A TRANSVERSE EXAMINATION OF OCCUPATIONAL STRESS AMONG A CROSS-DISCIPLINARY POPULATION OF IRISH CONSTRUCTION PROFESSIONALS

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The effect of occupational stress upon managerial and professional staff is increasingly being realised and studied. This paper presents the findings of a recent postal survey of 94 Irish Construction Professionals to evaluate the incidence and causes of occupational stress. 70% of the respondents considered that their work was having an adverse effect on their family and 55% believed that it was affecting their health. 40% have considered early retirement because of severe occupational stress, which appears to be a growing blight on Construction Professionals. The research found, not unexpectedly, that Site Managers had the most stressful roles, followed by Contracts/Project Managers and the Contractor's Quantity Surveyors.

The 4 main stressors identified were (a) volume of work, with associated time pressures, (b) administrative duties, (c) long working hours and (d) inadequate flow of communications.

The research programme found that an encouraging number of Construction organisations had implemented measures to alleviate the causes of stress - these ranged from team-building exercises to specific stress-awareness programmes. An attempt was made to evaluate these initiatives, but it was found that few were really effective. Hence recommendations are put forward in this paper as to how stress management techniques might more usefully be applied to reducing occupational stress in the traditionally hardy, 'macho' culture of the construction industry. The present practice of "presenteeism", whereby insecure employees work longer and longer hours to impress bosses and gain promotion is certainly not the answer.

Keywords: Construction professionals, Ireland, occupational stress.

INTRODUCTION

The job of manager has been isolated as being a potentially high stress occupation, Cooper *et al.* (1988). While some might argue that this is beneficial, providing stimulation and competition between individuals, extensive and convincing evidence exists linking conditions from this occupational environment to deleterious effects in terms of physical and psychological ill-health.

A number of exploratory and preliminary studies have sought to examine occupational stress among a particular occupation or group in the construction industry. In a study primarily investigating occupational stressors, Keenan (1982) chose as a target population, graduate engineers in the civil, mechanical and electrical engineering sectors of industry. Two separate studies have examined the impact of stress on construction site managers; Djebarni (1996) of the University of Glamorgan, analysed its influence on the leadership effectiveness of 71 site mangers, while Sutherland and Davidson (1993) of the University of Manchester conducted a pilot stress audit of 40

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middle and senior site managers on behalf of Bovis Construction as a precursor to a stress management intervention programme. Lysonski *et al.* (1989) briefly examined some of the causes and consequences of role stress among a sample of 180 project managers from a variety of project management companies. A number of North American studies have been reported, although they are restricted to blue-collar workers in the industry, and are mainly concerned with issues of job satisfaction and job motivation. In direct contrast to the paucity of research into managerial stress in the construction industry is the prodigious quantity of research focusing on managers in manufacturing, production and service industries, or in certain professions. It is widely recognised that the construction industry is different in many respects from other major industries and, therefore, managers in this industry may face different problems. For example:

- the fluctuating, fragmented format of work in the industry,
- "casual" nature of the workforce,
- the use of "sub-contract" labour,
- the background of staff.

Approaches to Stress Research

One of the problems to beset stress research is the lack of a universally accepted definition of its central concept. Currently there are believed to be some three hundred definitions of stress and "words of semantic similarity" according to Dobson (1983). Nevertheless, it has been concluded in several different reviews of the stress literature that there are essentially three different, but overlapping approaches to the definition and study of stress, Lazarus (1966); Appleby and Turnbull (1967); Fletcher (1988). The first approach, termed the 'engineering model', conceptualises occupational stress as an aversive characteristic of the work environment such as heavy workloads or a competitive work environment. The second approach, on the other hand, defines stress in terms of common physiological effects in response to a wide range of damaging stimuli, Cox (1993). This approach has been termed the 'physiological model'. The third approach sees work stress in terms of the relationship or interaction between the person and their work environment. In this instance stress is either inferred from the existence of problematic person-environment interactions or measured in terms of the cognitive processes and emotional reactions which underpin those interactions. This final approach has been termed the 'psychological model', or interactionist theory'. The engineering and physiological models emanate from the earlier theories of stress, while the interactionist model characterises contemporary stress theory.

