A systematic approach to occupational stress reduction is recommended, as an improvement on the isolated, one-off programme often utilised in the past. A stress management workshop and other phases of an experimental programme are described.

Stress Management in the Process of Occupational Stress Reduction

by Lawrence R. Murphy and Joseph J. Hurrell, Jr
National Institute for Occupational Safety and Health, Cincinnati, USA

Since the mid-1970s, a growing number of studies have evaluated the merits of prescriptive, relaxation-based stress control methods as applied in work settings (Murphy, 1984). Collectively labelled stress management training, methods have included muscle relaxation, meditation, biofeedback, and cognitive strategies. More often than not, stress management has been offered as a prevention activity designed both to educate workers about stress/health relationships and to provide skills useful for identifying and reducing stress symptoms. As such, worksite stress management is more properly classified as a health promotion/disease prevention as opposed to a treatment strategy (Murphy, 1985).

Worksite studies have typically evaluated a discrete stress management programme offered at one point in time in an organisation. The merits of training are assessed in the immediate post-training period and, less frequently, during a follow-up period. Evaluation has focused on individual-level outcomes such as blood pressure, catecholamine levels, and worker reports of anxiety, depression, and somatic complaints. Currently, some 20 studies have been identified which, as a group, support the efficacy of these programmes in terms of the outcomes listed above (Murphy, in press). The effects of stress management training on organisational outcomes such as job satisfaction, performance, absenteeism, and health care costs have been less researched, perhaps because the training programmes are focused on changing the worker, not the work environment.

Beyond determinations of efficacy, the role of stress management in the context of occupational stressor reduction has not been addressed. As noted above, most studies have evaluated stress management programmes as a discrete health promotion offering in organisations without apparent stress problems. In high stress organisations, stress management has obvious limitations because it does not attempt to reduce or eliminate the sources of stress at work. Also, targetting troubled workers and providing stress management training at the workplace is patently inappropriate. Workers with manifest clinical problems require treatment by trained professionals in a therapeutic milieu. On the other hand, it has been suggested that stress management is appropriate as a supplement to organisational change interventions (Ganster *et al.*, 1982) but no studies have described or evaluated such an application.

Ideally stress management should represent one step in a *process* of occupational stress reduction. Stress management serves to 1) legitimise stress as a topic for discussion, 2) educate workers about the nature, sources, and consequences of stress, and 3) provide workers with relaxation skills. After training, workers would seemingly be in a better position to provide input to both an assessment of work stress and the formulation of stressor reduction interventions.

The present article describes a process-oriented approach to occupational stress reduction which is being applied in one department of a US federal agency. The work is currently at an early stage. To date, the stress management workshop, formation of a stress reduction committee, and organisational stress assessment phases have been completed. Accordingly, these phases are described in detail in this article. The purpose of the article is to depict elements of the process and demonstrate an application of stress management as part of a comprehensive stressor reduction effort as opposed to an isolated, one-time programme offering.

Background

The programme was initiated at the request of an administrator of a department ($n=69$) in one location of a US federal agency. It was felt that employees in this department were generally dissatisfied with their work

and morale was low. In addition, the expression of high blood pressure in two employees was thought to be due to high levels of work stress and was viewed as a sign of a department-wide stress problem. The department sought assistance in the form of recommendations on how best to deal with these perceived problems.

The authors recommended that the department implement a continuous, as opposed to a one-time, stress reduction programme. The programme was conceptualised as a process involving the following phases: 1) a stress management workshop, 2) an organisational stress survey, 3) formulation of stressor reduction recommendations based on survey findings, 4) organisational change interventions, and 5) evaluations of change interventions. The latter two phases would be repeated over time to target emerging stressors and formulate appropriate stressor reduction interventions.

Method

Stress Management Training

Forty-five (65 per cent) of the department's 69 employees attended the stress management workshop. The workshops were conducted in May-June, 1985, by a local hospital which designs health promotion programmes for community and work settings. The workshop offered by this hospital consisted of a single six-hour training session. However, because multiple sessions appear to be more effective (Murphy, 1984) and allow participants an opportunity to practise between sessions, the department requested that the six hours of training be distributed over four sessions, each to be one and a half hours in length. Two sessions would be held each week for two consecutive weeks. The hospital agreed to modify their programme accordingly.

