilities should be consciously in mind when considering proposals now for encouraging healthy lifestyles up to the year 2000.

I conclude this section by suggesting a historical perspective that goes with the SHE scenario for health – with acknowledgements to McKnight (1982). In the nineteenth century the great improvements in health were brought about by providing the physical infrastructure for an urban industrial society. By bringing food supplies and adequate nutrition to the new urban populations and, above all, by providing them with drinking water and separate sewers, the epidemics were brought under control. The reconstruction of the physical environment in confirmity with minimum standards of public health was the key feature of progress in health care then. That was the "engineering era". It was succeeded by the "medical era" of the first, say, two-thirds of the twentieth century, in which allopathic medicine emerged as the dominant approach to health care, based on mass vaccination and the extensive use of antibiotics. Now, however, we have entered a "postmedical" era. The major determinants of physical wellbeing, such as individual behaviour (e.g. smoking, lack of exercise), social organization (e.g. stress), economic status (e.g. poverty, overconsumption) and physical environment (e.g. pollution), are no longer amenable to improvement by allopathic medicine. This is not say that allopathic medicine has failed. Like sanitary engineering, it is still required for maintenance purposes. But its

capacity to effect further improvements in health status is now limited. Whereas in the "medical era" – and the Business-As-Usual scenario – the politics of health have been mainly about how medical attention is to be provided and paid for, in the new "postmedical" era – as in the SHE scenario – the politics of health will be mainly about how good health and wellbeing are to be created. We are shifting, as Ferguson (1980) puts it, from an old paradigm of medicine to a new paradigm of health.

A Role for Scenarios in a Strategy for Health Promotion

The preceding sections will, I hope, have suggested the relevance of scenarios for lifestyle and health. Greater awareness of different possible futures, and the development and use of scenarios to clarify these, should be an essential part of the "critical debate to establish the assumptions and philosophy underlying the goals and methods of health promotion" (WHO 1980).

First, awareness of alternative possible futures will make false assumptions less likely. Once again, take employment and work as an example. In the kind of society we have today, people's money incomes are derived from paid work and people without jobs suffer loss of esteem. It follows that being unemployed contributes to the likelihood of ill-health. Nonetheless, it may be rash to conclude that the restoration of full employment is essential, if more people are to be enabled to live healthier lives. What if we are moving out of the phase of human development (which has lasted for the last two or three hundred years – in industrial societies, that is) in which working for an employer has been the dominant kind of work? If, as the SHE scenario suggests, that phase of development is coming to an end, and new ways will evolve of organizing society's work and providing people with a money income, a health-promoting policy which reinforces people's old assumptions about the necessity of paid employment could be positively self-defeating. Healthier lifestyles would be promoted more effectively by helping people to understand that other forms of useful and rewarding work are just as valuable as employment, and by campaigning for people to receive a basic money income which is totally disconnected from their work. The point is that trying to improve people's living conditions on Business-As-Usual assumptions will reinforce Business-As-Usual values and expectations, and thus make people's experience even more stressful and frustrating if Business-As-Usual assumptions prove false.

Second, scenarios should be used to stimulate discussion of possible lines of action. For example, health promotion activities are listed in the six following categories in the recent WHO-Europe overview of health promotion (Anderson 1984):

- Life skills and preparation for life
- Environment and environmental awareness
- Diet and nutrition

- Leisure and recreation
- Rest and relaxation
- Social and sexual relationship

How would health promotion activities under each of these heading be affected by, for example, the HE and SHE scenarios outlined above? To take just the first heading, the life skills and preparation for life needed for a HE future would clearly be very different from those needed for a SHE future – and different again from those needed for Business-As-Usual. Exploration of these differences could help to clarify priorities for health promotion activities to be undertaken now.

Third, scenarios should be worked up to suggest explicitly what a health-promoting society might be like, and how it might come about. The Alternative Health Futures Network in Toronto is working in this area. In a healthy society, how would people live, in what kind of environment, with what values? By what steps, and as a result of what actions and events, might a healthy society develop out of the kind of society that exists today? Different people will give different answers to these questions. It is important to clarify the range and nature of these differences, and what their implications are for health-promoting action now. In other words, drawing up scenarios for a healthy future could help us to understand how such a future can be brought about.

