

were especially related to social active-ness. Sex and education were not important predictors; in addition age had a noteworthy relation only to the indicator of chronic illness, ie, perceived health status.

The results of the AID analyses clarified the relation of the demographic factors and global factors of the work environment to stress reactions and health status. Further analyses with emphasis on the work stressors was carried out with other predictors selected on the basis of the AID analyses.

Final analyses with the general linear model

The aim of the GLM analyses was to study the relations of specific stressors in work and work conditions to the stress reactions and health indicators in order to widen the view on work stressors, which were only preliminarily studied in the AID analyses. On the other hand, the intervening effect of the best predictive dimensions of self concept, on the basis of the AID analyses, and of social support was to be studied.

Dependent variables

As the purpose of the analyses with the GLM was to increase the information available on the relation of work characteristics to stress and health indicators, mainly the same dependent variables were studied as in the preliminary analyses.

The symptom sum scale was slightly modified, the variables with the lowest correlations to the other items being

omitted so as to increase the internal consistency of the scale (appendix I). Two additional dependent variables were also analyzed. One of them was the measure of serum cholesterol, which was one of the possible single physiological stress indicators without significant correlations with other stress reactions or health indicators. It also remained outside the factor structure of the stress and health indicators. Cholesterol is, however, considered as one stress reaction, sometimes called a precursor of disease (161).

Job satisfaction was also analyzed with the GLM. The aim was not primarily to determine its predictors as such, but to test the relevance of its inclusion in the previously described AID analyses as a state partly mediating the effect of work conditions on stress reactions and health outcomes. The psychometric quality of the job satisfaction indicator was also made better by the formation of a sum scale of single variables of satisfaction.

Predictors

The selection of the predictors was based partly on the results of the AID analyses, and the theory on work stressors was applied. The aim of the selection of predictors was to include, in the analyses, mainly work characteristics left almost completely out of the AID analyses. The demographic variables included in the AID analyses were not selected as their relation to the dependent variables was already known. Of the individual characteristics, also those were left out which did not have any remarkable effect on the dependent variables in the AID analy-

Table 11. Results of the stepwise analysis with the general linear model of symptoms. (N = 546)

Predictor	Partial eta	Partial eta ²	Semipartial eta ²	eta
Pessimism	0.31	0.10 ***	0.07	0.41 ***
Self-control	0.26	0.07 ***	0.05	0.34 ***
Motive conflict	0.19	0.04 ***	0.02	0.25 ***
Work challenge	0.18	0.03 ***	0.02	0.23 ***
Social support	0.15	0.02 ***	0.02	0.20 ***
Organization climate	0.17	0.03 **	0.02	0.21 ***
Work load	0.17	0.03 **	0.02	0.20 ***
Role conflict	0.17	0.03 **	0.02	0.20 ***
Multiple R = 0.61, Multiple R ² = 0.37, F (29, 516) = 10.57 ***.				

** p < 0.01, *** p < 0.001.

ses. The aim in the selection of work-related variables was to include in the analysis all theoretically important aspects within the limits of the methodological properties of the various items. In this selection the factor analysis of the work variables was used as a basis. Sum scales were formed of the theoretically closely related single items which had sufficient intercorrelations, with the precondition that the intercorrelations between items in different scales had to be low.

Altogether 11 work variables, 3 personality characteristics, and 1 variable measuring perceived social support were included as predictors in the analyses (appendix III). Among the variables reflecting work characteristics were the following generally important variables: work challenge, work variability, responsibility, and qualitative work load. The problems in work role were reflected by two variables: goal conflict with administrators and role conflict. Sum scales, called organizational climate and employee relations, were formed of variables reflecting the social work environment and theoretically important characteristics of the organization. In prison service especially important variables, ie, insecurity and problems with prisoners, were selected for the analysis. Another variable, motive conflict indicating rehabilitative frustration, is also somewhat specific to prison service but may be important also in any work in the health and social care areas. The content of this variable also refers to a certain type of goal conflict. The two items in the sum scale did not, however, correlate strongly with the direct question reflecting general goal conflict. The three personality characteristics, ie, pessimism/optimism, self-control, and self-esteem, which appeared as the best predictors of health indicators in the AID analyses, were maintained in the group of independent variables also in the GLM analyses. One single item indicating perceived possibility to receive social support when needed was included as an additional independent variable.