Aim and Objectives

The overall aim of this research project was to conduct a transverse occupational stress study among a cross-disciplinary population of white-collar managers in the construction industries of the Republic of Ireland and Northern Ireland, taking both a qualitative and quantitative approach. Within this overall research framework, the following were the specific objective of the investigation:

- to undertake a review of the existing relevant research work on managerial stress, both global and construction industry specific, in order to inform the formulation of the Managerial Stress Questionnaire;

- to identify the occupational stressors that may exist and their extent among a cross-disciplinary population of managers in the construction industry;
- to examine the physical, psychological and behavioural effects on managers in terms of recognised stressor outcomes/symptoms;
- to identify the nature and extent of the coping strategies adopted and the level of social support perceived to be available from important work and non-work sources;
- to assess the incidence of use of stress management programmes, of a formal and/or informal nature and respondents attitudes towards the introduction of such programmes;
- to propose suitable strategies for the management of stress in the construction process.

METHODOLOGY

In consideration of the merits associated with the use of qualitative and quantitative research methods, and the exploratory and subjective nature of this research, the self-administered questionnaire was selected as the main data-gathering technique. Additionally interviews and a comparative review of the existing documentary research work on occupational stress served to inform the construction of, and complement the findings emerging from the postal questionnaire. This triangular approach, whilst helping to reinforce the likely validity of the research findings, helped to reduce the interpretative bias inevitably introduced by the use of a solitary research technique.

Following the preparation of an initial draft of the Managerial Stress Questionnaire, a number of unstructured interviews were conducted with contracts management and structural engineering management personnel. The objectives of these meetings were to identify potential sources of occupational stress for managerial staff in the construction industry, to be used in the formulation of the section of the final questionnaire assessing this issue and to gauge their initial reaction to its draft content. Prompting was kept to a minimum and it was found that most interviewees took a surprisingly open approach to the discussion.

A compilation of issues raised by the respondents during the process was used to formulate an item bank of nineteen potential sources of stress, consideration being given to the different stressors that might be encountered by different disciplines. With regard to the pilot testing of the questionnaire, constructive criticisms were proffered on amendments and on the modification of layout details in the questionnaire.

A detailed questionnaire survey was carried out among a cross-section of 200 staff from disciplines including architecture, quantity surveying, contracts management and site management operating in contracting, consultancy and public sector organisations both in the Republic of Ireland and Northern Ireland (100 in each). A total of 94 questionnaires (47% response rate) were returned, almost equally from both parts of the island. The results from the questionnaire were analysed using the Statistical Package for Social Sciences (SPSS), a comprehensive and flexible statistical analysis and data management system. The closed-end type questions adopted throughout the

questionnaire facilitated the application of SPSS, and the Likert-type scale acted as a means of coding the respondents' replies for subsequent use in the programme.

Six interviews were arranged with respondents from the contracting, consultancy and public sectors who had affirmed their willingness on the questionnaire to participate in a semi-structured interview, to expand upon and discuss the common issues raised in their own and other respondents' replies. All prospective interviewees were briefed once again as to the purpose of the study and were assured confidentiality of individual data.

The questionnaire was constructed on the completion of an initial literature survey and a series of research interviews. Design of the set of 30 questions, which are sectionalised into four distinct areas, was such as to allow the establishment of the following:

(i) the level of job satisfaction by means of a modified Warr et al (1979) Job Satisfaction Scale;

(ii) the causes of managerial stress by means of an item bank generated by the author;

(iii) the health effects on the respondents in physical, psychological and behavioural terms which may result from stress.

