

Job Redesign as an Intervention Strategy of Burnout: Organizational Perspective

B. Yip¹ and S. Rowlinson²

Abstract: This study sought to identify job characteristics associated with burnout in the context of the construction industry and then formulated job redesign as an intervention strategy of burnout. A survey was undertaken to explore the experience of burnout among 403 construction professionals working in the Hong Kong construction industry. The results of the study show that long working hours, role overload, role conflict, role ambiguity, lack of autonomy, and job security are significant job determinants of burnout. Job redesign was formulated based on these findings and implemented in a company. Levels of burnout experienced by the same respondent both before and 1 year after the job redesign demonstrate a significant difference, implying that job redesign does contribute to lower levels of burnout. The importance, ways, and constraints of job redesign as an intervention to manage burnout at organizational levels are discussed. The results of this study should be of direct benefit to policy makers by providing them with a foundation for designing effective organizational interventions to manage burnout and minimize a serious and often hidden cost.

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Burnout Phenomenon

Burnout is a gradual process that occurs as a result of constant and daily exposure to stress over a long period of time (Westman and Eden 1997). The term was originally restricted to human services domains, for example, health care and education (Leiter and Maslach 1988; Sarros and Sarros 1992), to describe a syndrome of physical and emotional exhaustion, which involved the development of a negative self-concept and job attitudes, and a loss of concern and feeling for clients (Freudenberger 1974; Pines and Maslach 1978). The concept of burnout has only expanded to include general occupation groups in the last decade (Schaufeli et al. 2002), containing similar psychometric properties but defined as “a crisis in one’s relationship with work, not necessarily as a crisis in one’s relationship with service recipients at work” (Maslach et al. 1996, p. 20). A widely adopted definition of burnout conceptualizes the phenomenon as “a syndrome of emotional exhaustion, cynicism, and reduced professional efficacy,” such that individuals suffering from burnout are likely to have feelings of depleted emotional resources and a lack of energy, a cynical attitude involving an exaggerated distancing from work, and a tendency to evaluate themselves negatively and become dissatisfied with their own accomplishments in the work place (Maslach et al. 1996).

¹Dept. of Real Estate and Construction, The Univ. of Hong Kong, 5/F Knowles Building, HKU, Pok Fu Lam Rd., Hong Kong. E-mail: brenda@hku.hk

²Professor, Dept. of Real Estate and Construction, The Univ. of Hong Kong, 5/F Knowles Building, HKU, Pok Fu Lam Rd., Hong Kong (corresponding author). E-mail: steverowlinson@hku.hk

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Why Should Employees Be Concerned about Burnout?

Research evidence suggests that burnout is associated with mental and physical disorders. Stress factors at work have been revealed to show a direct negative effect on mental health (Tang et al. 2001). This relationship could be explained by referring to the study conducted by Maslach et al. (2001) via an intermediate process of burnout, which was proven to be associated with the experience of psychological distress, anxiety, depression, and reduced self-esteem. In terms of physical health, the growing inventory of empirical studies supports a linkage between burnout and somatic symptoms, such as headaches, sleep disturbance, and coronary heart disease (Burke and Greenglass 1986; Appels and Schouten 1991; Dell’Erba et al. 1994; Tennant 1996; Grunfeld et al. 2000; Gunn 2004). More specifically, of the separate components of burnout, emotional exhaustion is strongly related to the potential for diseases of the circulatory system, whereas cynicism is related to diseases of the digestive system (Toppinen-Tanner et al. 2005). On top of the above, research has shown that burnout is strongly associated with male infertility (Lu 2004) and day-to-day behavioral problems, including increased use of alcohol and drugs (Repetti 1993). In addition, Cordes and Dougherty (1993) suggested that burnout is contagious and can affect one’s other domains, such as home life (Larson et al. 1994; Grzywacz et al. 2002). A recent study shows further support for the positive relationship between emotional exhaustion and work-to-family conflict (Lingard and Francis 2006) claiming that such spillover can also occur when moods are transferred from one domain to another (Repetti and Wood 1997).

Why Should Organizations Be Concerned about Employee Burnout?

Research evidence also suggests that burnout induces negative ramifications in organizational effectiveness in terms of tangible

and intangible implications (Wright and Bonett 1997; Asad and Khan 2003). In addition to absenteeism, loss of productivity, and medical expenses due to employees' chronic poor mental and physical health, organizations are likely to suffer from the employees' day-to-day negative beliefs, attitude, intentions, and behavior toward work. For example, employees experiencing burnout are likely to have low levels of job satisfaction, leading to diminished motivation and reduced performance (Rocca and Kostanski 2001). There is widespread recognition among scholars that burnout is negatively related to work engagement (Schaufeli et al. 2002; Lingard 2005), indicating that employees who experience burnout suffer from a lack of energetic and effective connection with their work, resulting in decreased personal efficacy. Furthermore, Leiter and Maslach (1988) suggested that diminished organizational commitment is a major consequence of burnout, implying that individuals have lower levels of identification and involvement in a particular organization, and hence a reduced willingness to contribute to the organization. Additionally, burnout is constantly linked to the defensive coping mechanism of escape in the stated desire to leave one's job (Lee and Ashforth 1990), such as intention to turnover and ultimately job turnover (Toppinen-Tanner et al. 2005). This is supported by evidence, as reported in the Dubrin (1994) study, which showed 33% of employees were suffering from burnout and seriously considered leaving their jobs. Lingard (2003) and Yip et al. (2005) echoed this finding and more specifically highlighted in their studies that both emotional exhaustion and cynicism were significant predictors of the intention to turnover, which had previously been found to be a good predictor of actual staff turnover and employees' behavioral attitude toward the intention to turnover (Parasuraman 1982). Employee turnover imposes direct financial implications as well as human resources loss on organizations, resulting in the lowering of its effectiveness.