As a start, the SHE scenario appears to have many characteristics of a health-promoting future. This is suggested, for example, by the Unit for the Study of Health Policy in London which, in discussing what a health-promoting economy would be like, says that "greater national, regional and local self-support in agriculture and less reliance on capital-intensive, high-energy forms of agricultural production would lead to greater consumption of cereals, vegetables and fruits and to a lower consumption of highly refined foods and additives". Again, the Vanier Institute of the Family in Ottawa argues that a healthier society will require a new mode of development, "towards descaling, towards less affluence and towards richer and simpler, more human ways of life – to wit, towards societies that are more familial". The WHO-Europe overview on health promotion stresses (Anderson 1984) the importance of the home and family as the setting in which people develop their habits and lifestyles and acquire skills and knowledge which help to determine their health. In the SHE scenario the role of the family, the household and the neighbourhood as places of productive and useful work, as well as places of consumption and leisure, will be much enlarged – leading, probably, to their acquiring an even greater formative influence on people's lifestyles and health.

Fourth, scenarios can help to clarify some of the steps by which the present state of affairs could evolve into a different state of affairs in the future. The kind of society that encourages people to live healthily is likely to be significantly different from today's. At first sight this presents a dilemma: whether to help people to live healthier lives in today's situations; or to concentrate on trying to create a new and healthier society for the

future. (This is the classical dilemma so often discussed in the context of social work.) In principle, the dilemma has to be resolved by finding ways of helping people to live healthier lives today that will also help to create a healthier society tomorrow. Scenarios for lifestyles and health would help to clarify what these ways of helping people would be.

Fifth, scenarios can help to highlight different ways of influencing the future, as well as different possible directions of development. Many people assume that desired changes will be brought about primarily through the agency of governments and governmental organizations. This corresponds to the Business-As-Usual view of the future. Others assume that, in fact, changes will be largely imposed by new technologies, and that people and society will simply have to learn to adapt. This assumption corresponds to the HE vision of the future. A third view corresponds to the SHE scenario. This is that desired change will be created most effectively by people taking the initiative to change their own lives in the places where they live and work; and that, by thus changing their relationship with the people whose lives and work they affect, they will directly help to change the structures of society. A strategy for health promotion should recognized these differences in approach to the processes of social change, and take account of their implications for health promotion.

Sixth, if alternative scenarios about the future of health became a regular element in public discussion, and in health education itself, they could play a valuable educative role. They could help to counteract the dependency-creating assumptions fostered today by the press and broadcasting media, that the most important influences on the future of health are to be found in the spheres of government and medical technology.

Concluding Suggestions

It is not easy to make firm recommendations about how WHO-Europe might proceed with scenarios for lifestyles and health, as this will have to be dovetailed into plans and preparations already under way – for example, in the context of the programme on Health for All by the Year 2000. But I shall conclude this paper with one specific suggestion and one more general suggestion.

Specifically, I suggest that as part of its present exploration of lifestyles and health WHO-Europe should arrange discussions and subsequently stimulate debate about *alternative futures for WORK and the implications for health*. The future of work is now a vital issue in all the European countries, the alternative possibilities have already received a good deal of attention and it would now be timely to link the discussion of that subject with discussions on the future of health. Alternative futures for work imply alternative futures for much else – the way people use their time; the relationship they develop; the physical environment, education and technologies they need; and the values they adopt. The subject is one that will

make it possible to open up the issues affecting lifestyles and health in a much more detailed and concrete fashion than has been possible in this paper.

More generally I suggest that, as part of the process of framing and carrying out a strategy for health promotion, two sets of questions should always be in mind. First, what changes in people's ways of life may the future bring, and how may these affect health promotion? Second, what would a healthier future be like, and what can be done to bring it about? Anything WHO could do to stimulate discussion of these questions and alternative possible answers to them (i.e. alternative scenarios) – both among health professionals and among the public at large – would itself be an important contribution to health promotion.

Twenty-one Possible Futures

R. Lutz

The following scenarios are qualitatively distinct archetypes of futures perspectives for industrial societies in a global context. These various scenarios can be combined to form further possible alternative futures; 21 such futures are described in Table 1, while Table 2 provides a synopsis of the seven scenarios described below.