(iv) the frequency with which the respondent adopts various coping strategies to deal with the pressures of work, using an abridged version of a check-list devised by Folkman and Lazarus (1985);

(v) the degree of social support received from work and non-work sources by means of an adaptation of the Caplan *et al.* (1975) four-point scale;

(vi) the current use of stress management initiatives within construction organisations, managers' attitudes towards and their willingness to participate in same and the perceived benefits to be derived from their introduction; and

(vii) background information on the participants in terms of their age, discipline, location of employment, grade of management, monetary value of current project(s), responsibility for the supervision of other, number of hours worked each day, frequency of weekend work, nature of employing organisation, educational/training background and number of years experience in the construction industry.

SURVEY RESULTS

Respondents were requested to rate ten construction disciplines on the basis of their perceived stressfulness with the polarity of responses which could be selected from ranging between "not at all stressful" to "extremely stressful". The various occupations were rated as shown in Table 1 (constructed using classifications "stressful" and "extremely stressful" from the Likert-type scale).

Question one on the Managerial Stress Questionnaire requested respondents to indicate how often, if ever, they are under stress at work, the term "stress" being defined as pressure with which one cannot cope effectively. Their responses revealed

Table 1: Ranking of perceived most stressful occupations

Ranking *	Discipline	Not at all/Least Stressful	Moderately Stressful	Stressful/Extremely Stressful
1	Site Management	3.6	20.5	75.9
2	Contracts Management	4.9	24.4	70.7
3	Quantity Surveying-Contracts	11.1	38.3	50.6
4	Independent Project Management	15.7	34.9	49.4
5	Architecture	19.6	50.6	30.1
6	Estimating & Purchasing	30.9	39.5	29.7
7	Engineering Design	24.7	54.3	21.0
8	Building Surveying	49.3	36.7	13.9
9	Construction Planning	48.7	37.8	13.9
10	Quantity Surveying-Private	31.3	60.0	8.8

*Selected on the basis of ratings in the classification 'Stressful/Extremely Stressful'

Table 2: Experience of occupational stress by age of respondent

	Frequency of Stress Experience			
Age	Never	Sometimes	Regularly	Often
	%	%	%	%
24 or less	0.0	66.7	33.0	0.0
25-34	0.0	68.4	26.3	5.3
35-44	0.0	59.4	37.5	3.1
45-54	10.3	58.6	24.1	6.9
55-64	0.0	50.0	33.3	16.7

that a small minority (3.4%) felt themselves to be "never" under stress, while 60.7% were "sometimes" affected. More remarkable, however, are the percentages in the remaining categories; 30.3% considered themselves to be "regularly" under stress, with 5.6% selecting the "often" category. Examining the response to this question by cross reference with the country of employment, does not suggest any noteworthy differences apart from the slightly greater tendency of some Republic of Ireland respondents to refute the suggestion that they are subject to stress.

Results indicated that middle managers are under the greatest degree of stress (on the basis of combining categories "regularly" and "often") compared to those in senior or junior level management. This conflicts with an assumption projected by some management research literature that top level managers in organisations suffer the highest job stress (Coates and Pellegrin 1975).

Cross-tabulating the frequency with which each discipline experiences occupational stress and their age groups produces Table 2. Combining the "regularly" and "often" categories of the table indicates that the oldest age group may be experiencing worrying stress levels. However, this finding is tempered by the small number of pertinent subjects (six in total) in this category, thereby casting doubt on its reliability. Of greater significance are the numbers concerned in the 35-44 years age bracket. In this regard, 41%, or 13 out of the 32 respondents who completed the question, perceive themselves to be experiencing a high level of work-related stress. The effect of this problem is reflected in the number of managers who would consider seeking alternative employment; one in three construction industry managers surveyed would leave their present employment because of its pressures.

