

PERCEPTIONS OF THE RELATIVE IMPORTANCE OF JOB CONTROL AND SUPPORT FACTORS, AS MODERATORS OF WORKPLACE STRESS, AMONG SOUTH AFRICAN CONSTRUCTION PROFESSIONALS: PRELIMINARY FINDINGS

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Occupational stress is moderated by the extent to which workers can control aspects of their work and the type and level of support they receive from colleagues and managers. An ongoing research project explores these factors among professionals working in the South African construction industry. Preliminary findings from descriptive analysis of data from 36 participants show that the five highest ranked job control factors, in terms of perceived importance, are: the volume of project work respondents are engaged in; control over the competence level of other staff engaged on those projects; the flow of work facing respondents; the type of work encountered; and the availability of particular staff (although the latter factor is significantly less important to female professionals). The five highest ranked job support factors, with no significant gender or professional discipline differences, are: adequate compensation (payment); adequacy of co-worker competence; positive job security; supervisor competence; and appropriate career path potential in the employing organisation. Subject to the confirmation of these factors in a later phase of the research project, the implications thereof include: companies wishing to implement effective proactive stress management strategies should look carefully at employee control issues such as how, what, how much and when work is allocated to staff; the composition of work teams should be carefully considered, especially in terms of competence and co-operation; whatever their size, professional firms in the construction industry should develop explicit career path opportunities for employees.

Keywords: construction professionals, workplace stress, job control and support factors.

INTRODUCTION

Background

Psychosocial risk refers to the potential for the psychological or physical well-being of a worker to be harmed as a result of how work is designed and managed within organisational and social contexts (Cox and Griffiths, 2005). The work factors associated with psychosocial risk are: “*excessive workload and work pace, job*

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uncertainty, inflexible work schedules, irregular, unpredictable or unsocial work hours, poor interpersonal relationships, lack of participation, unclear role in the organisation, poor communication, poor career development, and conflicting demands of work and home” (EU-OSHA, 2014: 5, citing Cox 1993). The impact of psychosocial risks on individual employees can be that both their performance and their health deteriorate. Occupational stress occurs when workers are unable to cope with or control the demands of their work environments (EU-OSHA, 2009). Consequently, the effect of their diminished performance, due to psychosocial risks, manifests as a financial burden to the individuals themselves, as well as to organisations and societies (EC, 2002; EU-OSHA, 2009). The 2014 EU-OSHA review of literature quantifying the cost of work-related stress and psychosocial risks concludes that the financial burden on societies is considerable, costing societies and organisations billions of Euros annually, a finding which establishes a strong business case for the prevention of such risks (EU-OSHA, 2014: 34-7).

Leung, Chan and Cooper (2015) list 46 construction sector work stress studies done over the past 25 years, with various foci. Approximately half of the studies involved construction company employees (workers/labourers – 20%; site managers – 9%; cost estimators/personnel – 20%) and half involved consultants/professionals (engineers – 9%; project managers – 9%; other professionals – 35%). The geographical spread of these is skewed towards Hong Kong (50%), England (15%) and Australia (15%), with only 11% having been undertaken in African countries. Against this background, there is a strong case for more research to be done in the African context. South Africa’s *apartheid* history makes it a case of special interest, given the imbalance in the supply of unskilled and skilled labour and the consequences thereof for stress levels (Leung, Bowen, Liang *et al.*, 2015).

The research reported in this paper was prompted by, and expands, the study of construction industry professionals undertaken by Bowen, Edwards and Lingard (2013). The theoretical framework adopted in that study was based on one of the interactional theories of workplace stress, the JDC-S model, the appropriateness of which was argued in Bowen *et al.* (2013). The scale items used in the research instrument were not identical to Karasek’s Job Content Questionnaire (JCQ) (Karasek, 1985), but were adaptations. Adaptation of the scales was encouraged by Karasek (1985) to deal with the “*situation-specific*” measurement of “*detailed problems that are important in the surveyed work site*” (Karasek, 1985). Although this was probably intended to mean that Karasek (1985’s) JCQ should be broadened, the scale items were replaced with ones deemed more appropriate for the South African construction industry, informed by the literature. The findings of the Bowen *et al.* (2013) research showed strong support for the model. The research instrument used in that study contained nine items in the “*Job Demands*” scale, six in the “*Job Control*” scale, and four in the “*Support at Work*” scale. In the analysis of the data, it emerged that greater complexity in the scales would benefit the interpretation of how control and support factors moderate workplace stress.