The list of predictors was the same in the analyses of all the health indicators. One exception was made in regard to the described list of predictors in the analysis of job satisfaction. The variable indicating

work challenge was omitted from the analysis of job satisfaction because of its high theoretical relationship and, in this study also, its empirical correlation with job satisfaction. The variable has sometimes even been considered as one aspect of job satisfaction. In place of this abandoned variable, an item indicating satisfaction with salary was included because of its importance as a predictor of job satisfaction.

Symptoms in relation to work stressors and interacting factors

The variation in the number and severity of symptoms was studied in relation to demographic and other global background factors and self concept in the previously described AID analysis. In the GLM analysis emphasis was placed on the explanatory power of stress factors at work.

Results of the general linear model analysis. The multiple correlation of the applied model to the perceived symptoms was 0.61, and it explained a considerable proportion (37 %) of the total variation of the symptom sum scale. Altogether eight independent variables had a statistically significant relationship to the symptoms (table 11). The best explanatory variable, pessimism/optimism, explained 10 % of the variance of the symptoms. This variable and the other personality characteristic, self-control, explained together almost as much of the total variation of the symptom sum scale as the other six predictors together, as indicated by the partial η^2 coefficients.

The simple correlation ratios (η) of the individual predictors with the symptom sum scale were all statistically highly significant. When the effects of the other predictors were partialled out, the correlation ratios (partial η) of each predictor with the symptoms were lower, as is usual with partial correlations. The corresponding η^2 coefficients indicating the proportion of variation explained by each predictor when the effect of the other predictors is partialled out of the dependent variable were, however, still statistically significant. Somewhat lower was the proportion of variation explained by each predictor when the effects of the other predictors were controlled for each par-

ticular predictor but not for the dependent variable (semipartial η^2). This was, on one hand, due to the greater amount of variation remaining in the dependent variable. On the other hand, the partialing out of the effects of the other variables from each particular predictor lowers its relation to the dependent variable because of the common variance of the predictors. The difference between the partial η^2 and the semipartial η^2 was, however, rather small and therefore showed that the intercorrelations of the predictors were low.

The means and adjusted means of the symptom sum scale in the categories of the independent variables varied strongly (table 12). The biserial correlations of the various categories of the predictors with the symptoms showed that the extreme ends of the scales tended to have the most significant relation to the symptom sum scale.

Discussion. Pessimistic/optimistic attitude towards future events was the best predictor of perceived symptoms. The same variable was the most powerful predictor also in the AID analysis. The categorical presentation of the means and adjusted means showed that the scale score of the symptoms was higher in the group of pessimists. As already discussed in the presentation of the corresponding AID analysis, the powerful effect of the predictor may partly have been due to its possible correspondence to the symptoms explained. It was fairly close to the indicators of anxiety and depression.

The second best predictor of symptoms was also a personality characteristic, self-control. A difference of nine points in the symptom scale score existed between the groups of low and high self-control. Strong self-control and an optimistic life concept can thus be interpreted as buffers against the development of stress and as examples of coping resources. Low self-control and a pessimistic attitude in turn can be considered as predisposing to stress. Corresponding results have been attained also in other studies (65). Also the third expected moderator of stress, social support, had a buffering effect against stress, as shown also previously (71).

Work characteristics appeared as less powerful predictors of symptoms than the

two aspects of self concept, although all of them in the model had a statistically highly significant relation to the symptoms. Motive conflict in work, representing a frustration in the rehabilitative aims in the applied measure, was the most powerful predictor of the symptoms among all the variables related to work. The interpretation of this result was somewhat burdened by the relatively low estimated reliability (0.63) of the applied two-item scale. This result indicates that the scale was not quite internally homogeneous; instead it measured two somewhat different aspects of the motive conflict.

