

III. Previous findings

INTRODUCTION

In characterizations of work and the work environment in stress research a distinction has often been made between the objective and the subjective work environment. In the study of stress in work life, on one hand, the study of the objective environment has, however, usually been restricted for practical reasons. On the other hand, the more the stress theory has begun to underline the cognitive evaluative function of the person as a perceiver of the environment, the less the

direct link between the objective environment and the person has been emphasized. Both the physical and the social environment is referred to in the selection of variables describing the objective work environment. The subjective work environment includes experiences with the objective physical and social aspects at work. In research reports the objective or subjective nature of the work variables is not always made clear, and therefore this variable cannot be reliably taken into account in the literature review.

The empirical research on work stres-

sors increased at such a rate during the 1970s that theory construction and concept definitions have lagged behind. This fact diminishes the comparability of the various writings. In job satisfaction research some studies have concentrated on overall job satisfaction (29), while others have regarded job satisfaction as a complex formed of the employee's conception of more specific aspects of his job (4, 249). The term stress, in turn, is used to describe the work characteristics, the imbalanced state, and the reactions of the individual.

The varying use of the independent, intervening, and dependent variables makes it difficult to compare the results of different studies and determine the causal relationships reported unless the definitions are specifically given in each paper. This situation makes an analysis of the literature in a theoretical frame of reference difficult. In this study the literature on job satisfaction, stress, and health in work is selectively reviewed on the basis of the work facet, and the work environment aspects are applied as a basis of classification.

OCCUPATION AND SOCIAL STATUS IN RELATION TO STRESS AND HEALTH

Some aspects of occupational life are closely connected with other aspects of the social environment. Social class and education are correlates of occupation. Epidemiologic research has demonstrated relationships between objective social conditions and response outcomes like stress reactions and health disorders. A typical approach of this field of research is the study of background variables of the individual, ie, occupation, vocational education, social status, etc, in relation to the health indicators.

Much support exists for an association between prestige and occupational status and job satisfaction (146, 211, 267). Studies in various cultures have shown that a low position in the social hierarchy is related to ill health more than higher statuses (126, 214). The large differences in health among different occupations cannot, however, be solely explained by social status. Differences between occu-

pations on about the same level in the social rank are also common, as has been revealed, eg, by disability statistics (250). The epidemiologic studies showing the same fact can seldom avoid the unsolved problem of cause and effect.

Occupation has often been considered as one reflection of the objective conditions of work. It is one of the criteria which define, to a large extent, an individual's position in the organization, his work's content, etc, which can be characterized by outside criteria. Occupational comparisons of stress reactions and health disturbances have been reported repeatedly in the literature. All the reports cannot, however, be considered as reliable from the point of view of the effect of occupation because of the many uncontrolled, contaminating effects.

In the Institute of Occupational Health, Helsinki, field studies on occupational stress in various occupations have been carried out. In spite of some differences in the methodology and the basic characteristics of the samples, close observation reveals differences in the stress levels. For example, bus drivers (226), firemen (134), and prison guards (135) differ considerably with respect to the reported subjective symptoms of stress. Firemen find the most positive aspects and less stress factors in their work, and they are the healthiest. The prison guards have more perceived problems than the others. Among bus drivers there is a difference between those who collect fares, having a relatively high level of symptoms, and those who do not. The first group approaches the stress level of the prison guards. These examples show that a global indicator like occupation as such does not reveal the basic predictors of stress. More specific, task-inherent aspects should be considered [reviewed by Kalimo et al (133)].

The same situation was also found in an analysis of the occupational differences among 23 occupations in the United States. Significant differences were found between the occupations with respect to psychological and physiological stress reactions (39). For each occupation, however, the level of stress varied strongly, depending on the specific task. Psychosomatic illnesses were more common for

persons with a "high stress" job (air traffic controller) than for controls (49).