Scenario 1: Computopia

This is a theme which is more closely linked to Orwell's book, *1984,* than any other scenario. However, Computopia does not so much portray the horrific vision of an electronic dictatorship as it depicts the possibilities and chances of a communication society. The development of microelectronics has led to new social and economic implications. Each and every industrialized nation and the majority of the newly industrialized nations are afraid to "miss the boat" of computerization and digitalization of industry and society. But apart from this fact, the new technologies offer hopes of liberation. On the one hand, they review the old socialist dream that the forces of production will attain such a high level that socially necessary labour will be reduced to a minimum; on the other hand, they facilitate the democratization process and link up individuals through electronic communication technologies.

Via the new media, decision-making processes of local or global importance can be implemented at the grass roots. First signs of this approach can already be observed in "citizens' channels", open telephones, free broadcasting stations, community television, computer networks, video groups and media cooperatives. Even if these initiatives are still marginal – or even illegal – they are nevertheless an indicator of the future trend towards a new communication system. Today, Computopia may still be in the hands of the media multis, but its instruments and technologies are increasingly becoming accessible to all.

Scenario 2: Space Colonies

For 20 years space travel has become a reality which is gaining in momentum, not only from the technical point of view, but also from the ecconomic angle. For instance, the microchip which was developed to meet the

Table 1. Combination of the seven scenarios into 21 possible futures

		Chinatown ▷	
	Findhorn ▷	Voluntary poverty, rather than material intellectual growth; a culture of simplicity and modesty	
	Spirituality as a development from material affluence; EST, aerobic, jogging, trimming as limited forms of body awareness among affluent citizens; drugs, entertainment	Chic *Chinatowns* in the centres of the western world as the cultural extravagance of the rich	
Dallas ▷			
Global environment protection by companies operating worldwide (e.g. Shell, Esso)	Gaia spirituality; the planetary Earth myth as an orientation framework for political and social developments	Worldwide coordination of industrial agglomerations and regulated development of production and industrial settlement	
Gaia ▷			

This triangular matrix shows how the seven scenarios can be linked up. Two scenarios are combined and briefly defined. Since there is little space only some aspects of the resulting possibilities are given. These combinations in turn provide new material for new scenarios. Further combinations are conceivable and can be established by the

Table 1 (continued)

		Computopia ▽
		Satellite television; telecommunication systems via geostationary and "free" satellites; the "global village" or total surveillance
	Space colonies ▷ ▽	
	"Arks" such as that of the New Alchemy Institute as autonomous survival systems; recycling systems as closed units	Alternative and eco-projects with computers and telecommunication systems to improve coordination of such projects
Ecotopia ▷ ▽		
Urban ecoprojects as cultural centres and integration projects as, e.g. in the 11th St. Project, New York and the COOP project, Bremen	High-density terrestrial and extraterrestrial colonies as the future life form; numerous megalopolises as a result of the population explosion	Loss of individuality, on the one hand; diversity of information and communication via computer media, on the other; video and digital culture
Rural ecocommunes based on spiritualism and religion, partly with historical models: Hutterites, Amish, Shakers	Conquest of space as a leap in evolution; space colonies as a vehicle for cosmic spiritualism.	The computer as a medium for spiritual development; but with feedback, church and quasitelepathic link-ups
Bio- and ecoproducts to expand consumption; environmental technology as a new sector of industry; biotechnologies up to genetic engineering	Space; imperialism and colonization; space production platforms and increased utilization of the earth's resources	An electronic labour society where everyone offers his labour on the computerized "marketplace" from his home terminal
Decentralized ecotopias as the keystone for a global revitalization of dead regions	Gaia as the first space colony offering the possibility of "swarming out" to other planets	Technical media to facilitate improved ecological planning and control, perhaps also for surveillance purposes

reader using the same method. This is one aspect of the Multiple Scenario Approach (MSA) which is now of great importance in future research (Armstrong 1978; Whitehead 1979).

Table 2. Synopsis of the seven future scenarios

	Scenario 1 Computopia	Scenario 2 Space colonies	Scenario 3 Ecotopia
Who?	T. Nelson, W. Norris, M. McLuhan, A. Toffler	G. K. O'Neill, B. Hubbard, T. Leary, J. von Putkamer	E. Callenbach, E. F. Schumacher, A. Lovins
What?	Universally linked-up computerized communication and production systems	Autonomous space stations in earth's orbit	Small, decentralized and self-sufficient ecosettlements and regions
Why?	Communication, democracy, electronic cottage industry, automation	Industrialization of space, energy supplies, environmental protection, production	Ecologization and natural means of production as a non-polluting lifestyle
How?	Link-up of existing systems and universal digitalization	Space shuttle to construct space colonies, graduated plan for the extension of the space platform	Decentralization, development of natural forms of life and production
To the benefit of whom?	Software + hardware producers; computer freaks	The astronautic industry and the military system, big business with the most capital	The "ecologists" and those who have learned to be self-sufficient
To the detriment of whom?	The poor southern part of the world; north-south gap widens	The Third and Fourth Worlds because they are excluded from this development	Multinationals since voluntary "poverty" is the order of the day