Those persons who found it difficult to make contact with the prisoners and who were bothered by a lack of possibility to help the prisoners were under more stress and had a greater number of perceived symptoms than employees who were better adapted and had only a secondary relation with the prisoners. Frustration in the rehabilitative motives could be expected to be an important stress factor in all client work in health and social care.

The motive conflict indicator can be compared to role stress variables, of which one, ie, role conflict, was included in the explanatory model of symptoms. The role conflict measure was only a single item. It was, however, worded in a way touching the basic aspect of the role conflict by definition. The effects of role stress in work have been demonstrated also in many other studies (71, 129, 130).

Work challenge, ie, the perceived level of stimulation and of possibilities for personal development in work, is an often demonstrated stress factor in work when found insufficient. In the present study a lack of challenge was strongly related to the perception of symptoms.

The organizational climate was in such an expected relation to the symptoms that those evaluating the climate factors negatively had more symptoms than those perceiving the organizational aspects as more favorable. The means of the symptom sum scale scores were somewhat lower than the direct category means in the categories of the organizational climate if the effect of the other predictors was partialled out, as shown in table 12. It has often been shown that the interrelations

of information and feedback in work, superiors' attitudes towards the initiations of the workers, and the possibility for decision making are strong determinants of job stress (82, 138).

The effect of the quantitative work load on the symptoms was bipolar. Both a high

and a low quantitative work load was stressful. The low work load was possibly related to feelings of boredom. This finding corresponded to those of previous reports on the negative effects of both under- and overload (70).

Table 12. Means and adjusted means of and biserial correlation coefficients with symptoms by category of selected predictors from the stepwise analysis with the general linear model. (N = 546)

Predictor	N	Mean	Adjusted mean	r_{bis}
Pessimism/optimism				
1 Pessimistic	76	46.5	44.7	0.34 ***
2	114	42.2	41.2	0.15 ***
3	144	38.6	38.8	— 0.10 *
4	135	37.5	38.0	— 0.18 ***
5 Optimistic	73	37.1	38.9	— 0.14 ***
9 ^a	4	34.5	37.4	— 0.06 NS
Self-control				
1 Low	30	45.6	41.6	0.17 ***
2	64	44.0	42.7	0.19 ***
3	122	41.0	41.4	0.08 NS
4	190	39.4	39.8	— 0.05 NS
5 High	135	36.8	37.3	— 0.23 ***
9 ^a	5	33.4	37.8	— 0.08 NS
Motive conflict				
2—3 None	158	38.0	38.5	— 0.16 ***
4—5	176	39.3	39.7	— 0.06 NS
6	130	40.7	40.5	0.05 NS
7—8	71	43.8	42.5	0.19 ***
9—10 Strong	11	44.5	42.3	0.08 *
Social support				
1 None	103	43.2	42.1	0.20 ***
2 Available	443	39.2	39.4	— 0.20 ***
Work challenge				
1 Low	83	43.9	42.7	0.22 ***
2	383	39.4	39.5	— 0.10 *
3 High	78	38.1	38.9	— 0.10 *
Organizational climate				
4—6 Negative	114	42.5	41.8	0.17 ***
7—9	144	40.5	40.2	0.04 NS
10—12	120	38.6	38.6	— 0.09 *
13—15	101	39.3	40.0	— 0.04 NS
16—20 Positive	67	37.6	38.6	— 0.11 **
Quantitative work load				
2—3 Low	20	41.2	41.8	0.03 NS
4—5	125	37.6	38.8	— 0.17 ***
6	131	39.3	38.8	— 0.05 NS
7—8	151	41.0	40.8	0.08 *
9—10 High	119	41.6	41.1	0.11 **
Role conflict				
1 None	53	37.8	38.7	— 0.09 *
2	62	37.4	38.4	— 0.12 **
3	179	39.5	39.3	— 0.04 NS
4	140	41.8	41.6	0.14 **
5 Strong	112	40.9	40.3	0.06 NS

^a A category of missing data which was included as a separate class in the variables of personality to see if not responding would have a certain specific relation to the dependent variable.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, NS = not significant.

