

fensive reactions are at least hard to differentiate. The continuation of the reactions activated at the alarm stage is not clearly indicated at the phase of defensive reactions, even in the model. It is, however, obvious that the responses evoked as alarm reactions continue and are diminished according to the successfulness of the defensive reactions. This type of overlapping takes place at any change of phase.

In spite of certain weaknesses Jenkins' model demonstrates the fact that the stress reaction will not become fully understood and explained as long as it is viewed as one global reaction pattern. Its differentiation also provides a basis for the study of the possibly different determinants of various levels, ie, psychological, biological, interpersonal, and sociocultural.

This type of general conceptual model can never be covered in one single study. Only accumulating evidence from studies covering certain partial aspects of it can finally test its applicability.

POSITIVE ASPECTS OF MENTAL HEALTH

In the study of work and health the main emphasis has been on the study of the presence or absence of symptoms and health problems in general. Very little attention has been paid to the positive aspects of health. The World Health Organization's definition of health as a complete state of general well-being is often cited but rarely included in the theoretical models, and studies on the positive aspects of health and their determinants are not many.

Problems in the study of the positive aspects of, especially, mental health are at least partly definitional. Variation in both the definition and measurement of mental health is common. One generally applicable classification system is the following, which includes indicators of both the positive aspects of mental health and its disturbances (139). Mental health first covers the indices of functional effectiveness. The basic idea is to regard health and illness as the capacity of the person to perform in social relations and fulfill institutionalized roles. Other characteristics of mental health are indices of well-being. This

category contains the affective states (eg, depression, resentment, anxiety) and "the various content areas of evaluation and satisfaction [p 509]" (eg, job satisfaction, life satisfaction, need satisfaction, self-esteem). A third group of mental health indicators is the indices of mastery and competence. Growth and self-actualization, coping resources, and the attainment of valued goals are some of the functions belonging to this category. The fourth group of mental health indicators is psychiatric signs and symptoms. Kasl (139) considers this category as residual. It includes states which are not included in the other three categories and which have clinical significance.

The first three categories at least partly reflect the central aspects of positive mental health, as characterized by several earlier writers [eg, Jahoda (118)].

The dimensions of positive mental health have not been found to correlate strongly with psychological and physiological symptoms such as anxiety, worry, and dissatisfaction. The psychological resources have thus been found to be a dimension separate and somewhat independent of health disturbances, which is something other than only a state without illness (26, 271).

In empirical research the following features have been measured as indicators of positive mental health: positive state of mind, lack of neurotic symptoms (219), life satisfaction, wish to live, and social activity (142). Closely related and partly overlapping indicators have been used under the heading of social well-being, such indicators as marital satisfaction, social participation, and work ability (219).

The techniques for measuring the positive aspects of mental health have not received as stable a position in health research as the measurement methods of illness have. Thus, both the indicators studied and their measurements vary strongly (271).

STRESSORS AT WORK

Introduction

Work is one of the fields of life in which adult persons spend a large part of their time. It is comprised of obligations and challenges, opportunities for the use of

personal potentialities, and networks of roles and social contacts. There are also many possible sources of stress.

A description of the general principles of the stress mechanism and the progressive health outcomes was presented earlier with reference to the various intervening variables. The same general concepts are applicable also to work stress. An overview now follows on those factors at work which may act as environmental aspects in the development of stress.

A great problem currently facing the researcher studying occupational stress is that there is no integrated theory or conceptual framework for person-work interaction. The field studies done before the 1970s are primarily descriptive reports. Thereafter various efforts have been made to systematize the analysis of the sources of stress in work (39, 56, 57, 59, 183). The structure and classification of various groups of phenomena in these propositions are important steps in theory building. They too are, however, for the most part descriptive in nature. Theories pointing out the basic psychological processes behind the mediation of job stressor effects are still fragmentary.

A model of work stressors

Among the recently presented diagrammatic views of job stressors is the model of Cooper & Torrington (59) and an almost identical version of it by Cooper & Marshall (57). The following description of the work stressors is given on the basis of a synthesis of these two versions of the model reproduced in fig 1. In the present report some complementary aspects are added which were not included in the presentation of the authors.