When considering alienation in the workplaces, burnout can be contagious and can have spillover effects that affect colleagues of those who experience it (Cordes and Dougherty 1993; Westman et al. 2001). In fact, people are highly social creatures and are affected by the attitudes and behavior of colleagues. Consequently, individuals may be influenced by others experiencing burnout and an employee's state of burnout may thus affect the emotional climate among a working team and an organization (Humbeek et al. 2004). It is clear that, from the organizational perspective, the outcomes of employees' burnout are costly because of either decreased levels of personal efficacy, productivity and performance, or increased absenteeism and job turnover. Therefore, there are strong grounds to believe that if employees are suffering from burnout, this is likely to reduce the organization's efficiency and threaten its long-term competitiveness. In view of the substantial and undesirable consequences burnout may have on individuals and organizations, the cause of these problems and ways in which they can be prevented or managed need to be better investigated.

Sources of Burnout within the Work Environment

While the results of some similar studies lend support to the speculation that burnout occurs as the result of a complex interaction between individual characteristics and issues in the work environment, there is a growing understanding that the latter appears to be the more salient in predicting burnout than the former (Gmelch and Gates 1998; Pines and Aronson 1989; Lingard 2003; Yip et al. 2005). In fact, there is widespread recognition among

scholars that stress stemming from the work environment has negative ramifications on individuals, leading to low levels of job satisfaction, organizational commitment, productivity, and effectiveness (Cordes and Dougherty 1993; Lee and Ashforth 1993; Rohland 2000). With reference to Schaufeli and Enzmann (1998) and Maslach et al. (2001), burnout experiences of employees may be employed in explaining this phenomenon.

For instance, as originally conceptualized, burnout is considered as the direct result of quantitative overload (Maslach and Jackson 1984). In addition, Lauderale (1982) maintained that role overload is often found within organizations with a scarcity of resources and a continual threat of cutbacks, factors that are likely to promote the burnout phenomenon within such organizations. Long working hours contributing to burnout can be explained in two ways: strain-based effects on individuals' mental and physical fatigue levels, and time-based effects on participation in family affairs, which leads to work-to-family conflict (Al-dous et al. 1979; Sweeney and Summers 2002).

Both role conflict and ambiguity have received a considerable amount of attention in burnout literature and have been shown to be consistently related to the three burnout dimensions to a significant extent (Jackson et al. 1986; Leiter and Maslach 1988; Law and Fox 2004). What kind of control employees have over their work pace depends on the demands of the work itself and the availability of resources. Lack of control over time management was found as one of the main sources of burnout as reported by Nyssen et al. (2003) since personal expectations cannot be reached. There is widespread recognition that staff burnout, in particular the dimension of emotional exhaustion, is linked to job insecurity (Leiter and Maslach, 2001; Westman et al. 2001; Visser 2003), which potentially threatens the continuity of the current post.

Burnout is also recognized as being associated with a wide span of supervisory control, undermining the autonomy of staff, reducing the potential for significant accomplishments by individuals, and also increasing their tendency to become cynical and distance themselves from their work (Maslach 1978). Pay and fringe benefits are often viewed as a major component of the overall reward system within organizations and are found to be related to burnout (Leiter and Maslach 2001; Yip et al. 2005). The monetary, social, and prestige rewards of work acknowledge to some extent the extraordinary contributions made. Employees may therefore invest significant time, skill, and effort to obtain recognition and promotion. They may find that their working conditions impede their capacity to achieve their own expectations, decreasing their level of motivation and interest in their work, with a consequent liability to burnout.

In a similar manner, promotion prospects offered by organizations are also linked to employee burnout (Brewer and Clippard 2002). Organizations that provide limited promotion opportunities or operate an unfair promotion policy are likely to have employees who feel that their experience is not recognized and equally they feel that they cannot achieve personal growth and development within such an organization. This causes feelings of depleted emotional resources and is often the result of finding oneself in a dead-end post.

Human interaction is a measure of how an employee relates to peers and supervisors. Lazarus and Folkman (1984, p. 47) suggested that "people will have better morale and health, and function more effectively if they receive or believe they receive social support when it is needed." Following that, there is a widespread recognition that the lack of social support in the workplace is a significant predictor of burnout (Sarros and Sarros 1992; Sand

and Miyazaki 2000). This can be explained by the fact that, when social support is absent, the opportunities to benefit from the protective effect of positive social interactions are limited and the stressor-strain relationship is thus stronger. While recognizing that organizational sources of social support from supervisors and coworkers can be a positive step in alleviating burnout, the lack of support from supervisors is especially important, even more so than support from coworkers (Mo 1991; Sarros and Sarros 1992) as supervisors are likely to have more influence on one's job prospects than coworkers.

In view of the numerous job stressors that are identified as contributing to burnout, leading to negative ramifications of the organization effectiveness, the acquisition of this fundamental information can contribute to successful organizational intervention strategies to prevent, manage, or treat burnout via job redesign.

Objectives of the Study

1. The study sought to identify job characteristics associated with burnout. They included identifying the relative importance of these potential sources of burnout. It is important to ascertain the most important determinants of burnout since interventions of burnout prevention are more likely to succeed if they address the source of the problems.
2. The study aimed to formulate job redesign as an intervention strategy to treat burnout. This included testing of its effectiveness 1 year after the implementation of the job redesign in a case study.

Methodology

Measures

Demographic information collected included the age, gender, and marital status of the respondents. Respondents were also asked to indicate their most advanced level of education.

Job characteristics were measured using a 36-item instrument with reference to the Lingard (2003) study. The scale was designed to tap dimensions likely to be relevant to the work of construction industry professionals. These were qualitative overload, responsibility, role conflict, role ambiguity, control over work pace, pay satisfaction, job security, promotion prospects, and social satisfaction. The items for each dimension were taken from several previously deployed instruments, including the Michigan organizational assessment questionnaire (see Cook et al. 1981). Respondents were asked to rate items on a Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Burnout was measured using the Maslach burnout inventory-general survey (Maslach et al. 1996). This 16-item inventory comprises three subscales assessing emotional exhaustion (I feel emotionally drained from my work), cynicism (I have become less interested in my work since I started this job), and professional efficacy (at my work, I feel confident that I am effective at getting things done). The items for the third dimension of burnout are framed in positive terms and thus a low score of professional efficacy reflects a high level of burnout. Items were rated on a seven-point scale ranging from 0 (never) to 6 (every day).