Perceived health status in relation to work stressors and interacting factors

Perceived health status was partly explained by demographic and other background factors. A more-detailed analysis of the relation of the stress factors at work was carried out with the GLM.

Results of the general linear model analysis. Only four of the independent variables was statistically significantly related to perceived general health status (table 13). Two of these predictors were work characteristics, ie, insecurity and the challenge of work, and the two others were personality variables, ie, self-control and pessimism/optimism.

As in the analysis of symptoms, the crude correlation ratios between the predictors and the dependent variable were higher than the partial correlation ratios when the effects of the other variables were partialled out. Controlling the effect of the other variables from either the dependent variable or the predictor did not change the level of the corresponding correlation ratios (partial η^2 and semipartial η^2). The proportion of the total variation of the perceived health status explained by the model was only 8 %.

Differences in the mean health status among the various classes of the predictors were considerable. Adjustment for the other predictors did not significantly change the range of the means (table 14).

Discussion. The most powerful predictor of health status was insecurity in work. This was only one of the four predictors of health status which did not appear in the explanatory model of symptoms. The interpretation of this interrelation can be made from an analysis of the content of the dependent variable. Perceived health status was a variable with considerably high correlations with health problems of a more chronic type than with the symptoms included in the symptom sum scale. In the factor analysis of the symptoms and the health-illness indicators health status was loaded on the factor of chronic health disturbances. Persons who had chronic problems of health and perceived their

health status as lowered were probably bothered more by the possible risks of security than their healthier colleagues. Another interpretative hypothesis could also be made on the basis of the results of the AID analysis. A strong relation was found between age and health status. Those who perceived their health status as low were older persons, who may in turn be more stressed by the risk of personal security in prisons.

Work challenge had an expected relation to health status. There was, however, a "chicken and egg" problem. Of the single categories of work challenge, especially the category which indicated high challenge in work was related to health status. Lack of perceived possibilities for development in work was, instead, not related to a low health status. On this basis it could be hypothesized that those who were healthier (and also younger) were more responsive to the developmental challenging aspects of work.

A hypothetical interpretation of the opposite effects of the two personality variables in the model could be made. On the basis of the mean health status by category of the personality variables (table 14), pessimism could be regarded as an attitude predisposing to illness and strong self-control as a buffering characteristic against illness.

The explanatory power of the work-related predictors remained quite low. One possible explanation was that the perceived health status, which was found to be based on an evaluation of the presence or absence of chronic illness, was a result of such a long-term development that its relation to work stress could no longer be traced. The results of some other studies with strong relations of various diseases to single work stressors have shown an opposite phenomenon (115). A possible technical explanation, due to the single-item nature of the health status indicator, was also considered. The coefficient approaching the reliability of the item based on its relation to the other items on the illness factor in the factor analysis was rather low. The validity and the reliability of the general health status indicator had been regarded as satisfactory in some other studies (83).

Blood pressure and serum cholesterol in relation to work stressors and interacting factors

Introduction. Blood pressure and serum cholesterol have been found to be sensitive to stress. Their regulation is, however, multifactorial, including biological inter-relationships. The study of these indicators is only exploratory in this investigation,

the emphasis being placed on perceived stress factors at work.

To avoid the possible confounding effect of sex, the analyses of diastolic blood pressure and serum cholesterol were carried out only for the group of men. No analysis was done separately for the women because of their small number in the study.

Table 13. Results of the stepwise analysis with the general linear model for perceived health status. (N = 690)

Predictor	Partial eta	Partial eta ²	Semipartial eta ²	eta
Insecurity	0.14	0.02 **	0.02	0.16 **
Self-control	0.14	0.02 **	0.02	0.17 ***
Pessimism	0.13	0.02 *	0.02	0.16 **
Work challenge	0.09	0.01 *	0.01	0.12 **
Multiple R = 0.28, Multiple R ² = 0.08, F (16, 673) = 3.52 ***				

* p < 0.05, ** p < 0.01, *** p < 0.001.