demands of the space industry is now a driving force of technology. The plans for the "industrialization of space" which have existed for approximately a decade are not merely "man's imagination run wild", but the serious plans of industry knocking against the limits of its growth on earth.

The construction, close to earth, of gigantic space stations which would generate, and in part process, energy and raw materials is therefore an interesting possibility to economic giants in both the public and private sectors. The current dispute over communication satellites provides a small foretaste of the problems in store.

Moreover, in the more distant future (0–80 years' time), space stations will play an important role as human settlement colonies. Plans for artificial planets to provide living space for the population masses which the earth can no longer feed and accommodate have already been outlined.

Table 2. (continued)

	Scenario 4 Chinatown	Scenario 5 Findhorn	Scenario 6 Gaia	Scenario 7 Dallas
Who?	P. Ehrlich, R. L. Meier, J. R. Platt	P. Caddy, M. Ferguson, D. Spranger	J. Lovelock, S. Brand, D. Meadows	H. Kahn, N. Machiavelli, A. J. Wiener
What?	Multimillion metropolises as melting pots of races and peoples	Spiritually oriented communities as New Age communes	Ecosystem Earth as a self-organizing, intelligent living organism	Economic imperialism; predominance of the "Western system", market orientation
Why?	Population explosion; planetarization and internationalization of nations	Spiritualism; inner development and psychological growth	Interaction and interdependence of all living systems on earth	Maximum profit, competitive spirit, social Darwinism; win or lose
How?	Tolerance and mixing rather than ghetto formation	Spiritual discipline and orientation towards "inner values"	Global coordination of all ecologically relevant activities	Stimulation of the economy; regulation of the economy by the "free market"; reindustrialization
To the benefit of whom?	Social integration and therefore intercultural exchange	Postmaterialists and the "new sensitives"	"Humanity" as a whole; at present, above all the injured nations	Big business; banks; industry; capitalistic aristocrats
To the detriment of whom?	"Purists" and nationalists; separatists and hermits	Materialists and pragmatists whose values become obselete	Nationalists and specific sectors of industry	The have-nots and idealists who do not want to give up the struggle

The Star Wars strategy developed by the American and Soviet military systems is a clear example of how this all-important concept is being used to a completely different end. Military exploitation of space seems to take precedence over peacefull applications.

Scenario 3: Ecotopia

This scenario owes its name to the California Ernest Callenbach, who created the prototyp of an ecological postindustrial social utopia in his novel *Ecotopia* in the mid-1970s.

At present, the Ecotopia approach can be found within the "alternative" culture, in the "new sensitivity" or the peace movement, and in environmental protection initiatives. The ecologization of the industrial culture is a desirable future scenario and its basic values can barely be called into question. The controversy only begins with the matter of feasibility.

Both the industrialists and the ecologists show mutual ideological prejudices. Instead of an historical development, we witness sectarian strife between the two camps – which in no way benefits progress. This is an expression of the debate on paradigms which is so typical of present times (Capra 1983).

Ecotopia is a dream with great appeal. As an alternative to industrial society, it not only encourages a counterattack by protest groups in Western nations. Ecotopia has also become the secret image of advanced affluent citizens, as illustrated by the range of "ecoproducts" and the leisure behaviour of the middle classes.

Scenario 4: Chinatown

The platform for the future scenario of Chinatown is the persistent world population explosion, above all in the southern hemisphere of our planet.

It is to be expected that all the cultures will become more and more international and heterogeneous. The mere increase of population density highlights the fact that a more complex and higher form of organization of cohabitation on earth will have to develop. This is already evident today in the world's metropolises and industrial agglomerations.