Stage 1—Cross-Sectional Survey

The population consisted of construction related professionals, i.e., project managers, architects, engineers, and surveyors, en-

gaged in property development, consulting, and contracting companies in Hong Kong. In the first instance, a company search was conducted on the government register of "general building contractors." General managers or managers of human resources in listed companies were approached and asked whether their company would participate in the survey. At this stage, the managers were briefed on the objectives of the study.

Within those companies who agreed to participate in the survey, a Web-based hyperlinked questionnaire was sent to the participants' internal e-mail systems by the human resources department or other responsible management groups. Completed questionnaires were submitted online and returned directly to the database system controlled by researchers. The front page of the questionnaire consisted of plain language statements briefly describing the objectives of the study. The statements also explained the voluntary nature of participation and assured the respondents of confidentiality.

The survey obtained 601 responses, which entirely completed at least one section of the questionnaire. The final number of returned questionnaires that were fully completed was 403. Among the 403 respondents who completed the entire questionnaire, the majority was male (84%). 21% of respondents were below 30 years of age, 33% between 30 and 39, another 33% between 40 and 49, with the remaining 13% over 50. The majority of respondents (66%) were married. 368 respondents (91%) had at least an undergraduate degree and 192 (48%) had a postgraduate degree.

Stage 2—Case Study

After the analysis of the results in the cross-sectional survey and identification of the major job predictors of burnout, job redesign was formulated as an intervention strategy of burnout and tested on one of the participating companies from Stage 1. This company was selected because it contributed the most respondents out of all of the participating companies and was therefore likely to offer the largest sample size in Stage 2. Questionnaires seeking demographic information of the respondents and their responses to the Maslach burnout inventory-general survey was distributed to potential participants through the internal mail system of the company one year after the implementation of job redesign. Completed questionnaires were returned directly to the researchers in unmarked postage paid envelopes provided for this purpose. Of the 87 questionnaires distributed, 55 completed and usable ones were returned yielding a response rate of 63%. Levels of burnout among each respondent measured before and after the implementation of job redesign were the compared to assess the effectiveness of this intervention strategy of burnout.

Results

Correlations of Burnout

Table 1 shows the correlations between demographic factors, job-related variables, and the three dimensions of burnout. It is observed that there is no coefficient above 0.70, indicating that multicollinearity is unlikely to cause problems in formulating a good model in subsequent regression analyses. In this study, burnout is hypothesized to be associated with the 12 defined job-related variables: working hours, quantitative workload, role ambiguity, autonomy, role conflict, resources adequacy, role overload, control over work pace, job security, satisfaction with pay,

Table 1. Correlations between Demographic and Job-Related Variables and the Three Dimensions of Burnout

	Emotional exhaustion	Cynicism	Professional efficacy
Age	−0.34 ^c	−0.39 ^c	0.25 ^c
Gender	0.12 ^a		−0.13 ^b
Marital status	0.26 ^c	0.26 ^c	−0.18 ^b
Educational level	−0.13 ^a	−0.12 ^a	0.11 ^a
Working hours	0.33 ^c	0.13 ^b	
Quantitative workload	0.31 ^c	0.10 ^a	0.26 ^c
Role ambiguity	0.23 ^c	0.34 ^c	−0.37 ^c
Autonomy	−0.21 ^c	−0.23 ^c	0.37 ^c
Role conflict	0.34 ^c	0.32 ^c	0.10 ^a
Resources adequacy	−0.38 ^c	−0.42 ^c	0.30 ^c
Role overload	0.48 ^c	0.27 ^c	−0.18 ^b
Control over work pace	−0.40 ^c	−0.31 ^c	0.20 ^c
Job security	−0.17 ^c	−0.19 ^c	0.20 ^c
Satisfaction with pay	−0.32 ^c	−0.28 ^c	0.10 ^a
Satisfaction with supervisor	−0.29 ^c	−0.32 ^c	0.23 ^c
Promotion prospects			
Emotional exhaustion	—	0.62 ^c	
Cynicism	0.62 ^c	—	−0.17 ^c
Professional efficacy		−0.17 ^c	—

Note: Correlations involving age, gender, marital status, and education level are Spearman rank-ordered statistic; all others are Pearson product-moment statistics, pairwise. $N=403$.

^a $p < 0.05$.

^b $p < 0.01$.

^c $p < 0.001$, two-tailed.

social satisfaction, and promotion prospects. All these job-related variables, with the exception of promotion prospects, were significantly correlated with emotional exhaustion. Of the significant job-related variables, five were positively correlated with emotional exhaustion: working hours, quantitative workload, role ambiguity, role conflict, and role overload. The six job-related variables, which were negatively correlated with emotional exhaustion, were autonomy, resources adequacy, control over work pace, job security, satisfaction with pay, and satisfaction with supervisor.

As with cynicism, all the job-related variables except for promotion prospects were significantly correlated with cynicism. Of the significant job-related variables, five were positively correlated with cynicism: working hours, quantitative workload, role ambiguity, role conflict, and role overload. The job-related variables, which were negatively correlated with cynicism, were autonomy, resources adequacy, control over work pace, job security, satisfaction with pay, and satisfaction with supervisor. A similar pattern of correlations, but in opposite direction, was observed between professional efficacy and the job-related variables as expected. Promotion prospects and working hours however failed to demonstrate a significant correlation with professional efficacy. Eight out of the remaining ten job-related variables were positively correlated with professional efficacy: quantitative workload, autonomy, role conflict, resources adequacy, control over work pace, job security, satisfaction with pay, and satisfaction with supervisor. Role ambiguity and role overload were the only two job-related variables which were negatively correlated with professional efficacy.