Additionally, the department requested that the workshop trainer solicit information from participants regarding job features felt to be stressful and that this information be tabulated and provided to the department at the end of the workshops. The trainer used a nominal group process to gather data on work stress on the first day of the programme. In retrospect, this should probably have been done on the last day of the workshop when employees were more acquainted with stress concepts.

The workshop goals were to improve conceptual understanding of stress and its consequences, equip workers with the ability to diagnose personal and environmental stressors and attendant stress reactions, and to foster the development of personalised action strategies for preventing negative stress effects. The programme was 25 per cent conceptual and 75 per cent skill development. Strategies taught to workers dealt with mental, physical, and emotional exercises such as cognitive restructuring, mental and physical relaxation, and deep breathing exercises. Participants were encouraged to view stress management as a continuing process involving skill development, application in situations outside the workshop, and refinement of abilities through practice.

Personal assessments were conducted during the workshops which provided participants with quantitative data on stress vulnerability, mental, physical and emotional reactions to stress, control over stress reactions, Type A behaviour, and recent life events. Each participant received a 73-page workbook (Bethesda Hospital, 1983) containing the educational, assessment, and exercise information described above.

Table 1. *Work Stressors derived from Nominal Group Process*

Source of work stress	Frequency
Unrealistic time lines	17
Lack of clear directions	6
Lack of recognition/respect	4
Unrealistic workloads	4
Unresolved conflicts	4
Interruptions	3
Duplicating machine	3
Having decisions overturned	2
Lack of communication	2
Personality conflicts	2
Telephone problems	2
Arbitrary decisions	1
Lack of independence	1
Lack of co-operation	1
Money	1
Disorganisation	1
Being made fun of	1

Employee feedback collected by the trainers indicated that most participants found the workshop to be informative and helpful. However, several workers felt that organisational change interventions should be attempted instead of stress management because the latter does not seek to eliminate or reduce the sources of stress at work. Work stressors mentioned in the nominal group process and their frequency are shown in Table I. "Unrealistic time lines" was mentioned by over half of the participants who made comments (17/33). No other job factor was mentioned with such high frequency. The next most frequently mentioned stressors formed a cluster having supervisory-related factors as its core. Examples here included lack of clear directions, lack of recognition/respect, unrealistic workloads, and unresolved conflicts.

Stress Reduction Committee

Two months after the stress management workshop, a committee was formed to make recommendations to management regarding strategies for reducing employee stress. The committee was composed of eight members, two employees from each of four work groups within the department. All members except one were nonsupervisory employees. A first action of the committee was to obtain the assistance of the authors in preparing an assessment survey to explore and quantify work stressors. Based on this assessment, the committee planned to formulate stress reduction recommendations for submission to management.

Assessment Instruments

A 52-item questionnaire was assembled which solicited information on age, gender, work group, job type, supervisory status, organisational tenure, perceptions of job characteristics, and job satisfaction. Perceptions of job characteristics were assessed using Form S of the Work Environment Scale (Moos and Insel, 1974). The WES produces scores on ten subscales corresponding to Job Involvement, Peer Cohesion, Supervisory Support, Autonomy, Task Orientation, Work Pressure, Clarity of Expectations, Management Control over Workers, Innovation, and Physical Comfort. Normative data for these scales are available for over 600 workers in 44 aggregate work groups representing white, pink, and blue collar occupations (Moos and Insel, 1974). In addition the WES has been used in detailed studies of VDT operators and assorted blue collar work groups for which comparable data are available.

Job satisfaction was measured using four items from the Quality of Employment Surveys (Quinn and Staines, 1979). The QES surveys were representative of all occupations and industries in the United States and were conducted in 1969, 1973, and 1977. The items selected for use in the present study assessed facet-free job satisfaction which has been shown to be stable across the three survey years (Quinn and Staines, 1979).