Table 14. Means and adjusted means of and biserial correlation coefficients with perceived health status by category of selected predictors from the stepwise analysis with the general linear model. (N = 690)

Predictor	N	Mean	Adjusted mean	r _{bis}
Insecurity				
3—5 Little	124	2.5	2.5	0.14 ***
6—7	177	2.3	2.3	0.01 NS
8—9	206	2.2	2.2	—0.05 NS
10—11	111	2.2	2.2	—0.03 NS
12—15 Great	72	2.1	2.1	—0.09 *
Self-control				
1 Low	39	2.1	2.1	—0.07 NS
2	77	2.2	2.3	—0.01 NS
3	154	2.2	2.2	—0.07 NS
4	224	2.3	2.2	—0.01 NS
5 High	163	2.5	2.4	0.16 ***
9 a	33	2.1	2.4	—0.05 NS
Pessimism				
1 Pessimistic	96	2.1	2.1	—0.12 **
2	129	2.3	2.3	0.01 NS
3	184	2.3	2.3	—0.01 NS
4	158	2.4	2.4	0.07 *
5 Optimistic	90	2.4	2.3	0.08 *
9 a	33	2.1	2.0	—0.07 NS
Work challenge				
1 Little	114	2.2	2.3	—0.02 NS
2	484	2.2	2.2	—0.08 *
3 Great	92	2.5	2.4	0.12 **

a A category of missing data which was included as a separate class in the variables of personality to see if not responding would have a certain specific relation to the dependent variable.

* p < 0.05, ** p < 0.01, *** p < 0.001, NS = not significant.

Results of the general linear model analysis. This analysis was done with a regression analysis application of the GLM. The reason for using this procedure was the exploratory approach and the relatively low number of expected statistically significant predictors of the dependent variables on the basis of the AID analysis of blood pressure. The tedious calculation of categorical means and other values was wanted to be avoided beforehand.

The predictors or their linear combination did not have any significant relations to diastolic blood pressure and blood cholesterol. The standardized regression coefficient (beta) of the variable insecurity was the only single significant determinant, but it may be a statistical artifact, since the whole model was not statistically significant (table 15). The results of the analysis for serum cholesterol have not been reproduced because no statistically significant correlations nor significant predictors were found in the stepwise analysis by the GLM.

Discussion. The lack of a predictive power of the applied work stressors with regard to the physiological functions often considered sensitive to job stress was unexpected as far as the actual magnitude was concerned. A chronic overactivity of the sympathetic nervous system has been considered a factor capable of elevating and maintaining high levels of serum cholesterol and blood pressure independently of, eg, dietary habits. In addition, the same type of relaxation methods as used for psychological states of tension and anxiety has been found effective in reducing hypercholesterolemia (60).

The great differences in diastolic blood pressure between the occupational groups, demonstrated in the AID analyses, created hypotheses of possibly varying work stressors in different occupations. As the occupational differences were such that those groups with a closer contact with the prisoners had the highest blood pressure levels, a hypothesis of a stressor effect of the contact with the prisoners was motivated. The present analysis did not, however, reveal any such effects. Nor did any of the other statistically significant predictors of perceived symptoms have a

predictive relationship to blood pressure or cholesterol level. This is not a completely unexpected result. Previous studies have indicated that job stress has to be studied in interaction with other variables. It has been shown that job stress is related to physiological responses, but only among persons who have reported poor social support or only among those low on psychological defenses (46, 71). Other occupational studies of blood pressure have not been much more conforming in regard to specific work stressors. The differences reported are mostly found between the occupations, and the interpretations concerning work stressors have usually been inferences made on the basis of task characteristics (49, 207). Sometimes hypotheses on the possibly mediating effect of, eg, job satisfaction have been formed (39). In this study job satisfaction was not related to blood pressure, as shown by the AID analyses.

In this study the AID analyses offered a possibility for a study of the interactive effects of the stressors. Because of methodological reasons the combination of the independent variables in the AID analyses included, however, only a few specific work stressors.