Chinatown is therefore the name we have given to the new structure of highly complex, mixed, dense urban centres. They are not only a necessity but also present a new quality: the interaction between different peoples, races and mentalities offers a fertile breeding ground for new experiences, developments and forms of living. The world's existing Chinatowns in New York, Paris and Rio de Janeiro are sufficient evidence of this. Chinatown must not necessarily mean cramped conditions, poverty and conflict, but can also involve diversity, innovation and cooperation. Openess and flexibility are not only characteristics of the system; they also provide personal qualities which are the more favourable preconditions for Chinatown. Communal living, communes and all kinds of social experiments are preparatory models for the complex plurality of Chinatown.

Scenario 5: Findhorn

The New Age Centre in Findhorn, Scotland, stands for the many spiritual communities that exist all over the world. Findhorn is the most manifest change in the values of industrial culture. Quantitative and material goals are no longer the only ones valid; spiritual and nonmaterial qualities come

more and more to the fore. Materially saturated societies strive towards internal growth; their first expression of this aspiration is a change in consumer habits.

The wave of occultism, the new awareness of the body (jogging, aerobics, yoga) and pop music reflect this trend towards spirituality and the search for one's inner self.

The complexity of highly industrialized countries and the loss of values has led to a desire for absolute and transcendental orientations which can easily be understod.

This legitimate demand is confronted by a series of reputable and less reputable approaches: meditation circles, world life-saving orders, black magic, etc. However, commercialization and perversion cannot divert from the basic tenor, i.e. the development of industrial society's materialistic conception of life into a spiritual and holistic understanding of postindustrial culture. The Findhorns of the world are therefore to be regarded as experimental laboratories of the new society which, in the world of today, are already anticipating upon what shall be relevant for the whole of society in the world of tomorrow.

Scenario 6: Gaia

This holistic, ecological scenario is named after the Greek goddess of the Earth and Nature. On the basis of the Gaia hypothesis of the cyberneticist Jim Lovelock and the microbiologist Lynn Nargulis, we have formulated the Gaia scenario as an antithesis to the megamachine, spaceship Earth as an abulic vehicle and bearer of life.

Gaia means that the earth with all its "crew" represents an intelligent living organism constantly optimizing its survival potential.

To guarantee their own survival, human beings must therefore think and act in a global, ecological context. Accordingly, all attempts towards internationalization, cross-border activities, global control and coordination are to take precedence over isolated, separatist nationalistic tendencies. Ecology is only possible with reference to the entire ecosphere, and not with reference to limited regions.

Gaia is an innovation within the evolutionary processes of the history of mankind in that it consciously recognizes and respects the existent network of the economy, nature and culture. The demand for cooperative, consensual world politics is made explicit and perpetuated by the Gaia image. The fact that this idea seems illusionary does not detract from its necessity.

Scenario 7: Dallas

The American television series "Dallas" is a popular symbol of the dream of "the good life" as a privilege of the materially richest classes of society. For research on the future, the Dallas scenario stands as a metaphor for the

perpetuation of industrial capitalism, combined with the myth of the "American way of life".

The image of Dallas is still predominant, albeit somewhat scratched on the surface. Despite the fact that it is no longer a generally desirable future scenario since it can only plausibly promise the social climb to a selected few, it nevertheless remains effective. The new entrepreneurs, new venture capital projects and the backing of technologies such as microelectronics and genetic engineering clearly demonstrate the fact that Dallas will continue to play a major role for some time to come.

Dallas also represents the Machiavellian view of reality as a combination of intrigue, power and violence and is not an optimistic scenario for the future. Within certain limits, Dallas is an optimum which evidently seems worthwhile to those with a fixation on the economy and the industry. Dallas' raison d'être within the scenarios for the future is linked to its feasibility – if only for a few. Dallas is not borne out by normative strength, but by its roots in facts.

New Strategies for Health Promotion in the Working World

H. Pfaff

During the conference a number of problems were addressed on the occupational practice of health promotion. A warning was given against making a positive health concept the exclusive basis of the strategy. This could have the consequence that existing known health risks could be neglected in future projects. A balance must be struck between the goal of promoting positive health and the goal of avoiding disease.

Regarding the question of whether the health promotion strategy should be more individual or more situation oriented, it was agreed that programmes for health promotion in the working world must focus on both aspects. Also, with regard to the question of the extent to which health promotion should be self-organized or initiated by experts from above, most of the participants were in favour of a pragmatic approach. Prevention should be seen as a long-term learning process. The means brought into play will depend on the nature of the problem. Thus, prohibitory measures, for instance, may be an absolute requirement in dealing with problems of smoking and alcohol consumption in the workplace while, as far as the avoidance of psychosocial stress and the enhancement of stress management resources is concerned, workers' participation in the organization of work should be in the foreground. The need to involve traditional workers' health and safety experts in health promotion programmes was also emphasized.