Regression Analysis

In subsequent hierarchical regression analysis, each job-related variable was evaluated in terms of its predictive power, over and above that offered by all the other independent variables. Age, gender, marital status, and education level were identified in previous studies as related to burnout (Maslach et al. 2001; Lau et al. 2005). These four demographic variables were therefore treated as controls to restrain the effects of possible respondent bias on scores of these variables (Pallant 2001). In the first step of the hierarchical regression analysis, the control variables—age, gender, marital status, and education level—were regressed against each of the burnout dimensions so that the effects of exogenous demographic differences were suppressed within the statistical analysis. Subsequently the 12 job-related variables were entered into the model to assess the remaining principal effects. Table 2 shows the results of the hierarchical regression analysis. The statistical significance relating to the block of variables entered in each step was assessed with an F test conducted on the change in the adjusted R^2 . Within each block of variables, the statistical significance of the effect applicable to each variable was measured with a t test.

Model 1a-1 indicates the regression result when the control variables themselves were entered as the first block to predict emotional exhaustion. It shows that the four variables have a statistically joint effect, with age demonstrating its own significant effect on emotional exhaustion, as such younger respondents are more likely to be subjected to higher levels of emotional exhaustion. The adjusted R^2 for the model was 0.10, implying that the control variables alone explained 10% of the total variance in emotional exhaustion. When both these variables and the main effects are entered, as shown in Model 1a-2, the results show that the block of the main effects has a statistically significant effect on emotional exhaustion and explains considerably more variance (adjusted $R^2=0.47$) than when the control variables are entered alone. Within this model, working hours, roles overload, and job security have a statistically significant effect on emotional exhaustion after accounting for the effects of demographics as control variables. On the other hand, it was observed that emotional exhaustion appeared to be affected strongly by role overload, with its high standardized beta coefficient ($\beta=0.31$, $p < 0.001$).

Turning now to the prediction of cynicism, Model 1b-1 shows that the four control variables have a statistically joint effect and that age again demonstrates its own significant effects on cynicism, with younger respondents more likely to be subjected to higher levels of cynicism. The adjusted R^2 for the model was 0.14, implying that the control variables alone explained 14% of the total variance related to cynicism. When both the control variables and the main effects are entered, as shown in Model 1b-2, the results indicate that the block of main effects has a statistically significant effect on cynicism and explains a considerably higher variance (adjusted $R^2=0.35$) than when the control variables are entered alone. Within this model, role conflict and role overload had a statistically significant effect on cynicism after taking account of the effects of the demographic control variables. On the other hand, it is also observed that cynicism seems to be affected profoundly by role conflict, with its high standardized beta coefficients of ($\beta=0.22$, $p < 0.001$).

In predicting professional efficacy in Model 1c-1, the four control variables again reveal a statistically joint effect. Age and education level present their own significant effects on professional efficacy, with older respondents or those with higher education more likely to possess enhanced levels of professional

Table 2. Hierarchical Regression Analysis^a of Predicting Burnout from Job-Related Variables

Demographic (controlled variables)	Standardized beta (β)					
	Emotional exhaustion		Cynicism		Professional efficacy	
	1a-1	1a-2	1b-1	1b-2	1c-1	1c-2
Age ^b	-0.26 ^c	-0.19 ^c	-0.36 ^c	-0.29 ^c	0.23 ^c	0.20 ^c
Gender ^b	0.02	0.10 ^c	-0.06	-0.03	-0.04	0.02
Marital status ^b	0.08	0.11 ^c	0.04	0.06	-0.06	-0.01
Education level ^b	-0.07	-0.02	-0.08	-0.04	0.13 ^c	0.11 ^c
<i>Job-related variables (main effects)</i>						
Working hours		0.14 ^d		0.02		-0.01
Quantitative workload		0.11		0.00		-0.01
Role ambiguity		-0.07		0.12		-0.25 ^e
Autonomy		-0.10		-0.13		0.16 ^c
Role conflict		0.09		0.22 ^c		0.05
Resources adequacy		-0.06		-0.06		-0.04
Role overload		0.31 ^e		0.15 ^d		-0.19 ^d
Control over work pace		-0.11		0.03		0.00
Job security		-0.10 ^c		-0.02		0.04
Satisfaction with pay		-0.09		-0.05		-0.10
Satisfaction with supervisor		-0.04		-0.07		0.09
Promotion prospects		0.02		0.10		-0.02
R^2	0.11	0.50	0.15	0.38	0.10	0.29
Adjusted R^2	0.10	0.47	0.14	0.35	0.09	0.25
F	9.46 ^e	18.15 ^e	13.22 ^e	11.24 ^c	8.38 ^e	7.41 ^c

Note: Entries represent standardized regression coefficients.

^aRegression method: forced entry, listwise, $N=403$.

^bAge recorded as 0=less than or equal to 40, 1=more than 40. Gender recorded as 0=male and 1=female. Marital status recorded as 0=married and 1=single. Education level recorded as 0=undergraduate or below and 1=postgraduate. $N=403$.

^c $p < 0.05$.

^d $p < 0.01$.

^e $p < 0.001$.

efficacy. The adjusted R^2 for the model was 0.09, implying that the control variables alone explained only 9% of the total variance in professional efficacy. When both the control variables and the main effects were entered, as shown in Model 1c-2, the results reveal that the block of main effects has a statistically significant effect on professional efficacy. This explains more variance (adjusted $R^2=0.25$) than when the control variables are entered alone. Within this model, role ambiguity, autonomy and role overload had a statistically significant effect on professional efficacy after accounting for the effects of the demographics as control variables. When considering the effect of the job-related variables, it was observed that professional efficacy regressed, particularly with the absence of role ambiguity with its high standardized beta coefficients ($\beta=0.25$, $p < 0.001$).