Social activeness in relation to work stressors and interacting factors

Social activeness in the present investigation was studied in relation to the same predictors as applied in the analyses of other stress and health indicators. These predictors, especially dimensions of self concept, were not all the most powerful predictors in the AID analyses. The aim was not to maximize the explained proportion of variance in social activeness, but to study it in relation to the same intervening variables as was applied with other independent variables.

Results of the general linear model analysis. Three of the independent variables were statistically significant predictors of social activeness; they explained 24 % of its total variation (table 16). Most of the variation explained was due to the variable pessimism/optimism, which accounted for more than three times the amount of variation than the other two

variables did. Both the crude and the partial correlation ratios of all the predictors with the dependent variable were statistically highly significant. The means and correlations of the categories of the predictors are presented in table 17.

Discussion. The proportion of the variation of social activeness explained by the three variables was high. Most of it was due to the variable pessimism/optimism. Social activeness, which was considered one aspect of mental health, was higher

Table 15. Results of the stepwise analysis with the general linear model for blood pressure among men. (N = 593)

Predictor	Beta	Partial beta ²	Semipartial beta ²	Covariance ratio	r
Insecurity	0.11 +	0.008	0.008	0.28	0.08 NS
Multiple R = 0.17, Multiple R ² = 0.03, F (15, 577) = 1.11 NS					

NS = not significant

Table 16. Results of the stepwise analysis with the general linear model for social activeness. (N = 637)

Predictor	Partial eta	Partial eta ²	Semipartial eta ²	eta
Optimism	0.41	0.17 ***	0.16	0.44 ***
Social support	0.18	0.03 ***	0.03	0.23 ***
Work challenge	0.15	0.02 ***	0.02	0.20 ***
Multiple R = 0.49, Multiple R ² = 0.24, F (8, 628) = 25.09 ***				

*** p < 0.001.

Table 17. Means and adjusted means of and biserial correlation coefficients with social activeness by category of selected predictors from the stepwise analysis with the general linear model. (N = 637)

Predictor	N	Mean	Adjusted mean	r _{bis}
Pessimism/optimism				
1 Pessimistic	85	9.6	9.8	— 0.38 ***
2	125	11.1	11.1	— 0.09 *
3	177	11.5	11.4	0.02 NS
4	155	12.0	11.9	0.17 ***
5 Optimistic	88	12.4	12.3	0.21 ***
9 ^a	7	12.9	13.0	0.08 *
Social support				
1 No	121	10.5	10.8	— 0.23 ***
2 Yes	516	11.6	11.5	0.23 ***
Work challenge				
1 Low	103	10.6	10.9	— 0.18 ***
2	444	11.5	11.5	0.07 NS
3 High	90	11.9	11.7	0.10 *

^a A category of missing data which was included as a separate class in the variables of personality to see if not responding would have a certain specific relation to the dependent variable.

* p < 0.05, *** p < 0.001, NS = not significant.

among those who were positively oriented towards coming events than among the pessimists. This result was in concordance with the reported results on the determinants of the symptoms and health status.

The relation of work challenge to social activeness was in concordance with the so-called carry-over theories (187). A lack of stimulation and developmental opportunity in work leads to passivity also in other fields of life outside work. A positive evaluation of work with regard to the challenge perceived in it does not have as strong a relationship to activeness as a negative evaluation of work has to the lack of initiativeness.

The relationship between social support and activeness leads to at least two alternative interpretations. On the basis of the buffering-effect hypothesis one might conclude that a perceived opportunity to obtain support when needed is a resource that counteracts psychological imbalance and enhances a person's capacity for an active, self-enhancing life. On the other hand the cause-and-effect relation can be hypothesized as the opposite. Those who are active in interpersonal relations, social participation, and hobbies have a greater probability to create contacts which may be a potential basis of social support. The first hypothesis can be at least partly accepted on the basis of initiativeness, ie, motivational aspect, and not only on the basis of participation in the items of the social activeness scale.

A comparison between the results of the AID analyses and the GLM analysis shows that the best predictors and modifiers of

stress reactions are not necessarily the same as the determinants of a mental health indicator. Positive aspects of mental health can thus be enhanced by factors which are not necessarily stress provoking if lacking.