A warning was expressed against ill-considered "import" of models from other countries. The cultural differences between countries are often too great to allow that. The criticism was also expressed that many health programmes do not take account of the basic conflicts that exist between employers and workers. It was also noted that, rather than new programmes, there is a need for political decisions. A split in health promotion practice between promotion of the health of management on the one hand and failure to remove known health risks for workers on the other was also seen as a danger.

It was pointed out that, in the previous health promotion programmes, too little account had been taken of women's work and the relationship between production and reproduction. It was strongly recommended that attention be paid to this problem and the question of risks in service occupations – precisely because of the increasing trend towards a service industry society and the changes that are taking place in the working community generally.

From the point of view of the future researcher, the criticism was expressed that the former concepts of health promotion focused unduly on the existing situation of society and took too little account of the future trends in work and society. A consensus was reached to the effect that holistic health promotion strategies should be applied that encompass different approaches to health promotion. In that respect, a pragmatic approach should be chosen which also aims in the long term at ensuring participatory work organization and a combination of lay and expert contributions as well as a combination of sickness- and health-related strategies.

A New Approach to Health Policy Relevant to the Working World

As a first conclusion of the conference, it can be stated that there is a need for a new policy on health-related activities in the working world. During the conference, it became clear what the most important components of this new policy should be, namely: a sociological approach, a holistic view, the involvement of all concerned in the promotion of health, and self-organization of work. It was, however, also clear that the occupational reality of health promotion up to now, as measured against the new goals and perspectives, still shows considerable shortcomings.

The necessity for a new policy results from two considerations: *first*, the shortcomings of traditional workers' health and safety arrangements, which came to light during the discussion on the risk-factor concept and the critical review of occupational medicine; and, *second*, the marked change that is taking place in the working world. The correction of existing shortcomings and an adaptation to the changes taking place in the working world call for a reorientation of occupational health measures. The new approach is characterized by an opening to projects that focus more on the general promotion of health and less on the prevention of specific diseases although, as mentioned, a balance is necessary. In fact prevention and health promotion must be viewed as two end points in a continuum, to which different health projects are oriented. The new orientation of occupational health policy will be accompanied by a shift away from prevention towards health promotion in general.

Project Classification

A second conclusion of the conference concerns the need for a proper classification of health-promotive interventions. From the background papers, presentations and discussions, it became clear that health promotion programmes can be classified at four levels:

1. Situation and objectives (disease versus health)
2. Starting points (individual versus situation)

3. Organization (external organization versus self-organization)
4. Target group (risk population versus total population of a workplace)

At the level of situation and objectives, two types of health promotion project can be distinguished: the first focusing on disease and the goal of protection against specific conditions and the second focusing on "health" and the goal of general promotion of health and wellbeing. As stated, there is a continuum between both situations (disease versus health). In these terms, "disease" can be classified under the preventive approach, while "health" is the focus of the health promotion approach. *The future trend with regard to the goal of health policy relevant to the working world is thus moving in the "health" direction.*

At the second level, that of the starting points of health promotive intervention, it is also possible to distinguish two types of measure: individual-oriented versus situation-oriented programmes. The existing research findings point to a need to complement existing traditional health education programmes, which for the most part focus on modification of individual behaviour, by concepts of health promotion in the working world, aimed at improving working conditions with regard to the stress and resource situation. In this respect, *there will be a shift in the orientation of occupational health policy from the individual to the work situation.*

Regarding the third level of the organization of health programmes in the working world, it was noted that an essential distinction can be made between external organization and self-organization. Each of these two forms constitutes the end point of a continuum along which the different projects can be classified. The need was recognized to replace the external organization of the health promotion programmes, which is up to now, closely bound up with the traditional preventive approach and domination by experts, by self-organization, which can develop into participation in matters of work organization. This necessity is demonstrated on the one hand by research which shows the importance of real participation for stress management and the promotion of health, and on the other by the *future changes in the work situation marked by increasing decentralization and greater emphasis on self-organization.*

Health-promotive measures can be identified at the fourth level of the target group and/or population they are directed to. In this respect, two essentially different types of project can be distinguished: on the one hand programmes that focus on the risk population of a workplace, e.g. people with high blood pressure, and on the other hand projects that cover the entire population of a workplace. Here again, *the new orientation of the occupational health policy will extend the focus from care of the risk population of a particular workplace to health promotion of the entire workforce.* This will occur not least because the emphasis in health promotion will in the future be on health, and hence the target group will include the healthy as well as the sick and those at risk. Alongside this distinction of target groups at the micro level of a workplace, different target groups can be

distinguished at the macro level. The following were considered: large companies versus small companies; work within a company versus external work forms; and gainfully employed versus non-gainfully employed, e. g. housewives.