The purpose of the current study was therefore to identify the main control and support factors likely to be influential in the design of interventions to moderate workplace stress in the South African construction industry professional sector. The scales used in the Bowen *et al.* (2013) study were expanded substantially, in accordance with the results of a more comprehensive review of the literature. The findings of the current study are an important step towards deepening our

understanding of workplace stress in the South African construction sector, which will, in turn, provide a foundation for the development of appropriate interventions.

According to the Job Demand Control-Support (JDC-S) theory of occupational stress (see Johnson and Hall, 1988), jobs that are high in demands, low in control, and low in workplace social support are experienced as the most stressful and produce the most damaging health impacts (Michie, 2002).

Job demand refers to the stressors involved in accomplishing one's workload, dealing with unexpected tasks, and handling job-related personal conflict (Karasek, 1979, 1985). It can be understood as the perception of the relationship between the amount of mental and physical processing capability or resources available and the amount required by the task (Demerouti, Bakker, Nachreiner *et al.*, 2001).

Job control refers to the employee's degree of control over his or her tasks and conduct during the working day (Karasek, 1979). It can be regarded as a perceived ability to exert some influence over the work environment in order to make it more rewarding and less threatening (Ganster, 1989). Previous studies of occupational stress have shown that lack of job control can be an important cause of strain in various occupations such as nursing and construction (Karasek, 1979; Sauter, Hurrell and Cooper, 1989). Job control concerns the issue of participation in the organization, which can be reflected in whether or not employees feel they have the right to speak freely about matters of concern (Frese, 1987). It also encompasses the balance between levels of authority and responsibility. Tasks associated with low levels of authority and high levels of responsibility deprive employees of the ability to exert influence over their work and the working environment, thereby inducing stress (Schieman and Reid, 2009). Lack of control may also affect relationships with project team members or superiors, the consequences of which (such as arguments with colleagues) can significantly affect stress levels (Leung, Chan and Yu, 2009). Conversely, good interpersonal relationships at work can facilitate good performance (Djebarni, 1996) that, in turn, can help to alleviate stress (Jex, 1998).

Job support refers to being trusted, respected, and supported by colleagues and superiors. Working in such conditions enhances employees' sense of well-being and reduces their stress, which can positively influence commitment and improve job satisfaction (Stenman, Wennström and Abrahamsson, 2010). Those who perceive themselves as having support from their supervisor report more job satisfaction, more emotional commitment to the organization, and less turnover (Taylor, 2008). In addition, job support from both supervisors and colleagues can act as a moderator of stress (Mayo, Sanchez, Pastor *et al.*, 2012).

RESEARCH METHOD AND QUESTIONNAIRE DESIGN

The research instrument

The research is ongoing, and field-administered survey questionnaires are used for primary data collection. Two sections of a multi-sectional instrument, comprising catalogues (see Table 1) for Job Control (19 items) and Job Support (17 items) factors, are reported and analysed in this paper.

Catalogue items were largely drawn from the literature, but were augmented where appropriate with additional items from the researchers' combined knowledge of, and experience in, the construction industry. Additional input was provided by an industrial psychologist. Five-point Likert scale options are given for each catalogue item, to indicate perceived levels of importance, intensity or degree of contribution.

Respondents are also asked to rank the top five items in each catalogue, in terms of their own work experience. Finally, participants are asked to describe a recent work-related stress experience in greater detail.

Administration of the survey

Given the complexity of the survey instrument, it was deemed necessary to meet with respondents to explain the research and the requirements. The first ten completed questionnaires, the completion of which was assisted by the researchers, were treated as a pilot study. These ten respondents were asked to comment on the adequacy of the instrument. No changes were suggested, but they considered the length of the entire multi-sectional instrument to be a problem. Consequently, the researchers decided to meet with all subsequent respondents to explain the research and requirements. Research assistants were engaged to do this.

Purposive convenience sampling was used to identify suitable respondents. This sampling method ensured adequate representation of professional disciplines and both genders. The target frame was restricted to professionals working in the construction industry in the Western Cape province of South Africa, and largely to the metropolitan boundaries of Cape Town. The distribution of the research instruments commenced in February 2012 and is ongoing. Thus far, 36 completed surveys (including the 10 from the pilot study) have been received. The profile of the respondents comprised: 11 architects (7 male, 4 female); 8 project/construction managers (7 male, 1 female); 5 engineers (4 male, 1 female); and 12 quantity surveyors (7 male, 5 female).

ANALYSIS OF THE DATA

The data reported and analysed in this paper are the Job Control and Job Support scales of the questionnaire. The items for these scales are listed in Table 1 below and drawn largely from the work of Sutherland and Davidson (1989), Haynes and Love (2004), Ng, Skitmore and Leung (2005), Leung *et al.* (2009), Leung, Skitmore and Chan (2007), and Love, Edwards and Irani (2010).