Factors intrinsic to job

The block of factors "intrinsic to job" covers variables indicating the work load. Both underload and overload are conditions which do not fit with the characteristics of the individual and are sources of stress by definition. Underload and overload may be both qualitative and quantitative (70). Qualitative underload is a result of too little demanding work in comparison to one's abilities, and quantitative underload of too little to do to keep up

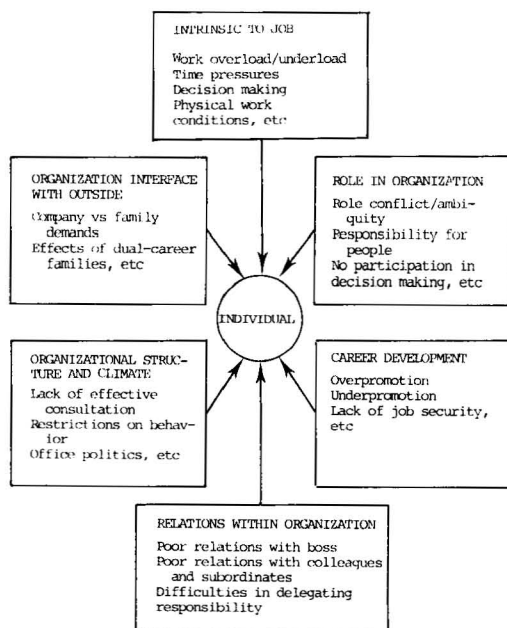


Fig 1. Sources of work stress. Modified version of the model of Cooper & Marshall (57) and Cooper & Torrington (59).

activation and to satisfy one's readiness to function. Qualitative and quantitative overloads refer to tasks that are too difficult and too much to do in a given period of time, respectively. Miller (190) has proposed that overload leads to a breakdown of most systems, be they single cells of an organism or working people in organizations. Work load in turn is dependent, on one hand, on the content of work and, on the other, on work arrangements. The most important content variables are the variability and complexity of work and the possibility to use one's skills and abilities. Crucial aspects of work arrangement are, eg, time schedules, individual work, group work, and the pacing of work either mechanically or individually. A lack of self-determination with respect to both the content and the arrangement of work is also a known stress factor. Thus time pressure, marked in the model (fig 1), is one example of work arrangement factors.

The intrinsic work stressors have sometimes been conceptualized as two-dimensional (138). The two basic dimensions according to this view are job demands and decision-making latitude. According to Karasek's theory job stress is seen as a function of the level of job demands

put on the worker's skills and, on the other hand, of the personal discretion over the matters in one's work.

In the model of Cooper et al physical work environment is included in this group of factors. Such factors as noise and other environmental conditions are physical environment aspects that are often also of psychological importance.

Role in the organization

The conception of the individual's position and behavior in relation to the organization is based on the role theory. Role concepts have been defined as "the major means linking the individual and the organizational levels of research and theory; it is at once the building block of social systems and the summation of the requirements with which such systems confront their members as individuals [p 197]" (141).

The roles represent the expectations of the individual and the organization. Roles are sets of behavior that persons expect of occupants of a position (91). The determinants of role-making systems can be classified into three major categories: technological systems, social-cultural systems, and person systems (183). In a successful case the role favorably serves the interaction of the individual and the organization. It can also be dysfunctional. Kahn et al (130) brought up the terms role conflict and role ambiguity to describe dysfunctions in roles. Role conflict is defined as a condition of incompatible roles sent to the focal person, and role ambiguity is defined as the existence of a lack of clarity in the sent roles. Both role conflict and ambiguity have been defined as having objective and subjective components. Later definitions have further refined the original definitions: "... role conflict is conceptualized as the degree of incongruity of expectations associated with a role. Role ambiguity is conceptualized as the lack of clarity of role expectations and the degree of uncertainty regarding the outcomes of one's role performance [p 114]" (237). Role dysfunctions have been interpreted as hindrances to perceiving tasks including high levels of autonomy, identity, or feedback, ie, determinants of job satisfaction and possible risks of job stress (237).