Job satisfaction in relation to work stressors and interacting factors — An additional test of the framework of the study

Introduction. As already discussed in the presentation of the selection of the dependent variables in the GLM analyses, the analysis of the relationships between job stressors and job satisfaction was carried out as an additional test of the framework of the study. According to the basic hypothesis the effect of the job stressors was partly mediated by job satisfaction, and part of it was direct. In the AID analyses job satisfaction was thus used as a predictor of stress reactions, ie, perceived symptoms and health status, blood pressure, and social activeness. The hypothesis behind this use was that job satisfaction mediates, at least partly, the effect of those work characteristics that are significantly correlated to job satisfaction. As was seen in the results of the AID analyses, job satisfaction formed explanatory interactions with other predictors of all other dependent variables except blood pressure. The work characteristics, the direct effect of which was studied in the AID analyses, were few in number.

The aim of the GLM analysis was to study the adequacy of the treatment of job satisfaction in the previously described

Table 18. Results of the stepwise analysis with the general linear model for job dissatisfaction. (N = 663)

Predictor	Partial eta	Partial eta ²	Semipartial eta ²	eta
Contact problems with prisoners	0.22	0.05 ***	0.04	0.30 ***
Work variability	0.21	0.05 ***	0.04	0.29 ***
Organizational climate	0.18	0.03 ***	0.03	0.34 ***
Self-esteem	0.15	0.02 **	0.02	0.16 **
Employee relations	0.14	0.02 **	0.01	0.28 ***
Satisfaction with salary	0.10	0.01 *	0.01	0.13 **
Multiple R = 0.50, Multiple R ² = 0.25, F (23, 639) = 9.26 ***				

* p < 0.05, ** p < 0.01, *** p < 0.001.

manner and determine the theoretical hypothesis behind it. For this reason job satisfaction was analyzed by the same predictors used in the analyses of stress and health indicators, except for the exclusion of "challenge" and the addition of "salary". The purpose was to determine the statistically significant predictors of job satisfaction and their correspondence to the predictors of the other dependent variables.

Results of the general linear model analysis. Six variables were statistically significantly related to job satisfaction (table 18). The multiple correlation of the combination of the predictors with job satisfaction was 0.50, and the corresponding proportion of the variation of job satisfaction explained was 25 %. Great differences could be seen between the simple correlation ratios (η) of some predictors with the dependent variable and, on the other hand, the partial correlation ratios (partial η). This result demonstrates the importance of the partialing out of the effect of the other variables in determining the correlation of a certain predictor with the dependent variable. Partialing out the effect of the other predictors from the single predictor with a calculated correlation ratio to the dependent variable (semipartial η^2) slightly lowered the coefficients of certain variables in comparison to partial η^2 . The means and adjusted means of job satisfaction by category of predictors, as well as the biserial correlations, are presented in table 19.

Discussion. Problems with prisoners and work variability, which were the best predictors of job satisfaction, explained together a higher proportion of variance than the rest of the variables. As already mentioned, the variable work challenge, used in the other analyses, was omitted from this analysis because of its close semantic relation to job satisfaction itself. Work variability is a repeatedly verified determinant of job satisfaction. Experiencing work as monotonous and lacking variability seemed to be especially important. These experiences increased feelings of job dissatisfaction (table 19).

Less important was the satisfaction-increasing effect of perceived variability.

This result is contrary to the two-factor theory of Herzberg (110), which regards work variability as a motivation factor and thus as an increaser of satisfaction. The scale "organizational climate" includes items, ie, information, feedback, consideration of supervisors, and participation in decision making, which are theoretically based and empirically repeatedly validated determinants of job satisfaction (35). Both extreme ends of this scale were highly significant and therefore indicated that characteristics of organizational climate promote satisfaction when positively evaluated and produce dissatisfaction when perceived as negative. The fairly great difference in the crude means of the satisfaction scores within the extreme categories of the organization scale was somewhat diminished in the adjusted means when the effect of the other predictors was partialled out.