Table 1. Catalogue of job control and job support factors as moderators of workplace stress

Item	Job control factors (19-item catalogue)	Job support factors (17-item catalogue)
1.	Flow of work	Co-worker competence
2.	Volume of work	Supervisor competence
3.	Type of work	Co-worker support
4.	Physical environment	Supervisor support
5.	Power to delegate	Co-worker interpersonal skills
6.	Ergonomics	Supervisor interpersonal skills
7.	Decision-making authority	Fairness of criticism from others
8.	Decision latitude	Recognition from others
9.	Staff availability	Freedom to speak openly
10.	Staff competence	Opportunities for skills enhancement
11.	Team size / composition	Positive job security
12.	ICT resources	Adequate compensation (salary)
13.	'Busy-ness' and breaks	Appropriate career path potential
14.	Work travel	Freedom from health issues
15.	Role conflict	Absence of personal / family issues
16.	Forced redeployment	Absence of harassment at work
17.	Forced relocation	Absence of discrimination at work
18.	Forced shift-work	
19.	Forced termination	

Respondents could nominate up to two additional factors in each case, and were asked to rate each factor, on a scale of 1 – 5 (1 = negligible contributor to moderating workplace stress; 5 = major contributor; without other interval definitions). They were also asked to rank, from their own work experiences, the top five factors in terms of frequency encountered (1 = most frequently encountered). In designing the research instrument, it was envisaged that these five would not necessarily match the five highest-rated factors for moderating stress; since, while respondents might regard a particular factor as capable of making a major contribution to stress moderation, they might not have experienced it.

The reliability of the instrument was tested. The Cronbach's alpha for each set of Job Control and Job Support factors is 0.83 and 0.89, respectively, indicating excellent internal consistency in each set. The dataset was subjected to missing value analysis involving the detection of anomalies. No anomalous cases are identified. It is premature to comment on the validity of the instrument, because the intention is to use the ranking exercise to refine the items for use in a future version of the scale, after which we intend to test for construct validity in terms of the JDC-S model.

The Kolmogorov-Smirnov test for normality was applied to the Job Control and Job Support factor data, respectively. For all factors in both categories, values of the statistic were below 0.05 indicating a *violation* of the assumption of normality. Non-parametric techniques were therefore employed to examine differences between groups in terms of gender and professional groupings. Specifically, the Mann-Whitney U Test was used to test for differences in the Job Control and Job Support factor

scores on the basis of gender, and the Kruskal-Wallis H Test was employed to explore differences on the basis of professional grouping.

The five most influential Job Control stress-moderating factors are perceived to be [1] control over the volume of work (less volume=lower stress); [2] control over staff competence (higher levels of competence=lower stress); [3] control over the flow of work (greater control over the flow of work needed to be done=lower stress); [4] control over the type of work (greater control over what work is done=lower stress); and [5] control over staff availability (more abundant competent staff resources=lower stress). The median rating values (*Md*) are reported where appropriate.

With the exception of *staff availability* (males: *Md*=3.00, *n*=24; and females: *Md*=2.00, *n*=11; *U*=74, *z*=-2.11, *p*=0.035, *r*=0.35), there are no significant differences in the perceptions of males and females regarding the impact of the job control factors in moderating workplace stress. Specifically, males, more than females, see greater levels of control over staff resourcing as a meaningful moderator of job stress.

Whilst not significant, the difference in the perceptions of males and females regarding the moderating influence of ergonomics (i.e., control of their working environment in terms of office layout, etc.) is noteworthy (males: *Md*=2.00, *n*=24; and females: *Md*=3.00, *n*=11; *U*=80, *z*=-1.94, *p*=0.053, *r*=0.32). Females, more than males, see this factor as having a moderating influence on stress.

When perception differences are considered on the basis of professional grouping, significant differences exist only in relation to the physical work environment (architects: *n*=11; project and construction managers: *n*=8; engineers: *n*=5; and quantity surveyors: *n*=12), $\chi^2(3, n=36)=9.04, p=0.029$, with medians of 3.00, 3.50, 3.00 and 1.50, respectively; and for forced relocation, $\chi^2(3, n=36)=8.57, p=0.036$, with medians of 1.00, 3.50, 2.00 and 1.00, respectively. With regard to control over the physical environment, it is apparent that, of all professional groups, project and construction managers most see this factor as having the potential to moderate their stress levels; while engineers, albeit to a lesser extent, also hold this viewpoint. Relocating to new projects is always likely to induce some stress for site-based professionals.