Causes of Stress

Based on the literature survey and a number of interviews with managers in the construction industry, an item bank of nineteen potential stressors was identified. Respondents were requested to indicate how frequently they experienced stress relative to each. For each stressor the "never" or "rarely" categories were combined, together with the "often" or "always" responses to present Table 3.

Table 3: Causes of stress among managers in the construction industry

Rank Stressoring		Frequency of Stress Experience		
		Never/Rarely %	Sometimes %	Often/Always %
1	Volume of work and time pressures	2.3	12.5	85.2
2	Amount of paperwork	3.4	37.9	58.6
3	Long working hours	13.6	29.5	56.8
4	Poor communication flow	6.9	37.9	55.2
5	Insufficient time spent in family/home environment	20.5	29.5	50.0
6	Company strategy	28.4	27.3	44.3
7	Contractual role	26.4	40.2	33.3
8	Inadequate numbers of staff to do job properly	13.6	54.5	31.8
9	Responsibility without control	29.8	40.2	29.8
10	Lack of competent staff to do job	18.2	55.7	26.1
11	properly	40.0	38.8	21.1
12	Form of contract/procurement method	48.3	31.0	20.6
13	Lack of teamwork	44.3	37.5	18.2
14	Interpersonal conflicts-personality clashes etc	46.0	39.1	14.9
15	Lack of clarity in responsibilities	60.3	26.5	13.3
	Relationships with senior management etc			

Table 4: The single cause of stress construction professionals would most like to see improved.

	Stressor	Chosen by %
1	Workload	25.3
2	Communication flow	10.1
3	Paperwork	10.1
4	Lack of competent staff	8.9
5	Inadequate numbers of staff	7.6
6	Working long hours	7.6
7	Procurement route	6.3
8	Teamwork	5.1
9	Time spent with family	3.8
10	Training	2.5
11	Interpersonal conflict	2.5
12	Public sector bureaucracy	2.5
13	Relationships at work	1.3
14	Lack of clarity in responsibilities	1.3
15	Responsibility without control	1.3
16	Recognition for good work	1.3

Table 5: Construction professionals ‘often’ experiencing common symptoms of stress

	Symptom	**Experienced by %**
1	Physical inactivity	28.7
2	Fatigue	22.7
3	Tension	17.2
4	Disturbed sleep pattern	11.4
5	Weight gain from over-eating	10.5
6	Poor dietary habits	9.2
7	Irritability	5.7
8	Digestive upsets	4.6
9	Increased cigarette smoking	3.5
10	Lack of concentration	3.4

Table 6: Coping strategies used by construction professionals

	Coping strategy	Percentage using strategy "frequently" or "always"
1	Think objectively about situation and control feelings	72%
2	Find out more about problem	66%
3	Take immediate action on basis of present understanding of problem	63%
4	Draw on past experiences	59%
5	Follow formal channels of procedures	55%
6	Make a plan of action and follow it	47%
7	Seek advice from superiors at work	35%
8	Reduce tension by physical activity	28%
9	Go on as if nothing happened	26%
10	Become more involved in non-work activities	23%
11	Express anger to person who causes problem	12%
12	Wait and see before progressing	9%
13	Become more involved in family life	7%
14	Make myself feel better by eating, drinking taking medication etc	5%

Table 7: Perceived benefits to be derived from the introduction of stress management programmes

Ranking	Benefit	Percentage selecting 4 or 5 on scale
1	Greater motivation	69.2
2	Better job satisfaction	61.9
3	Higher levels of contentment/morale	61.6
4	Improved productivity	53.9
5	Greater organisational commitment	50.0
6	Improved profitability	40.3
7	Better industrial relations	30.3
8	Reduced staff turnover	27.7
9	Reduced absenteeism	24.7
10	Reduced recruitment and retraining costs	20.8

Suggested Improvements

From a list of potential causes of stress in the construction industry, respondents selected the single stressor that they would most like to see improved, (Table 4). One in four respondents chose the volume of work, while 10% would like to see changes made in the process of communication in construction and a similar number of respondents selected the amount of paperwork as a target for improvement. The next most cited factor was "a lack of competent staff to do the job properly".