Health Education, Information, Participation

A third important conclusion of the conference relates to the close links shown between health education and participation in the working world. It was stressed that only limited participation by workers in health matters is possible unless proper information is given about the interrelationship between living and working conditions on the one hand and physical, mental and social health on the other. This task of information transfer falls to all concerned with education for health.

It was made clear that, in health education, it is not enough simply to impart knowledge and information about the interrelationship between work and health. It must also be possible to apply this knowledge in the working world. It is only through experience of actual application of the information obtained that the necessary motivation can be created to trigger off the process of learning and application of health information. In health education, the element of application of findings should be firmly established. Health promotion through participation and progressive health education should be closely interwoven in the future.

Health Promotion and Future Research

The fourth conclusion of the conference deals with the future tasks of research in the field of health promotion in the working world. The needs for future research relate both to basic research and to the evaluation and documentation of occupational health promotion.

With regard to *basic research*, it was stressed that its orientation must change. Alongside the epidemiology of disease, more emphasis must be given to the epidemiology of health. Not only the question "What makes one ill?" but also "What makes one healthy?" should be the centrepoint of research on health promotion in the working world. In this connection, the following questions were asked: What factors promote positive health in terms of wellbeing? What indicators are there for health promotion and positive health?

It was emphasized that occupational health physicians engaged in research and practice must work more closely with social scientists. Also, more consideration should be given to the subjective importance of disease and health, and subjective wellbeing must be accepted as an indicator of health, also in medical thinking. The social determinants of health and health behaviour modification should continue to be investigated.

In this respect, it should be borne in mind that an exclusive concern with the negative aspects of the working world (health risks, accidents, psychosocial stress) often falls short of the target and should be complemented by attention to the positive aspects (control over work, social support, the challenge of work). A further important point is to develop indicators for measurement of positive health so as to provide a basis for evaluating health promotion projects.

In the field of *research on occupational health promotion practice*, a gap was noted with regard to the description and documentation of the available projects and programmes. To fill this gap, a focus for future research work should be established. Alongside documentation, more efforts should be made to evaluate existing projects. Research on occupational health promotion practice should include the following steps: analysis of practical needs for health promotion, description, documentation, classification and, ultimately, careful process and result evaluation of individual health promotion programmes. It was suggested that existing institutions or ones due to be established might be asked to collect and expand the existing information on projects for health promotion in the working world.

It was further noted that both the nature and the methodology of research must change. This science must in the future be seen more as a service institution, which, alongside innovation, is above all concerned with project guidance and evaluation. In this connection, it was asked repeatedly that increased efforts be made to enhance self-organization by workers in connection with health promotion. Also, there was wide agreement that efforts should be made to link the knowledge of workers with that of experts. This would require a new relationship between health experts and greater participation by workers in the development and implementation of individual programmes.

During the discussion, it was stressed that the new orientation of research towards a positive concept of health should not result in a neglect of existing risks of the working world. The view was also expressed that there is already quite enough knowledge of health hazards in the working world and that the real problem is to apply that knowledge to occupational practice.

Programme Mix in Terms of Strategy

A final conclusion of the conference was that a strategy of health promotion in the working world which is applied at different levels and operates with several goals is more effective than a strategy which pursues only one goal such as lowering of blood pressure. Such a "mix" of strategy components – oriented simultaneously to different intervention points such as the individual and the situation and also focusing on the prevention of specific diseases as well as the promotion of wellbeing generally – can have a synergistic effect and has the advantage of being relevant to the different needs of members of the workforce.