Procedure

The employee survey was conducted in December 1985, approximately six months after the stress management workshop. One questionnaire was distributed to each department employee at his/her desk by a representative of the stress reduction committee. A covering letter with the questionnaire from the committee indicated the intent of the survey, its voluntary and anonymous nature, steps taken to ensure confidentiality, and a request for all employees to participate. Employees were granted work time to complete the questionnaire at their desks. Each employee placed the completed questionnaire into a blank envelope which was collected 15-20 minutes after distribution by a committee member. A record was kept of each questionnaire distributed and collected.

Results

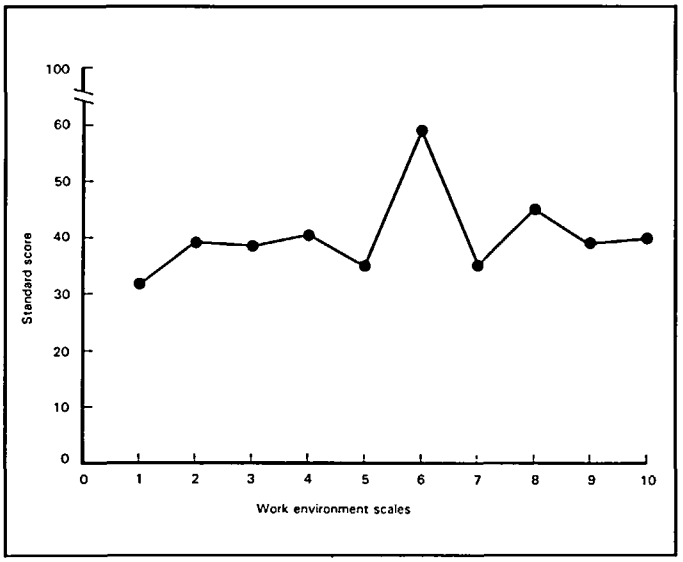
The response rate to the survey was 100 per cent. However, one returned questionnaire was blank and two questionnaires were dropped from the analyses because of missing data on too many survey scales. Characteristics of the sample along with data analysis codes are shown in Table II. Sixty-five per cent of the sample were 31-50 years of age and 58 per cent were in professional/technical jobs. Nearly 75 per cent of the sample occupied nonsupervisory positions and 55 per cent were female. The four work groups within the department were of similar size except for Group D.

Table II. *Sample Characteristics*

Variable	Data code	Frequency	%
Age			
21—30 years	1	13	19
31—40 years	2	23	34
41—50 years	3	21	31
51—60 years	4	5	8
over 60 years	5	5	8
Gender			
Female	1	37	55
Male	2	30	45
Job level			
Nonsupervisory	1	49	73
Supervisory	2	18	27
Job type			
Clerical/secretarial	1	14	21
Professional/technical	2	39	58
Managerial	3	14	21
Tenure in department			
Less than 1 year	1	9	13
1—2 years	2	20	30
3—4 years	3	15	22
5—7 years	4	13	20
8 or more years	5	10	15
Work group			
A	n/a	17	25
B	n/a	24	36
C	n/a	19	28
D	n/a	7	11

Figure 1 shows scores from the present sample on the WES plotted as standard scores using WES norms. The sample did not differ significantly from WES norms on any scale ($p > 0.05$) though sample scores on all scales were lower than normative values. In particular, scores on Job Involvement (WES 1), Task Orientation (WES 5), and Clarity (WES 7) approached significance ($p < 0.10$). WES scores for the present sample were then compared to four other work groups, namely, VDT operators ($n=248$) and non-VDT clerical workers ($n=85$) (both from Sauter *et al.*, 1983), machine-paced poultry inspectors (Wilkes *et al.*, 1981), warehouse workers ($n=141$) involved in an outbreak of mass psychogenic illness (Moseley *et al.*, 1978). For present purposes, VDT operators, machine-paced assembly, and warehouse workers represent groups considered to be under elevated stress while non-VDT clerical workers represent a lower stress group. The present sample more closely resembled the VDT operators and warehouse workers in terms of their WES profile than the non-VDT worker group. Only the group of machine-paced workers had a WES profile indicative of higher stress than the present sample.