In the cited model variables indicating responsibility for people could also be included in the intrinsic job characteristics. This possibility implies that responsibility can be considered as one feature closely related to the content of work. In the tasks of health care, eg, the responsibility for people is an inherent content characteristic of work, rather than a role indicator.

Participation in decision making is another dimension that could be placed in the model as part of the group of indicators of the organizational climate (204).

Career development

Certain aspects of career development may reflect work underload or overload and also role ambiguity and conflict. The potential stressors in career development are embedded in two main sources, lack of job security (fear of redundancy, obsolescence or early retirement) and status incongruity (under- and overpromotion, reaching of career ceiling, etc). A crucial aspect in the stressfulness of career development is the individual's level of aspiration and achievement motivation in relation to career promotion. Another determinant of promotion stress is the abilities and skills of the worker in relation to job demands. Schein (234) has differentiated various stages of career orientation in the individual life cycles.

On the job, education and guidance are important modifiers of potential career stress. Lack of job security in turn does not only mean a danger to one's aspirations and self-actualization, but it also evokes anticipation of concomitant effects outside work, eg, lowering of financial level and social status. All these instances are threats to the individual's self concept (see the section Self Concept under Stress Theory).

Relations within the organization

The two main dimensions of the relations in organizations are the vertical and the horizontal ones. The vertical dimension covers the relations between persons in various positions in the organizational hierarchy. The lateral or horizontal dimension refers to co-worker and peer relationships.

Theoretical structures of the communicative aspects of human relations in the organization have been fragmentary. Three basic orientations in the theoretical analysis have, however, been differentiated, human relationists, behavioral decision theorists, and process or system theorists (212).

According to the human relationists' view, the interindividual relations in work are bound by the affiliation needs of man. A number of writers (12) have considered the relationships between the individuals at workplaces as a strong correlate of individual well-being. The effects of interindividual relations are often indirect. Poor relations with superiors tend to lead to other phenomena, eg, information gaps and consequently role problems. For this reason superior-subordinate relations could as well, or perhaps better, be included in the group of variables describing the organizational structure and climate in the presented model. The same concerns the variables of "difficulty in delegating responsibility."

In client-oriented work the relations between the employees and the client are also crucial sources of stress, as discussed elsewhere in this report. Two types of relations, those among the employees and those between the employees and the clients, have not been clearly separated in the study of interpersonal stress.

Not only can difficulties in existing human relations be a source of stress, but so can a complete lack of relations. A lack of relations may be due to the work arrangement and/or physical work conditions (eg, noise). Sometimes the reason is a voluntary isolation on the basis of organizational reasons (managers).

Organizational structure and climate

The concept of organizational climate in the work environment is one of the contemporary focuses of interest among theorists, researchers and practitioners (106, 204). The value of the concept is that multiple aspects of the organizational function with reference to the structure can be covered by one global concept (235). The value of the global concept depends, however, on its internal consistency. Organizational climate has been defined as

a set of attributes which characterize an organization, its department or unit (35, 171) and as the characteristic behavioral processes in a social system at a particular point in time. "These processes reflect the member's attitudes, values and beliefs which thus have become a part of the construct [p 1128]" (204).

Organizational climate is also a function of the organizational context (purpose, technology, ownership, etc) and organizational structure (eg, authority system) discussed in part IV of this report. Indicators of the organizational climate often considered have been individual autonomy, degree of structure in one's position, reward and feedback, and consideration, warmth and support (35).

A strong controversy exists concerning the cause-and-effect relations of the climate, job satisfaction, and stress linkage (93, 124).

Organizational interface with the outside

The variables concerning the interplay between work and life outside work are numerous and only little known. Such aspects as the correspondence and overlapping of workplace and family demands are among the most common hypothetical sources of stressors. Problems in fitting the organizational aspects of shift work, family arrangements, and social participation are among the most discussed factors. Great distances between the workplace and home and long travel times to work are some of the recent characteristics of urban environments. This wide field of factors is recently receiving increasing attention in research and theory construction (77).