The basis of this work should therefore be a holistic approach to health with a socioecological orientation, which recognizes that the individual in the working world should have available resources, e.g. social support, scope for initiative, knowledge and skills, by which psychosocial stressors and other health risks could either be eliminated or coped with better. Furthermore, health promotion concepts should be developed which take into consideration not only large companies but also small and medium-sized ones as well as various forms of unpaid work, e.g. by housewives and dual employment, including paid spare-time work. The specific problems of women, e.g. double burden, and their forms of work should also be given special attention.

Recommendations

The participants unanimously and enthusiastically welcomed the intention of the WHO Regional Office for Europe to enhance health promotion in the working world at both the national and the international levels. Underlined also in this context was the fact that health promotion in the working world would not be limited to workers' health and safety, but would encompass other aspects such as stress management programmes, participatory workplace organization, prevention of work-related diseases and promotion of positive health. For future development in this key area, the following recommendations were formulated:

Network Promotion. The development of national and international networks of staff experienced in research and the occupational practice of health promotion should be supported by all possible means, including information leaflets, magazines, meetings and follow-up telephone calls.

Documentation. Centres should be established at the national and international levels, where studies on health promotion in the working world could be collated and classified and then communicated to interested persons in the fields of research and practice. The Regional Office should play an essentially catalytic role in support of national efforts.

Research. In the scientific field, future efforts should focus on the following points: health indicators, case descriptions as well as the process and result evaluation of individual programmes, social determinants of health and behavioural change and analysis of health promotion needs in the working world.

Further Development of Practical Health Promotion. Successful projects for health promotion in the working world should be publicized in journals and other media. Each person connected should help spread the idea of health promotion by all suitable means and not relinquish responsibility for this to governmental bodies or international agencies.

Some Concluding Remarks

B. Badura

The increasing relevance of health promotion in the working world is related to the modification of disease patterns and the development of new information technologies which render obsolete the traditional approach to health protection at the workplace. A case in point is the term "occupational diseases". Today, it is realized that the knowledge and experiences of workers and employees need to be taken into consideration just as much as scientific research data to provide a realistic view of the problem.

Many Aspects To Consider

A major prerequisite of health promotion in the workplace is the analysis or diagnosis of the company and the work environment with regard, first, to stressors, control of work, physical risks and social relations and, second, to the impact of these factors on the health of employees. Without such a baseline survey, no priorities can be met. Nor can evaluation of the effects of single measures and experiments be carried out.

All who are concerned, i.e. employees, employers, professionals and researchers, have to face new problems which are not merely scientific; the knowledge base of health promotion is a synthesis of the knowledge of experts (social-epidemiology and occupational medicine) and of the experiences and knowledge of the workers.

In addition health promotion should not counteract major interests of the company or its goals. It has to be accepted by the employees. At the same time, it must be scientifically sound and intent on evaluating its effects. In this respect, basic research in socioepidemiology and in sociopsychosomatic factors as well as on practical experiences in health promotion cannot rely on single projects; it needs a well-established scientific infrastructure.

At present we are witnessing exciting new developments which will help us to understand better than before how social factors are linked to psychological factors and psychological factors to physiological factors and other processes. Modern psychobiology is currently on the way to giving a new impetus to epidemiology. Sociology and psychobiology, especially psychophysiology, are able to contribute not only to the identification of causal relationships – which is the main task of epidemiology – but also to the clarification of causal mechanisms (Badura et al. 1987).

New Roles for Professionals

Another prerequisite for the implementation of health promotion programmes at the workplace is a new perspective on the part of professionals. It might be best expressed by four key words: initiate, consult, study and evaluate.

A professional *initiates* activities of health promotion based on current epidemiological knowledge. He or she *consults* groups and organizations on how to design health promotion programmes. He or she *studies* experiments, accumulates evidence of success and learns from negative outcomes. Finally, he or she provides the professional support people need to *evaluate* their activities and draw conclusions concerning future programmes and activities. The entire process is focused on permanent learning and involves both professionals and lay persons. Health promotion cannot be implemented by a "top-down" approach. It needs a "bottom up" approach that involves all those who are concerned about their health.

The Main Focus: Factors Which Contribute to Health

Health promotion is a new approach that stimulates health-related activities in the working world. At the same time, it is deeply rooted in the history of public health (Dubos 1959). Its implementation, however, is no easy task, based as it is on a broad socioecological concept of health. This calls for the systematic identification not only of factors which contribute to the development of illness but also of factors which contribute to health. A positive vision of health, a holistic approach to health and a socioecological model of health are the foundations of health promotion in the working world.

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