Figure 1. *Sample Scores on the Work Environment Scales expressed as Standardised Scores (Mean=50, SD=10)*



WES scales are: Involvement=1, Peer Cohesion=2, Supervisory Support=3, Autonomy=4, Task Orientation=5, Work Pressure=6, Clarity of Expectations=7, Control Over Worker=8, Innovation=9, and Physical Comfort=10.

Table III compares job dissatisfaction scores for the present sample with US norms (Quinn and Staines, 1979) and US Public Health Service (PHS) scientists (Hurrell and Burg, 1985). Job dissatisfaction was significantly higher in the present sample relative to both comparison groups ($p < 0.01$). Figure 2 shows the pattern of responses to the job dissatisfaction question "All in all, how satisfied would you say you are with your job?" Chi-square tests indicated that the pattern of response to this survey item in the present sample differed from that of both comparison groups ($\chi^2=39.39$, $df=4$, $p < 0.001$ for US norms; $\chi^2=18.98$, $df=4$, $p < 0.001$ for scientists).

Figure 2. *Distribution of Response to the Question "All in all, how satisfied would you say you are with your present job?" for US Norms (A), the Present Sample (B), and PHS Scientists (C)*

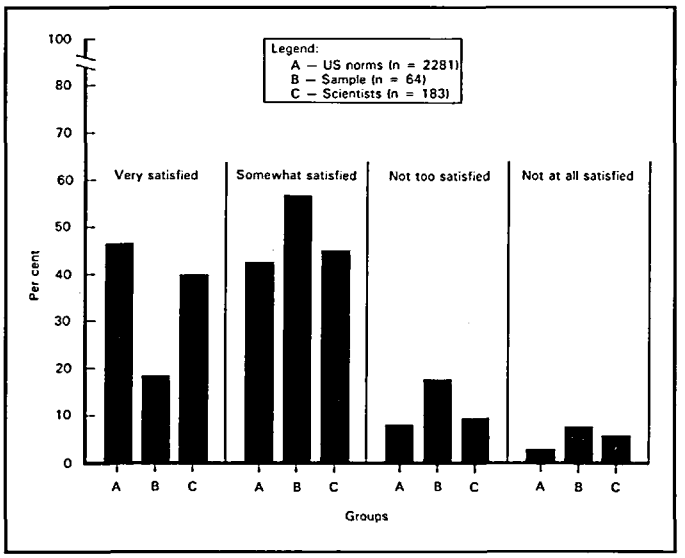


Table III. *Job Dissatisfaction Scores*

Job dissatisfaction	Sample ($n=66$)	US norms ($n=2281$)	PHS norms ($n=183$)
Mean	2.14	1.68	1.82
SD	0.81	0.75	0.84

Significance tests

Sample vs. US norms $z=4.49$, $p<0.01$

Sample vs. PHS scientists $z=2.68$, $p<0.01$

Inspection of Figure 2 reveals that fewer workers in the present sample reported being "very satisfied" and more reported being "somewhat satisfied" or "not too satisfied" relative to the norm groups.