In summary, referring to the three regression models altogether, among the twelve job-related variables, six demonstrated a significant effect on at least one dimension of burnout: working hours, role ambiguity, role conflict, and role overload contributed positively to burnout, whereas autonomy and job security contributed negatively.

Paired Samples t -Test for the Levels of Burnout before and after Job Redesign

The sample means for the burnout scores reported by respondents in Stage 1 and Stage 2 are presented in Table 3. The mean scores

of emotional exhaustion and cynicism in Stage 2 are both lower than those in Stage 1 while professional efficacy is opposite. There is a strong positive correlation between scores recorded in the two stages in all three dimensions of burnout, as such respondents who scored high in Stage 1 also scored high in Stage 2. Referring to the T values of the paired samples test before and after the implementation of job redesign, significant differences were found in terms of only two dimensions of burnout: emotional exhaustion ($\chi^2=2.71$, 54 df , $p < .001$) and cynicism (χ^2

Table 3. Descriptive and Paired Samples Statistics of Burnout Sources in Stage 1 and Stage 2

		Mean	SD	Correlation	t
Emotional exhaustion	Stage 1	3.13	1.39	0.792 ^b	2.17 ^b
	Stage 2	3.07	1.51		
Cynicism	Stage 1	2.81	1.40	0.669 ^b	1.40 ^a
	Stage 2	2.72	1.48		
Professional efficacy	Stage 1	4.04	1.02	0.627 ^b	-1.71
	Stage 2	4.07	1.13		

Note: $t=T$ value; and $df=54$.

^a $p < 0.01$.

^b $p < 0.001$.

=1.40, 54 *df*, $p < .010$); as where no significant difference was observed between the two scores for professional efficacy.

Discussion

Sources of Burnout

The results of the study lend support to the proposition that job stressors in the work environment appear to contribute significantly to employee burnout. This study suggests that working hours, role overload, role conflict, role ambiguity, autonomy, and job security are likely to predict burnout. Identification of these findings within the context of the construction industry carries significant implications as all these seven job-related variables are common stressors found within the sector, implying that the high levels of burnout experienced by professionals in the industry are likely to be significant.

The nature of the construction industry is inherently complex and demanding within its external and internal environment. Applying Porter's forces analysis (Porter 1980) to the industry shows that it is operating in keen competitive conditions. First, the rivalry among existing competitors, both local firms and those based elsewhere, could be considered severe, with no barriers to entry (Rowlinson and Walker 1995). "Lowest" bidding is widely accepted as the norm when construction projects are awarded (Kovacs 2004), leading to a low or even negative profit margin. In addition, the bargaining power of customers is extremely high. Under such extremely demanding conditions, construction professionals are often required to work under role overload for long and sometimes irregular hours, often resulting in a stressful work situation.

Considering the construction industry is primarily a project-based one, Dainty et al. (1999) predicted that job security is likely to be lower than in repetitive process industries. In fact, in project-based industries, continued employment is often conditional on successful bidding for new projects in a highly competitive environment. The unpredictability of the workload induces psychological fear of unemployment, a likely source of burnout. The management of construction projects typically involves balancing the expectations of different stakeholders, such as client, designers, consultants, contractors and suppliers, and the potential for role conflict and role ambiguity is high (Djebarni 1996). Bacharach et al. (1991) suggested that conflict between professional standards and budget constraints might be strongly associated with life threatening consequences, further increasing the experience of burnout.

Impact of Burnout on Organizations

The presence of the numerous significant job predictors of employee burnout in this study should draw the immediate attention of organizations, as they are likely to cause tangible and intangible adverse ramifications on organizational effectiveness due to employees poor health and attendance, lower levels of job satisfaction, work engagement, organizational commitment, and high levels of job turnover (Rocca and Kostanski 2001; Schaufeli et al. 2002; Leiter and Maslach 1988; Lingard 2005; Tang et al. 2001). Such negative attitude and behavior are likely to reduce the overall productivity and performance, hence the long-term competitiveness of an organization.

Organizations with a minimal staff turnover record might need to consider that employees subject to a high level of burnout may

still involuntarily remain in their posts because of a lack of available and acceptable opportunities (Hughes 2001). This situation is worrying since it poses potential problems of changes in attitude and effort, and further declining performance. Other research have further suggested that burnout develops largely in terms of the emotional exhaustion associated with leaving one's profession (Pick and Leiter 1991).

Since burnout serves as a trigger for job turnover, it causes considerable loss to an organization as human resources are one of its most valuable assets. Any business has substantial investment in its human capital—their education, professional accreditation, skills, and so on. When experienced and competent employees leave an organization voluntarily, the company has to bear the costs of staff turnover, recruitment, and retraining.

Organization Interventions: Job Redesign

In view of the substantial and undesirable consequences burnout may have on individuals and organizations, it is logical for organizations to devise interventions to prevent employee burnout. Theoretical and empirical findings show the relative importance of situational factors compared with that of individual factors in predicting burnout, implying that job redesign may be an effective preventive strategy against burnout (Lingard 2003). It is encouraging to learn that job redesign, formulated based on the findings in the Stage 1 survey, was found to be helpful in treating burnout in this study. Suggestions on minimizing the six job predictors of burnout include working hours, role overload, role conflict, role ambiguity, autonomy, and job security.

In Hong Kong, typical working hours on a construction site are from 8:00 a.m. to 6:00 p.m., Monday to Saturday, resulting in a 54-h working week, which is 6 h more than the SA8000 reference standard (ILO 2007). In addition, working overtime beyond these periods and on rest days is very common in the local industry. The participating company was advised to adopt an alternative Saturday roster for office based employees so that they could enjoy one extra day off in two weeks. Moreover, the working hours on site were adjusted to commence from 8:30 a.m. instead of 8:00 a.m. and management was advised to discourage their staff from working overtime so as to relieve both the time-based and strain-based effects induced by long working hours (Aldous et al. 1979).