Problems with the prisoners reflect the quality of the basic human relation included in work, ie, the relation to the object population. This is the type of human relation expected to be one of the crucial sources of stressors in any client work and especially in the work done on a long-term basis and among people deviating from accepted social norms. In the present study, the perception of problems was as significant to job dissatisfaction as the unproblematic situation was to job satisfaction (table 19). More common types of human relations studied in job satisfaction research are the relations between co-workers. The variable "employee relations" covered, in this study, the relationships both among the co-workers and between superiors and subordinates. Job satisfaction was modified by the successfulness of these relations, as has been repeatedly shown in job satisfaction studies (200).

Satisfaction with salary was a predictor used only in the analysis of job satisfaction. It was added because of its role as one of the most important extrinsic determinants of job satisfaction. Its relation to job satisfaction was expectedly statistically significant. The satisfaction-increasing effect of the perceived sufficiency of salary was, however, more important than the dissatisfaction-producing effect of the

Table 19. Means and adjusted means of and biserial correlation coefficients with job dissatisfaction by category of selected predictors from the stepwise analysis with the general linear model. (N = 663)

Predictor	N	Mean	Adjusted mean	r_{bis}
Contact problems with prisoners				
2-3 None	109	6.5	6.5	-0.25 ***
4-5	208	6.9	6.8	-0.07 NS
6	165	7.3	7.1	-0.04 NS
7-8	137	8.0	7.2	-0.06 NS
9-10 Strong	44	8.3	7.6	0.08 *
Work variability				
2-3 Little	59	8.6	7.9	0.12 **
4-5	109	7.9	7.3	0.01 NS
6	316	6.9	6.8	-0.20 ***
7-8	144	6.9	7.1	-0.10 *
9-10 Great	35	7.5	7.5	0.09 *
Organizational climate				
4-6 Negative	135	8.1	7.5	0.11 **
7-9	175	7.6	7.6	0.14 ***
10-12	158	7.0	6.5	-0.12 **
13-15	116	6.9	7.3	-0.00 NS
16-20 Positive	79	6.0	7.4	0.06 NS
Self-esteem				
1 High	32	6.7	6.7	-0.18 ***
2	119	7.1	7.0	-0.13 ***
3	346	7.2	7.3	0.03 NS
4	74	7.7	7.9	0.19 ***
5 Low	56	8.0	7.7	0.15 ***
9 ^a	36	7.3	8.1	0.22 ***
Employee relations				
2-3 Warm	109	6.4	7.7	0.15 ***
4-5	200	7.0	7.1	-0.16 ***
6	174	7.6	6.9	-0.10 **
7-8	140	7.7	7.5	0.04 NS
9-10 Tense	40	8.4	7.6	0.23 ***
Satisfaction with salary				
1 High	32	6.2	7.5	0.11 **
2	439	7.2	7.1	-0.07 NS
3 Low	192	7.4	7.1	-0.08 *

^a A category of missing data which was included as a separate class in the variables of personality to see if not responding would have a certain specific relation to the dependent variable.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, NS = not significant.

perceived insufficiency of salary, a fact which does not confirm the role of salary as an extrinsic factor only.

Self-esteem was the only personality characteristic that had a statistically significant predictive effect on job satisfaction. This effect was based on the strong relation of low self-esteem to job dissatisfaction. The positive end of this predictor did not, however, correlate noteworthy with job satisfaction.

Conclusions. On the whole, the predictive model of job satisfaction differed al-

most completely from the predictive models of stress and health indicators. Only organizational climate was also among the statistically significant predictors of the symptom sum scale. This result indicates that it is possible to place job satisfaction as an intermediary phase in work and stress models. Stress reactions have been found or have been inferred to be mediated by job satisfaction also in some other studies (39, 50, 127). The direct work-related risks of health are other modifiers of job satisfaction. Thus the inclusion of job satisfaction as a predictor of stress

reactions and health among other independent variables, ie, direct stressors, in the AID analyses was feasible. The num-

ber of direct stressors in the AID analyses was, however, restricted for technical methodological reasons.