CONCEPT OF JOB SATISFACTION

Theoretical background

The literature on job satisfaction is very rich and includes both theoretical and empirical writings. Also a number of reviews have been presented [Two of the more recent are Locke (169) and Petersen (205)].

Among the most studied theories of job satisfaction are the need theories (277).

They explain satisfaction as a function of human needs and outcomes. Job satisfaction necessitates a subjective feeling of need satisfaction in work (195, 210). The need theories apply generally to Maslow's (1954) hierarchy of needs (4, 22).

The expectancy-valence theories with the greatest relevance to this study consider the conflict between expectations and perceived reality as a crucial aspect determining job satisfaction (97, 151, 181, 267). The scope of expectancy theories is wide and has been reviewed elsewhere (36, 94). In addition the terms "process theories" and "content theories" are used for job satisfaction theories. The two-factor theory of Herzberg et al (109, 110) has been classified as a content theory.

The theory of Locke (168) can be characterized as a cognitive process theory among the wide group of expectancy-valence theories. On the basis of this theory job satisfaction and dissatisfaction are, like all emotional reactions, value responses. As in all expectancy models, a basic determinant of reaction or action is the individually defined valence of outcomes, ie, their anticipated or perceived value. Values reflect the things an individual tries to achieve or maintain. They reflect the ways an individual perceives an object or a situation after evaluating it according to a standard. This standard reflects the person's ideas of what is good for him. "They are the form in which an individual experiences his appraisal of an object or situation against a standard of what he considers good or beneficial [p 485]" (168). The values vary both by content (what is wanted) and intensity (how much is wanted). Value judgements depend both on the level of satisfaction of values and on the importance of a value in the need hierarchy. All needs are not conscious, and all values are not congruent with the objective needs of a person.

Definition of job satisfaction

Job satisfaction is a state characterized by pleasure. It is a result of an appraisal of work as such that aids or leads to a fulfilling of values. Job dissatisfaction in turn is an emotional state characterized by displeasure and unpleasant feelings. It is a result of an appraisal of work as nega-

tive from the point of view of reaching one's goals, or as having features which are not valued. The evaluation of job satisfaction is based first on the perception of work characteristics and their evaluation, ie, cognition. As a second step a value standard is applied for an implicit or explicit evaluation. As a final phase a conscious or unconscious evaluation on the correspondence of the values and perceived realities is made, ie, the discrepancy between what is achieved and expected is evaluated (168). The latter phase comes close to certain aspects of the definitions of stress or well-being (205). In a later definition Locke has included the concept of need as a background of values: "Job satisfaction results from the perception that one's job fulfills or allows the fulfillment of one's important job values, providing and to the degree that these values are congruent with one's needs [p 1307]" (169).

Determinants of job satisfaction

All of the theoretical and empirically inferred views of job satisfaction have a problem in specifying the determinants and components of job satisfaction. Common components of many of the theories are self-actualization, autonomy, esteem, security, social affiliation, and pay (211).

Herzberg et al (110) classified the determinants of job satisfaction into two classes of variables, ie, intrinsic and extrinsic factors. Intrinsic factors are the achievement or completion of an important task successfully, recognition, responsibility, and advancement. Extrinsic factors are pay, technical supervision, human relations, company policy and administration, work conditions, and job security. The intrinsic factors are derived from the interaction of the individual with the work itself. These factors have also been called motivators or content factors. Extrinsic factors are derived from the organizational structure and function. An alternative label for extrinsic factors is hygienic factors.

Vroom (226) outlined a taxonomy of seven factors on the basis of previous factor analytical studies. These seven factors, which have since been applied in numerous studies, are company policies

and management, promotional opportunities, job content, supervision, financial rewards, work conditions, and co-workers. On the basis of much of the same literature, Smith et al (249) structured a taxonomy of the following five satisfaction-determining factors: supervision, the work itself, pay, promotions, and co-workers. Partially, the same factors are included in the classification of Hackman & Oldham (98, 99): skill, variety, task identity, task significance, feedback, and autonomy. Another much applied taxonomy has been presented by Davis et al (62); it is one of the most thorough models, comprising 20 factors. In a later second-order factor analysis these 20 scales approached a higher-order structure of two factors resembling Herzberg's dichotomy of intrinsic and extrinsic factors.