Three in-house training courses were conducted: one for effective coping methods, one for time management, and the last one for communication and negotiation skills as individual-oriented approaches to help employees cope with the role overload (Lingard 2003). In addition, during the time of the case study, since the participating company was handling four construction projects simultaneously, it was recommended to flexibly allocate employees from one project to another to cope with different peak periods of demand in different projects to ease the role overload experienced by employees in one particular project.

Organizational intervention strategies to reduce role conflict and role ambiguity with the objective of managing burnout were introduced with a clearly defined job description and specification encompassing the whole department and the whole organization. These include operational charts showing where in the line management and reporting structure each member belonged for role clarity (Whetstone 1984). Equally important is defining authority and responsibilities in such a way that there is no conflict with others.

Strategies for enhancing autonomy focused on redesigning the employees' job role to enable empowerment and decision making

within a well-defined scope of work. However, there is a long-standing theory stating that people are inherently different, with some seeking responsibility and others wishing to avoid it at all costs (Pugh and Hickson 1996). This theory might suggest that a positive relationship between autonomy and burnout may not exist equally in all individuals. In this way, higher levels of autonomy would automatically go together with higher levels of responsibility and induce higher levels of burnout among those employees who do not easily accept it. Interventions should therefore also focus on achieving an improved job-attribute/job-applicant match, particularly in the area of autonomy and responsibility. If an improved match can be achieved, employees are likely to want and need to feel empowered, and to feel they are contributing their effort toward the success of the whole organization and that their contribution is also recognized and valued, thus reducing their exposure to job burnout.

Organizational policy geared toward treating burnout by enhancing job security may encourage the perception of a longer-term employment among employees and induce higher levels of internal promotion prospects. To achieve this goal, it may be desirable for organizations to lower their expected profit margins and hence increase the chances of success when bidding for new projects so as to maintain the employment of project team members. This may incur increased risk, but it may be offset against (1) redundancy payments when lay off occurs, (2) the cost associated with recruitment as new business comes on line, and (3) those intangible costs related to raising job insecurity levels and the subsequent effects of burnout.

Risks and Constraints of Job Redesign

One of the critical challenges of organizational management is the development of a scientific approach to improve productivity, efficiency, and responsiveness to change, while simultaneously engaging the loyalty and involvement of the staff. In this respect, it is necessary to examine the potential risks and constraints job design might have on organizational context, structure, and culture, as well as how these values shape the emotional and cognitive relationships that people develop within their work. This understanding can then be applied in devising job redesign to treat employee burnout.

Job redesign can affect the organizational context both at the project levels and throughout the company on a larger scale. Gaines and Jermier (1983) interestingly found that the levels of emotional exhaustion differ across departments even when the job characteristics of each sector were kept almost the same, suggesting that specific environmental and situational factors within the department can affect the levels of burnout. Seen from this wider perspective, the organizational context is subject to larger social, cultural, and economic forces; organizations may therefore be required to undergo certain changes from time to time, such as downsizing and mergers, which will also have significant tangible and intangible effects on their employees.

With the recognition that increasing autonomy can help prevent burnout, it has become popular among many companies today to change their organizational structure by creating semiautonomous teams to replace individual roles (Morgeson et al. 2006). However, in ceding a certain amount of control, they must be aware of the potential risks that poor judgment, negligence of duties, and failure to act in the best interests of the organization could lead to failure (Morgeson et al. 2006). Once autonomous power has been put into place, it is also then very difficult to retract it. Furthermore, disturbing the hierarchical balance can

upset the entire culture of the company if the staff are not fully prepared and equipped for their new roles. If employees feel unable to cope with the increased workload or to handle new tasks they might feel are beyond their means (Ugboro 2006; Thomas 1995), morale will suffer. Instead of preventing burnout through job redesign, these feelings of inadequacy and uncertainty in regard to their new roles could lead to the very circumstance the organization is trying to avoid.

Organizations also need to consider the physical constraints associated with job redesign. In spite of an awareness of the prevalence of the burnout phenomenon, organizations may not be able to implement job redesign to improve the situation because of lack of resources and time and budget constraints (Rocca and Kostanski 2001). In these circumstances, it is recognized that employees often exercise relatively low levels of control over the presence of job stressors, and are thus unlikely to be able to influence their exposure to it. However, organizations should be aware of the undesirable implications of employee burnout and its related, often hidden, costs, which may prove to be higher than expected over the long term. On top of business initiatives, it is a corporate social responsibility to provide a healthy (physically and mentally) working environment for the well being of employees.

Benefits of This Study to the Construction Industry

The results of this study should be of direct benefit to both construction professionals and their employing organizations by achieving a better understanding of the burnout phenomenon and its contributing factors within their working environments. This study provides a foundation for designing effective organizational interventions such as job redesign to manage, control or curb burnout, minimizing a serious and often hidden cost. Practical ways and constraints of job redesign from an organizational perspective are discussed.

Conclusion

This study has critically reviewed theoretical and empirical findings jointly to advance the conceptual framework of burnout for intervention. It shows that long working hours, role overload, role conflict, role ambiguity, lack of autonomy, and job security play a significant role in the development of burnout, and that strategies focusing on job redesign to minimize these job factors are likely to reduce burnout. This proposition was confirmed by a case study where the levels of burnout in respondents were significantly different before and 1 year after the implementation of job redesign. Nevertheless, when formulating job redesign as an intervention strategy to prevent burnout, organizations are advised to consider the risks and constraints based on their own organizational context, structure, and culture to assure its effectiveness.