The differences found between occupational groups in many studies (and in the health statistics) do not yet indicate where and what the reasons for the differences are beyond these broad categories (115). It is not known to what degree occupations as such, with certain work conditions, salary level, etc, lead with time to the differences in health or to what degree people with originally varying predispositions become selected to and from the occupations. The life-styles may also vary between the occupational groups.

SOURCES OF STRESS AT WORK

Factors intrinsic to work

Many studies have demonstrated correlations between the qualities of work, job satisfaction, symptoms of stress, and illness. The characteristics of work studied have been qualities of about any aspect of work — work content (eg, variability, challenge, responsibility), work arrangement (eg, forced speed, workhours), mental and physical work load, physical work surroundings (eg, underground location, noise) [reviewed, eg, by Kalimo et al (133)]. In these studies comparisons have been made between groups on the basis of objective measurements or subjective evaluations of the work characteristics, and the other, possibly influencing parameters have been more or less controlled.

Simple unchallenging work has repeatedly been found to be related to low self-esteem, low job satisfaction, and low general satisfaction with life (28, 81, 125). Repeated evidence has also indicated that repetitive, paced work has an adverse effect on physical health (175, 245). Job satisfaction, measured with three inter-related variables (boredom, dissatisfaction with work load and general job dissatisfaction) had the strongest correlations with the underutilization of skills among intrinsic factors at work (39).

Responsibility for people at work has been found to be an important stress factor and to correlate, eg, with coronary heart disease more strongly than responsibility for material factors (270). Responsibility for the work of others has been

found to correlate with increased smoking and blood pressure among managerial and other professional staff (38). Heart disease risk among executives has been explained partly on the basis of the responsibility for others, but the data have not been found generally consistent (113). A comprehensive scale of job stressors (responsibility, work overload and role conflict) was associated with an increased risk of heart disease in a study of many professions (114). An increased incidence of coronary heart disease was found among middle-aged policemen who participated daily or several times per day in tasks causing objectively defined tension and anxiety (264).

In a sample of over 4,000 industrial workers patients with angina pectoris more often had work experience on paced conveyor lines than any other arrangement of technology. Workers in the sawmill industry had both physiological and psychological stress reactions in a linear relation to work cycle (82). Industrial workers working under forced speed had both stronger hormonal indices of stress reactions and more perceived symptoms than their co-workers who had a possibility to regulate the work speed themselves. There are signs of decreasing possibilities for self-determination, eg, along with technological advancement also in white collar jobs with concomitant risks of job satisfaction and well-being (27, 268). Deadlines in work performance have been found to be strong predictors of perceived symptoms of stress (50).

Not only mental overload but also physical work overload and inconvenient workhours have been proposed as mental health risks (146). Shift work has been found to be related to disturbances of physical, social, and mental health [reviewed by Rutenfranz et al (228)].

The relationship between work load and job satisfaction among administrators, policemen, scientists, and assembly-line workers has been found to differ between the occupations (104). Qualitative underload did not cause as much job dissatisfaction among assembly-line workers and policemen as among administrators and scientists. The result was interpreted on the basis of a supposedly higher level of expected intrinsic satisfaction in work by

the professionals than by the other two types of workers.

In work involving the care or service of other people the contact with the client is a possible source of stress. Feelings of being an "inflictor" of pain and having to cope with difficult patients were among the most important stressors of dentists (54). The same type of stressors has been proposed also in studies on nursing personnel at various types of hospitals (105). This subject is discussed more extensively in part IV of this report.

Role in organization

Determinants and consequences of role stress have received considerable attention in research on work life, especially since the pioneering work of Kahn et al (130). Dysfunctional consequences of role conflict and ambiguity have been found in many studies. Perceived tension, anxiety, dissatisfaction, lowered level of performance, and increased turnover have been proposed as consequences of role conflict and ambiguity (116, 130, 189, 192).

The relation of role stress to psychological symptoms and tendency to change jobs has been found in, eg, groups of hospital staffs (237). Among practical nurses role conflicts were statistically significantly related to psychological stress reactions (127).

In addition to these determinants role stress is related to low job involvement and, on the stressor side, to task characteristics with a low motivating potential (98).