Locke (168) classified the values which a person can look for in his work into two groups, task-related values and nontask values. The first group of values cover such aspects as a wish to develop one's abilities at work, the interesting nature of work, a wish to reach goals, challenges at work, etc. Nontask values include, eg, occupational promotion, increase in salary, positive feedback, etc. Locke's classification of values also corresponds closely to Herzberg's theory of motivation and hygienic factors in work.

In the approach just presented job satisfaction was regarded as a long-term emotional state, ie, dependent variable. It has, however, been treated also as a motivating state, ie, predictor of, eg, work affiliation and performance. A third application of the job satisfaction concept is its position as an intervening variable. This aspect is discussed further in the empirical part of the present report.

ADOPTED FRAMEWORK

Introduction

The framework of this study is based on a synthesis of various theories on stress. The aspects of the framework concerning the relation of stress and health with interacting moderators has been the most systematically presented by Jenkins (122) in his previously described theory. The

conception of the primary phase of the process, ie, development of stress as a result of an imbalanced relation of the person and the work environment, has its background in the common views of many recently presented theories on job stress. The adopted definition of stress is based on McGrath's (182, 183) definition, which has been used by many other authors [eg, Kagan & Levi (128)]. The role of the cognitive appraisal of objective work conditions is adopted in the sense presented by Lazarus (152). The view on specific work characteristics and the qualities of the work environment which are supposed to be possible stress factors is based on empirical results and theoretical refinings of, eg, Caplan et al (39), Cooper & Marshall (56, 57), and McGrath (183).

Adopted model of stress

Stress is defined in this communication as a state of imbalanced relation between the individual and the environment. It may be caused by a mismatch (i) between environmental demands and individual abilities, (ii) between the individual's important needs and environmental opportunities, and (iii) between the individual's important goals and perceived reality.

The qualities of the environment that are the ecological counterpart of the imbalanced relation are called stress factors or stressors. The individual's response to stress is defined as a stress reaction. This is a wide group of responses which have been divided into psychological, physiological, and behavioral reactions. The end states of continued and/or strong stress are considered as the psychological, physiological, and social aspects of health. This process is modified by individual factors, social support, and environmental factors other than the original source of the stressors.

The adopted framework in fig 2 approaches the questions at the individual level. This framework highlights those elements in Jenkins' model that are particularly relevant to the analysis and the interpretation of the data in the present study.