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References

- Aldous, J., Osmond, M. W., and Hicks, M. W. (1979). "Men's work and men's family." *Contemporary theories about the family*, W. R. Burr, R. Hill, F. I. Nye, and I. L. Reiss, eds., The Free Press, New York.
- Appels, A., and Schouten, E. (1991). "Burnout as a risk factor for coronary heart disease." *Behav. Med.*, 17, 53–59.
- Asad, N., and Khan, S. (2003). "Relationship between job-stress and burnout: Organizational support and creativity as predictor variables." *Pakistan Journal of Psychological Research*, 18(4), 129–149.
- Bacharach, S. B., Bamberger, P., and Conley, S. (1991). "Work-home conflict among nurses and engineers: Mediating the impact of role stress on burnout and satisfaction at work." *J. Organiz. Behav.*, 12, 39–53.
- Brewer, E. W., and Clippard, L. F. (2002). "Burnout and job satisfaction among student support services personnel." *Hum. Resour. Dev. Q.*, 13(2), 169–186.
- Burke, R. J., and Greenglass, E. R. (1986). "Work and family conflict." *International review of industrial and organizational psychology*, C. L. Cooper and I. Robertson, eds., Wiley, New York.
- Cook, J. D., Hepworth, S. J., Wall, T. D., and Warr, P. B. (1981). *The experience of work: A compendium and review of 249 measures and their use*, Academic, London.
- Cordes, C. L., and Dougherty, T. W. (1993). "A review and an integration of research on job burnout." *Acad. Manage. Rev.*, 18, 621–656.
- Dainty, A. R. J., Neale, R. H., and Bagilhole, B. M. (1999). "Women's careers in large construction companies: Expectations unfulfilled?" *Career Dev. Int.*, 4(7), 353–357.
- Dell'Erba, G., Venturi, P., Rizzo, F., Porcù, S., and Pancheri, P. (1994). "Burnout and health status in Italian air traffic controllers." *Aviat., Space Environ. Med.*, 9(1), 315–322.
- Djebarni, R. (1996). "The impact of stress in site management effectiveness." *Constr. Manage. Econom.*, 14, 281–293.
- Dubrin, A. (1994). *Applying psychology: Individual and organisational effectiveness*, Prentice Hall, Englewood Cliffs, N.J.
- Freudenberger, H. J. (1974). "Staff burnout." *J. Soc. issues*, 30, 159–165.
- Gaines, J., and Jermier, J. M. (1983). "Emotional exhaustion in a high stress organization." *Acad. Manage. J.*, 26, 567–586.
- Gmelch, W. H., and Gates, G. (1998). "The impact of personal, professional, and organizational characteristics on administrator burnout." *J. Educ. Adm.*, 36(2), 146–159.
- Grunfeld, E., Whelan, T. J., Zitzelsberger, L., and Willan, A. R. (2000). "Cancer care workers in Ontario: Prevalence of burnout, job stress, and job satisfaction." *CMAJ*, 163, 166–169.
- Grzywacz, J. G., Almeida, D. M., and McDonald, D. A. (2002). "Work-family spillover and daily reports of work and family stress in the adult labour force." *Fam. Relat.*, 51, 28–36.
- Gunn, B. (2004). "The antidote to burnout." *Strategic Finance*, 86(3), 8–10.
- Hughes, R. E. (2001). "Deciding to leave but staying: Teacher burnout, precursors, and turnover." *Int. J. Human Resour. Manage.*, 12, 288–298.
- Humbeek, G., Audenhove, C., and Declercq, A. (2004). "Mental health, burnout, and job satisfaction among professionals in sheltered living in Flanders: A pilot study." *Soc. Psychiatry Psychiatr. Epidemiol.*, 39, 569–575.
- ILO. (2007). *International labour organisation*, (<http://www.ilo.org/global/lang-en/index.htm>) (Oct. 25, 2007).
- Jackson, S. E., Schwab, R. L., and Schuler, R. S. (1986). "Towards an understanding of the burnout phenomenon." *J. Appl. Psychol.*, 71(4), 630–640.
- Kovacs, A. (2004). *Enhancing procurement practices: Comprehensive approach to acquiring complex facilities and projects*, Kluwer Academic, Boston.
- Larson, J. H., Wilson, S. M., and Beley, R. (1994). "The impact of job insecurity on marital and family relationships." *Fam. Relat.*, 43, 138–143.
- Lau, S. Y., Yuen, M. T., and Chan, M. C. (2005). "Do demographic characteristic make a difference to burnout among Hong Kong secondary school teachers?" *Soc. Indic. Res.*, 71, 491–516.
- Lauderdale, M. L. (1982). *Burnout: Strategies for personal and organisational life speculations on evolving paradigms*, University Associates, Tex.
- Law, D. M. Y., and Fox, P. W. (2004). "Job stress of construction professionals." *J. Hong Kong Institute of Surveyors*, 15(1), 88–92.
- Lazarus, R. S., and Folkman, S. (1984). *Stress, appraisal, and coping*, Springer, New York.
- Lee, R. T., and Ashforth, B. E. (1990). "On the meaning of Maslach's three dimensions of burnout." *J. Appl. Psychol.*, 75, 743–747.
- Lee, R. T., and Ashforth, B. E. (1993). "A longitudinal study of burnout among supervisors and managers." *Org. Behav. Hum. Decis. Process.*, 54, 369–398.
- Leiter, M., and Maslach, C. (2001). "Burnout and quality in a sped-up world." *J. Qual. Particip.*, 24(2), 48–52.
- Leiter, M. P., and Maslach, C. (1988). "The impact of interpersonal environment on burnout and organisational commitment." *J. Organiz. Behav.*, 9(4), 297–308.
- Lingard, H. (2003). "The impact of individual and job characteristics of 'burnout' among civil engineers in Australia and the implications for employee turnover." *Construct. Manage. Econ.*, 21, 69–80.
- Lingard, H. (2005). "Balancing study and paid work: The experiences of construction undergraduates in Australia." *Aust. J. Constr. Econ. Build.*, 5, 41–47.
- Lingard, H., and Francis, V. (2006). "Does a supportive work environment moderate the relationship between work-family conflict and burnout among construction professionals?" *Construct. Manage. Econ.*, 24(2), 185–196.
- Lu, S. (2004). "His job may affect baby-making." *Prevention*, 56, 101.
- Maslach, C. (1978). "Job burnout—How people cope." *Public Welf.*, 36(2), 56–58.
- Maslach, C., and Jackson, S. E. (1984). "Patterns of burnout among a national sample of public contact workers." *J. Health Hum. Resour. Adm.*, 7, 189–212.
- Maslach, C., Jackson, S. E., and Leiter, M. P. (1996). *Maslach burnout inventory manual*, 3rd Ed., Consulting Psychologists, Calif.
- Maslach, C., Schaufeli, W. B., and Leiter, M. P. (2001). "Job burnout." *Annu. Rev. Psychol.*, 52, 397–422.
- Mo, K. W. (1991). "Teacher burnout: Relations with stress, personality, and social support." *Educ. J.*, 19(1), 3–11.
- Morgeson, F. P., Johnson, M. D., Campion, M. A., Medsker, G. J., and Mumford, T. V. (2006). "Understanding reactions to job re-design: A quasi-experimental investigation of the moderating effects of organizational context on perceptions of performance behavior." *Pers. Psychol.*, 59(2), 333–363.
- Nyssen, A. S., Hansez, I., Baele, P., Lamy, M., and De Keyser, V. (2003). "Occupational stress and burnout in anesthesia." *Br. J. Anaesth.*, 90(3), 333–337.
- Pallant, J. (2001). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows (Version 10)*, Open University, Buckingham, U.K.
- Parasuraman, S. (1982). "Predicting turnover intentions and turnover behavior: A multivariate analysis." *J. Vocat. Behav.*, 21, 111–121.
- Pick, D., and Leiter, M. P. (1991). "Nurses' perceptions of the nature and causes of burnout: A comparison of self-reports and standardized measures." *Can. J. Nurs. Res.*, 23, 33–48.
- Pines, A., and Aronson, E. (1989). "Why managers burnout?" *Sales and Marketing Management*, 3(4), 287–299.
- Pines, A., and Maslach, C. (1978). "Characteristics of staff burnout in a mental health setting." *Hosp. Community Psychiatry*, 29, 233–237.
- Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*, Free Press, New York.
- Pugh, D. S., and Hickson, D. J. (1996). *Writers on organizations*, 5th Ed., Penguin Books, London.
- Repetti, R. L. (1993). "Short-term effects of occupational stressors on daily mood and health complaints." *Health Psychol.*, 12(2), 125–131.
- Repetti, R. L., and Wood, J. (1997). "Effects of daily stress at work on