In addition to perceived dissatisfaction and symptoms of stress, role stress has been found to be a risk factor of coronary heart disease (56). Also other physical diseases, eg, ulcers, have been shown to correlate with role stress. Foremen, representing a job with a high role conflict level, were several times more prone to develop ulcers than laborers (177). Indices of cardiovascular dysfunction, including diagnosed diseases and acute measurements, correlated with perceived role conflict in a group of inhabitants in Kibbutz. Great differences were found between occupational groups covering workers from agriculture to industrial work and white collar jobs. The interrelation of

coronary dysfunction and role conflict was, however, found only among the white collar groups. It may be hypothesized that white collar groups are more apt to experience role conflicts and ambiguity than blue collar workers who usually have a more restricted task content and less interpersonal cooperation (247).

The effects of role conflict have been analyzed in some studies on the interactive combinations of some other stress-determining factors. Those persons found to be more subject to stress had more frequent communication with the role senders in a role conflict situation (130). Important also is the power and authority of the persons sending the role messages (226). Different kinds of role stress have sometimes been found to correlate in opposite directions with work attitude variables like job satisfaction (172).

Organizational structure and climate

Organizational structure is becoming an increasingly popular object of research. One reason for this is the recent trend in activities aimed towards increasing the democratic participation of workers in the decision making of companies.

In the use of the literature written on organizational structure and climate in relation to job satisfaction and stress, a main problem is the heterogeneity of the definition and, particularly, the operationalization of the concept. Sometimes it has included dimensions which perhaps refer rather to the intrinsic variables of the job itself (203). Sometimes items of the so-called psychological climate have been connected with the organizational dimensions. In this field recent theorizations have, however, brought some clarity (86).

Organizational climate is generally considered a property of the organizational system. It is, however, clear that one single organization leads predominantly to heterogeneously perceived climates (203). In this respect both the objective aspects of the organizational structure and the perceived climate are important targets of study.

In this report the specific organizational aspects of closed institutions have been discussed elsewhere, in part IV.

Among the most important organizational factors to be discussed recently have been workers' participation, which has taken, eg, the form of autonomous working groups and a greater participation in the decision making of the company in general. In congruence with these macro-level aspects immediate decision-making latitude and autonomy in one's work have also been important topics of study.

The study of the effects of worker participation started from viewpoints on the productivity and motivation of workers. More recent is the perspective of the climate factors on the well-being of employees (236).

In a study of French & Caplan (74) those persons who reported greater opportunity for participation in the decision making of the company reported significantly higher job satisfaction and a higher feeling of self-esteem. The same has been stressed by Karasek (138), who has also presented a two-factor theory of the determinants of job stress. According to this theory the most important predictors of job stress are the decision-making latitude and the work demands. In view of a review of the related literature Karasek has demonstrated a verification for his theory on the basis of national statistics from the United States and Sweden.

The feasibility of this theory is expectedly the best for worker groups with restricted or irrelevant interpersonal relations at work and, correspondingly also, role networks. The two dimensions are probably not sufficient to describe all the stressors of work in complex organizations or high-level posts in general.

Autonomy, self-determination, and decision making have been demonstrated to be important determinants of job stress also in some other studies of Swedish workers (82). A perceived lack of possibilities for decision making was related to escape reactions among female electronic workers (157).

An increased participation in planning and decision making has, in turn, been found to lead to the following positive consequences: heightened production, positive attitudes towards work and organization, improved relations among co-workers and between superiors and subordinates, and a lowering of the symptoms of

overload and stress (51, 71). Prestige and control over work were significant predictors of job satisfaction and were inversely related to job alienation in a group of male workers (50).

Leadership styles are an aspect of work organizations, that has been extensively studied. Investigations concerning their relation to the stress of subordinates has produced varying results. Usually the relation has remained rather low (246), and it has been suggested that the effects of leader behavior and power may be modified by the nature of the subordinate's task and his personality (254). A subordinate's personality variable, locus of control, was not found to moderate the relationships between job tension and leadership variables (246).