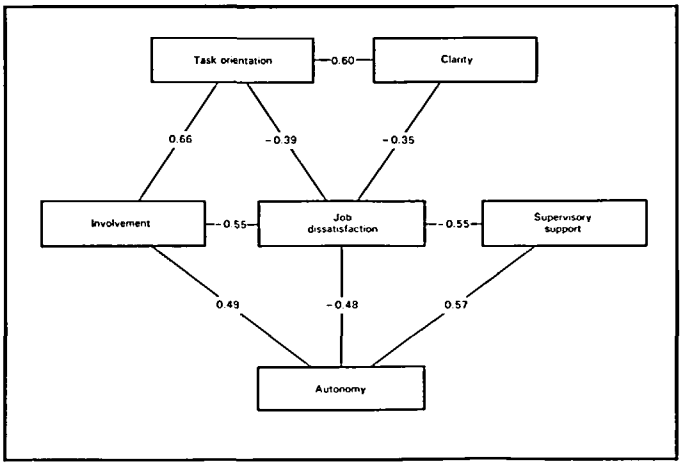
Table IV. *Correlations among Survey Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Demographics																	
1. Age	—																
2. Gender	11	—															
3. Job level	16	33**	—														
4. Job title	27*	51**	73**	—													
5. Tenure at agency	38**	17	28**	44**	—												
6. Tenure in department	14	17	15	27*	54**	—											
Work environment scales																	
7. Involvement	14	21	31*	35**	22	−05	—										
8. Cohesion	0	−01	0	−02	0	−12	24	—									
9. Support	−10	28*	26*	22	02	−21	37**	38**	—								
10. Autonomy	−19	26*	41**	32*	15	16	49**	34**	57**	—							
11. Task orientation	−06	0	11	08	−13	−11	66**	18	31*	41**	—						
12. Work pressure	−12	−19	05	0	−14	−08	11	05	−18	−20	06	—					
13. Clarity	−07	04	17	07	−13	−20	38**	16	30*	31*	60**	02	—				
14. Control	09	−16	−07	−13	−10	−32*	05	01	−14	−38**	−07	33**	17	—			
15. Innovation	−12	−03	19	01	24	07	29*	21	40**	46**	20	−29*	25*	−09	—		
16. Comfort	24	−12	16	07	11	−03	22	−15	−01	−05	21	06	32*	05	−04	—	
Outcome variable																	
17. Job dissatisfaction	−02	−12	−12	−16	0	24	−55**	−27*	−55**	−48**	−39**	14	−35**	04	−32*	−14	—

Note: Decimals omitted. Critical values are $r=25$, $p<0.05$; $r=33$, $p<0.01$; *significant at $p<0.05$; **significant at $p<0.001$.

Table IV shows correlation coefficients among all questionnaire variables. It is noteworthy that demographic variables *did not* correlate significantly with job dissatisfaction ($p>0.05$) or, for that matter, with many of the WES scales. On the other hand, seven of the 10 WES scales correlated with job dissatisfaction ($r=-0.27$ to -0.55). Stepwise multiple regression analyses were performed with job dissatisfaction as the criterion variable and socio-demographic and work environment scales as predictors. The stepwise procedure maximised incremental R^2 and significance was required at $p<0.05$ for variables to enter or remain in the model. No variables were forced into the model. Only two variables, both WES scales, entered the predictive model and together explained 45 per cent of the variance in job dissatisfaction. Job Involvement entered the model first ($\beta=-0.36$, $R^2=0.32$, $p<0.001$) followed by Supervisory Support ($\beta=-0.21$, $R^2=0.13$, $p<0.001$).

Figure 3. *Main Correlations among Work Environment Scales and Job Dissatisfaction*



Though only two WES scales predicted job dissatisfaction, it was clear from Table IV that the WES scales were intercorrelated and that these intercorrelations needed to be explored to generate meaningful recommendations for stressor reduction strategies. Main correlations among the WES scales and job dissatisfaction are shown in Figure 3. As a starting point, we focused on the two WES scales, Job Involvement and Supervisor Support, which were significant predictors of job dissatisfaction. As can be seen in Figure 3, Job Involvement correlated highly with Task Orientation which in turn correlated with Clarity of Expectations. The latter two scales correlated only moderately with job dissatisfaction. Also, Supervisor Support correlated highly with Autonomy which in turn was associated with both job dissatisfaction and Job Involvement. These relationships indicate that actions to improve one or more elements in the chain should have beneficial impacts on job satisfaction.

Recommendations for Stressor Reduction

The following recommendations for reducing job stress and increasing job satisfaction were offered to the committee:

1. *Actions which improve Task Orientation (TO) and Clarity of Expectations (CE) should improve job involvement and, thereby, job satisfaction.* In this regard, close examination of the items which comprise these scales suggests that "work planning" and "efficiency" are common underlying constructs. Consider the following sample items from these two scales: "There's a lot of time wasted because of inefficiencies" (TO); "Things rarely get put off till tomorrow" (TO); "Things are sometimes pretty disorganised" (CE); and

"Activities are well-planned" (CE). Clearly, actions to improve the work planning process should be a major focus of stress reduction recommendations submitted by the committee. To a large extent, such recommendations will need to involve supervisors in that they are key participants in the work planning process.