The adopted view of the relevant components of stress at work is presented in

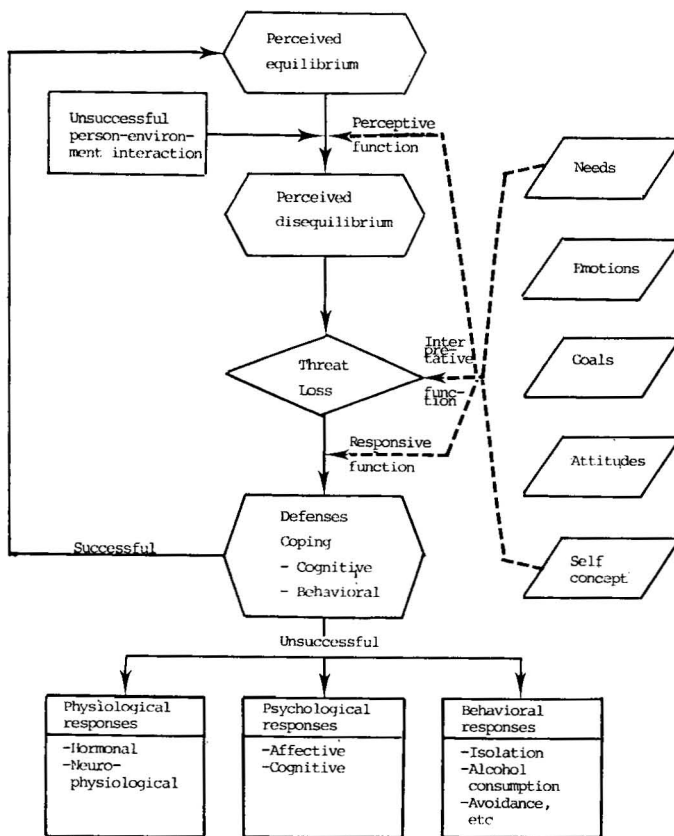


Fig 2. Adopted framework for stress on the individual level.

fig 3 and characterized in the following text.

Workers' experiences concerning the objective work environment are elements of the subjective work environment. The subjective environment refers to the perceptions of the individual. It is an approximation of what Lewin called "psychological environment" (163). In contrast to the outside, the objective environment exists inside the person and is modified by the person's perceptions and their interpretation (11, 39, 162). These cognitive appraisals include a conscious or latent evaluation of the correspondence of the work demands and one's own qualifications, and the correspondence of the work

and one's own expectations concerning the work.

Job satisfaction is characterized as a reflection of the positive experiences related to work, and correspondingly job dissatisfaction as the negative experiences. The relative weight of the positive and negative characteristics of work depends on their importance to each individual. A crucial aspect is the degree to which the work conditions support one's values or goals or contradict them. Job satisfaction in this study was considered as an intermediary phase in the interplay of work and the occupational well-being of the individual. The effects of the possible work stressors were thought to be partly

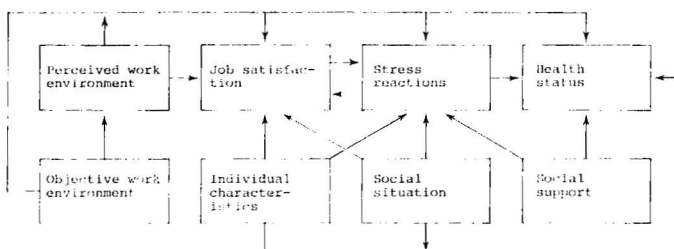


Fig 3. Adopted framework for stress at work.

mediated by job dissatisfaction (232). The correlations between various indices of job satisfaction and mental health have been found to range below 0.40 [reviewed by Kasl (139)]. Inferences have, however, been made on job satisfaction as a stress-mediating phase (39, 127).

Stress reactions indicate negative experiences and physiological symptoms due to stress, ie, a discrepancy between the needs, motivation, and qualifications of the person and the possibilities given in work and the work demands. A reaction pattern with worry, anxiety, irritation and depression, and experienced changes in body functions, as well as objective physiological responses (eg, elevation of blood pressure and serum cholesterol level) are characteristic features of stress reactions. This response pattern also includes changes in behavior (sleeping habits, eating, alcohol consumption, smoking, etc). These responses are often situationally determined and reversible if the work conditions become more favorable. The differences between these types of symptoms and more permanent health problems are, naturally, not very distinct.

In the present study the general hypothesis of the stress theory is that stress reactions, if maintained continuously or if very strong, may lead to more chronic impairments of health.

A man's state of health can be described with medical terms. In a wider sense the health state can be evaluated also on the basis of the experiences of a person, from the point of view of perceived symptoms and perceived illness. Health state can also be further evaluated from observations of a person in his social surroundings, his social roles, and his behavior in social contexts (213, 255).

An increasingly popular epidemiologic view on health, eg, the definition of health by the World Health Organization, underlines that not only the disturbances of biological, mental, and social health should be taken into account, but also the positive, satisfying, physical, psychological, and interpersonal resources. These resources may be regarded both as "end states" reflecting the level of the individual's achieved well-being and as moderators, ie, as the competence to get through difficulties in life.

Individual characteristics modify the experiences of the stress factors in the work environment and resulting stress and health outcomes.

Social support received from either the work environment or from outside work life acts against stress and increases a person's coping resources when he is under stress.