Human relationships at work

The relations between individuals on the horizontal or vertical dimensions are one possible source of job satisfaction and stress. On one hand, many of the scientists studying job satisfaction have included human relations at the workplace in the taxonomies of the determinants of job satisfaction, as has already been indicated. On the other hand, good relationships have been considered as an indicator of positive mental health (12, 118). Human relations are thus regarded both as dependent and independent variables.

One of the remarkable works in this field was done by Kahn et al (130), who discussed human relations as organizational role indicators. Among the risk situations in interpersonal relations which are particularly relevant for the present study are the so-called boundary positions and innovative roles, the latter especially in bureaucratic, static organizations. Boundary positions indicate that a role sender is located in a different social system than the focal person. In certain types of organizations and tasks (involving the prison organization under study) possible sources of stress may be based on boundary positions in various relationships (line versus staff, institution versus customers, one shift versus another). Persons holding a so-called innovative position in an organization that is as a whole bureau-

cratic and static easily end up not only with role conflicts but also with interpersonal conflicts with those who are involved in maintaining the status quo.

In later studies correlations between perceived interpersonal problems and stress reactions have been reported repeatedly. Problems in relations among staff have been found to be related to a large number of psychological stress reactions among practical nurses (127). Interpersonal problems were among the most important work stressors in relation to psychological stress reactions, especially depression, also among electronic workers (157). In the latter study the conclusion was drawn that contact problems are secondary by nature, ie, based on other problems in the work environment.

Communication possibilities among staff members have been found to be one explanatory factor for the more beneficial influence of small institutions in comparison to big ones. A more fluent and close communication in small than in large organizations has been shown to modify nurses' job satisfaction in psychiatric hospitals [reviewed by Rump (227)].

It is important to note that not only problems in existing relations may be sources of stress, but also a lack of possibility for communication and contacts. Short-term sickness absences have been found to be more common among those workers who had only an eye contact with each other in comparison to those who had a possibility for closer communication with co-workers, other things being equal (24).

The role of interpersonal relations has been found to be conditional in some studies. The effects of quantitative work load on physiological functions have been found to be dependent on the quality of the relationships between superiors and subordinates and among co-workers. For instance diastolic blood pressure was related to work load, but only among those employees who had poor relations with their immediate superiors. Relations with immediate subordinates had an even stronger effect on blood pressure than relations with superiors (71). These findings indicate that good relations at the workplace act as a buffer against the stressful effects of work load. The condi-

tioning effect of social relations was not, however, realized in the relation of work stressors with psychological stress reactions.

STRESS FACTORS OUTSIDE WORK

In the study of work stress a large proportion of the variation in stress reactions, which are often perceived symptoms, usually remains unexplained. This finding has led to an additional emphasis on possible stressors outside work.

One recently much-studied group of such stressors are changes in life which, according to the related theory, represent situations with a necessity for the individual to adapt. Repeated demands on an individual's adaptive capacity are possibly supposed to exceed his resources and lead to disease. A whole research tradition has developed to study the impacts of changes in central aspects of life on an individual's health [reviewed by Cleary (45)].

Research results have shown that such health disorders as depression, coronary heart disease, and various other physical diseases increase in number and intensity in relation to previous stressful events like job changes, death of a meaningful other, divorce, etc (64, 215). In the studies on the effects of life changes on health, all types of changes have been treated qualitatively equally, the grading being only quantitative. Behind this approach is the notion that any change in a person's environment creates new challenges and mobilizes his adaptive capacity, ie, causes stress in Selye's (241) sense. Criticism has, however, been raised on the possibly different consequences of favorable versus unfavorable events. Some studies have shown somewhat opposite effects of the so-called gain and loss events on health (63, 265).

MODERATORS OF STRESS

Personality

Individuals differ in their susceptibility to stress under exposure to specific stress factors in work, and also in their psychological, physiological, behavioral, and sociocultural responses to stress, ie, in re-