Job Dissatisfaction

Job dissatisfaction was measured using an amended version of the Warr *et al.* (1979) Job Satisfaction Scale. The results, using this method, indicated a mixture of "hygiene" factors and lack of "true motivators" as significant causes of discontent.

Effects of Stress

Respondents were requested to report how frequently they experienced any of twenty-one common symptoms of stress. Table 5 shows the occurrence of the main effects in terms of the percentage of respondents who reported "often" suffering from each symptom.

Coping Strategies

Coping strategies have been examined on the basis of strategies used to deal with stressful work situations or problems. These include seven ways of coping, three of which are problem-focussed and address confrontive coping, responsibility acceptance and planful problem solving, and three of which are emotion-focussed, namely distancing, self-controlling and escape-avoidance. The seventh seeking social support, is deemed to be a combination of problem-focussed and emotion-focussed coping.

An encouraging 91% of respondents to the Managerial Stress Questionnaire would participate in stress management/control programmes if offered, preferably in team-building, control of workload and stress awareness/relaxation training.

CONCLUSIONS

The results of this research study suggest that the construction industry needs to urgently address the problem of occupational stress among its managers. It is noteworthy that there is a greater prevalence of work-related stress problems among particular groups, especially those involved in the role of site management, at middle-management level and in specific age categories. Although the most frequently reported stress symptoms may appear somewhat innocuous, their extent provides ample grounds on which to justify and instigate remedial efforts. It is encouraging to observe that those coping strategies generally used by managers in the construction industry are widely acknowledged for their mediative characteristics in regard to work-related stress and its negative health outcomes. Nonetheless, the following recommendations are presented which may assist in supplementing and reinforcing such adaptive skills while also addressing the sources of, and influences on, occupational stress among construction industry professionals.

RECOMMENDATIONS

Foremost among the main stressors identified is the inadequacy of communication flow, which may undermine those managerial functions propounded by such theorists as Fayol and Mintzberg including the manager's ability to plan and exercise control and to perform their role as a decision maker and as a co-ordinator of resources. Central to this objective is the harnessing of the potential of construction information technology (IT). Secondly, it is important that client organisations refine their construction brief as early as possible in the development process regardless of whether they are one-off, irregular or frequent purchasers of construction. Thirdly, when selecting the contractual arrangements to be adopted for a project, clients and their professional advisers should firstly consider those that facilitate an early relationship and better communications to be developed with the main contractor.

Over a quarter of those managers surveyed would like to see improvements made in the volume of workload with which they have to contend. The deficiencies revealed in work-related social support, particularly from an immediate supervisor is a matter of some concern considering the benefits which have been found to stem directly from this source in respect of psychological and physical well-being and in the promotion of job satisfaction. Over one in five of the construction industry managers surveyed considered team-building programmes to be the most appropriate stress management initiative for their organisations. Such programmes target issues of interpersonal conflict, social support, communiction etc, all of which are important as causal factors in the incidence of work-related stress.

19% of managers in the survey identified stress awareness/relaxation training as an important strategy in mitigating the effects of occupational stress. Stress management training has been found to reduce physiological arousal levels, tension, anxiety, sleep disturbances and psychosomatic complaints. The findings from this research project suggest that in introducing such stress management initiatives, particular occupational groups, management grades and age categories should be targeted because of the greater prevalence of problems among these groups of employees. One of the major disadvantages of such programmes is that they are not designed to reduce or eliminate the sources of stress at work, but merely to improve an employee's coping strategies. Therefore, a primary goal of every organisation should be to address and remove stressors from the work environment in order to make the organisation inherently less stressful. As a result, it is hoped, there would be benefits not only to individual professionals employed in the construction industry, but also to the industry as a whole.

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