2. *A related intervention point is suggested by the relationship between Supervisory Support (SS) and Autonomy (Au).* Stress reduction interventions should address each factor separately insofar as the direction of causality cannot be specified based upon correlational data. Regarding Autonomy, the committee should consider actions to increase employee initiative and freedom to make decisions, especially regarding work planning. Improving supportive behaviour of supervisors might be accomplished via department training.
3. *Finally, the committee should consider job type, job level, and work group membership factors when recommending stress reduction interventions.* Though these factors did not enter into the regression model predicting job dissatisfaction, examination of WES scores revealed apparent differentials. For example, clerical/secretarial workers had far less job involvement and task orientation and more work pressure relative to other job types. In the same way, two of the four work groups had higher scores on work pressure relative to the remaining groups. To achieve maximal benefit, stress reduction interventions targetting certain work factors (e.g. work pressure) will need to be tailored to specific work groups or job levels. In contrast, variables like age and tenure need not be factored into intervention strategies based upon WES scores.

Discussion

Stress management programmes continue to be popular offerings in work settings. As health promotion activities, their purpose is to educate workers about stress and impart training skills to prevent stress-related problems. Research has described significant physiological and subjective benefits of stress management to the individual worker but has not provided guidance with respect to its role within overall stressor prevention/reduction efforts. While it seems clear that stress management is inappropriate as the sole stress reduction strategy, it is appropriate as an adjunct to organisational change interventions (Ganster *et al.*, 1982; Murphy, 1984).

The present paper described an application of stress management as one component of an organisation's stress reduction activities. The paper provided a chronology of events and description of activities in one organisation. The application described here is not being offered as the best nor the only role that stress management can play in organisations. Rather, it illustrates the complementary role of stress management within a more comprehensive stressor reduction programme. To date, phases involving the stress management workshop, formation of a stress reduction committee, and an employee survey have been completed. The difficult tasks of formulating, implementing, evaluating, and modifying stressor reduction strategies remain to be tackled by the committee.

References

Bethesda Hospital (1983) *Stress Management Workshop*, Bethesda Health Management Services, Cincinnati, Ohio.

Ganster, D.C., Mayes, B.T., Sime, W.E. and Tharp, G.D. (1982) "Managing occupational stress: a field experiment," *Journal of Applied Psychology*, Vol. 67, pp. 533-42.

Hurrell, J.J., Jr. and Burg, J.R. (1985) *Satisfaction among Commissioned Corps Scientists*, report prepared for the Scientist Advisory Committee, National Institute for Occupational Safety and Health (NIOSH), Cincinnati, Ohio.

Moos, R.H. and Insel, P.M. (1974) *The Work Environment Scale*, Consulting Psychologists Press, Palo Alto, California.

Moseley, C.L., Singal, M. and Murphy, L.R. (1978) *Health Hazard Determination Report*, HE 78-116-557, National Institute for Occupational Safety and Health (NIOSH) Cincinnati, Ohio.

Murphy, L.R. (1984) "Occupational stress management: a review and appraisal," *Journal of Occupational Psychology*, Vol. 57, pp. 1-15.

Murphy, L.R. (1985) "Individual coping strategies," in Cooper, C.L. and Smith, M.J. (Eds.) *Job Stress and Blue Collar Work*, John Wiley and Sons, Chichester, Sussex, pp. 225-39.

Murphy, L.R. (in press) "A review of organizational stress management research: methodological considerations," *Journal of Organizational Behavior Management*.

Quinn, R.P. and Staines, G.L. (1979) *The 1977 Quality of Employment Survey*, Institute of Social Research, University of Michigan, Ann Arbor, Michigan.

Sauter, S.L., Gottlieb, M.A., Rohrer, K.M. and Dodson, V.N. (1983) *The Well-being of Video Display Terminal Users: an Exploratory Study*, final report on Contract No. 210-79-0034, National Institute for Occupational Safety and Health, Cincinnati, Ohio.

Wilkes, B., Stammerjohn, L. and Lalich, N. (1981) "Job demands and worker health in machine-paced poultry inspection," *Scandinavian Journal of Work Environment and Health*, Vol. 1, pp. 12-19.