Whilst not significant, the difference in the perceptions of the different professional groups regarding the moderating influence of 'type of work' is noteworthy (architects: *n*=11; project and construction managers: *n*=8; engineers: *n*=5; quantity surveyors: *n*=12) $\chi^2(3, n=36)=7.55, p=0.056$, with medians of 3.00, 3.00, 4.00 and 2.00, respectively.

The five most influential Job Support stress-moderating factors are perceived to be [1] adequate compensation (salary) (higher salary=lower stress); [2] co-worker competence (higher levels of co-worker competence=lower stress); [3] positive job security (greater degree of job security=lower stress); [joint-4th] supervisor competence (higher levels of supervisor competence=lower stress); and [joint-4th] appropriate career path potential (greater career path potential=lower stress). There is a clear link between *staff competence* as a job control stress-moderating factor [ranked 2nd] and as a job support stress-moderating factor [ranked 2nd and 4th].

There are no significant differences in the perceptions of males and females regarding the impact of the Job Support factors in moderating workplace stress. However, whilst not significant, the difference in the perceptions of males and females regarding the moderating influence of a lack of harassment at work is noteworthy (males: *Md*=1.00,

$n=24$; females: $Md=2.00$, $n=11$; $U=89$, $z=-1.67$, $p=0.095$, $r=0.28$). Females, more than males, view a lack of harassment at work as a positive moderator upon workplace stress.

There are no differences (significant or noteworthy) in the perceptions of the different professional groups regarding the impact of the Job Support items in moderating workplace stress.

Chi-square tests (χ^2) for independence confirm that the 'marginal' relationships are not significant for: gender and ergonomics, $\chi^2 (5, n=35)=8.32$, $p=0.14$; professional group and type of work, $\chi^2 (12, n=36)=11.14$, $p=0.52$; and for gender and an absence of harassment at work, $\chi^2 (5, n=35)=4.60$, $p=0.47$.

DISCUSSION

The five highest ranked Job Control factors as stress moderators all relate to the work being done and the staff resources available to undertake that work. This confirms the findings of Haynes and Love (2004) and Leung *et al.* (2007) with regard to workload, but highlights the importance of control over type of work and work-flow, as well as over staff availability and competence. Control over staff resourcing is particularly important to males, possibly because of the predominance of men in senior management positions in most construction professional practices (Bowen *et al.*, 2013). Arising anecdotally in the interviews, it may also be that female professionals, as a minority group, exhibit more flexibility and acceptance in terms of team composition.

Control over the physical working environment is particularly important to project and construction managers, and to a lesser extent, to engineers. The reason for this may lie in the nature of the work undertaken by project and construction managers (and engineers), in that some work assignments have the potential to be 'less comfortable' than others e.g., rural or remote site locations for construction projects, or being a resident engineer in a high risk location. Professional architects and quantity surveyors are more likely to be urban office-based. A similar situation pertains to project and construction managers (and engineers) regarding forced relocation. Projects located close to home, family and amenities are bound to be preferable. Control over the nature and location of the working environment is important to project and construction managers (and engineers). The five Job Support factors rated most highly as stress moderators may be grouped into two categories – competence of colleagues (co-workers and supervisors), and career-related issues (salary, job security and career path potential). These results align with those of Leung *et al.* (2007) regarding the negative effects of low levels of reward, and Ng *et al.* (2005) concerning a lack of opportunity to learn new skills in terms of career path development, as well as a lack of autonomy in decision-making.

CONCLUSIONS

The aim of this paper was to present the findings on respondents' ranking of the top five Job Control and Job Support factors. Perceptions of the importance of Job Control and Job Support factors, as moderators of workplace stress, were gathered from construction professionals in South Africa. The highest ranked Job Control factors were found to be: the volume of project work being undertaken; control over the competence level of other staff; the flow of work facing respondents; the type of work encountered; and the availability of staff. The highest ranked Job Support factors were: adequacy of compensation; adequacy of co-worker competence; positive job

security; competency of supervisor; and appropriate career path potential. Significant differences in perception, on the basis of gender and professional groupings, occur only with respect to control of staff resourcing (gender), physical work environment (profession), and involuntary relocation (profession). Firms need to consider 'how, what, how much and when' work is allocated to staff. Work team composition needs careful consideration – particularly in terms of inter-personal relations (important to female staff) and competence. Finally, career path opportunities need to be both motivational and explicit. These are not considered insurmountable challenges in the context of workplace stress and worker health.

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