- mothers' interactions with preschoolers." *J. Fam. Psychol.*, 11, 90–108.
- Rocca, A. D., and Kostanski, M. (2001). "Burnout and job satisfaction amongst Victorian secondary school teachers: A comparative look at contract and permanent employment." *Proc., Teacher Education: Change of Heart, Mind, and Action. ATEA Conf.*, Melbourne, Australia.
- Rohland, B. M. (2000). "A survey of burnout among mental health center directors in a rural state." *Adm. Policy Ment. Health*, 27(4), 221–237.
- Rowlinson, S., and Walker, A. (1995). *The construction industry in Hong Kong*, Longman, Hong Kong.
- Sand, G., and Miyazaki, A. (2000). "The impact of social support on salesperson burnout and burnout components." *Psychol. Mark.*, 17(1), 13–26.
- Sarros, J. C., and Sarros, A. M. (1992). "Social support and teacher burnout." *J. Educ. Adm.*, 30(1), 55–69.
- Schaufeli, W., and Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*, Taylor and Francis, London.
- Schaufeli, W. B., Martinez, I. M., Marques, P. A., Salanova, M., and Bakker, A. B. (2002). "Burnout and engagement in university students: A cross-national study." *J. Cross Cult. Psychol.*, 33, 464–481.
- Sweeney, J. T., and Summers, S. L. (2002). "The effect of the busy season workload on public accountants' job burnout." *Behav. Res. Account.*, 14, 223–245.
- Tang, C. S. K., Au, W. T., Schwarzer, R., and Schmitz, G. (2001). "Mental health outcomes of job stress among Chinese teachers: Role of stress resource factors and burnout." *J. Organiz. Behav.*, 22(8), 887–901.
- Tennant, C. (1996). "Experimental stress and cardiac function." *J. Psychosom. Res.*, 40, 569–583.
- Thomas, J. (1995). "Frustration over job re-design (letter)." *Nurs. Manage.*, 26(12), 10.
- Toppinen-Tanner, S., Ojajarvi, A., Väänänen, A., Kalimo, R., and Jäppinen, P. (2005). "Burnout as a predictor of medically certified sick-leave absences and their diagnosed causes." *Behav. Med.*, 31(1), 18–27.
- Ugboro, I. O. (2006). "Organizational commitment, job re-design, employee empowerment and intent to quit among survivors of restructuring and downsizing." *J. Behav. Appl. Manage.*, 7(3), 232–253.
- Visser, M., Smets, E., Oort, F., and De Haes, H. (2003). "Stress, satisfaction, and burnout among Dutch medical specialists." *CMAJ*, 168(3), 271–275.
- Westman, M., and Eden, D. (1997). "Effects of respite formwork on burnout: Vacation relief and fadeout." *J. Appl. Psychol.*, 82, 516–527.
- Westman, M., Etzion, D., and Danon, E. (2001). "Job insecurity and crossover of burnout in married couples." *J. Organiz. Behav.*, 22(5), 467–481.
- Whetstone, R. (1984). "Effect of project management on stress factors: Role ambiguity, conflict, and overload." *Proc., 16th Annual Seminar/Symp.*, Project Management Institute, Philadelphia.
- Wright, T. A., and Bonett, D. G. (1997). "The contribution of burnout to work performance." *J. Organiz. Behav.*, 18(5), 491–499.
- Yip, B., Rowlinson, S., Kvan, T., and Lingard, H. (2005). "Job burnout within the Hong Kong construction industry: A cultural perspective." *Proc., CIB W92/T23/W107 Int. Symp. on Procurement Systems*, Las Vegas.