Employee perception of work stress in a large construction company in Australia

Teck Heng Benson, Lim¹, and Adam Perica¹

¹ Construction Management and Property, Faculty of Built Environment, University of New South Wales UNSW, Sydney, Australia

Abstract. Managing stress effectively is touted to be a key determinant of increased performance. It is however believed that individuals perceive and cope with stress differently. This thus makes stress management more complicated in construction. The aim of this research is to investigate the perceived work stress of construction employees by examining how perceived stress vary across employees and the perceived stress correlate with employee performance. In addressing these, an online questionnaire survey of 187 construction employees was undertaken, and data were analysed using the relative prevalence indexing method, ANOVA and Pearson correlation tests. The overall results show that poor work-life balance and work overloads are the major negative perceived stressors for construction professionals. Furthermore, there were differences in the perceived stress among cadets, operational staff, middle and top management. Lastly, the findings reveal the interpersonal and organisational climate have strong association with employee performance. In conclusion, the findings shed lights on the spectrum of work stress underling employee performance and how different cohorts of employees perceive and experience work stress.

1 INTRODUCTION

In construction, workplace stress is often reported as the key cause to adverse reactions that are detrimental to employees' health and performance (e.g., [1], [2]). Hitherto, a considerable amount of research has documented a list of factors that could attribute to workplace stress: a toxic work environment [2], negative workload [2], role ambiguity [1], lack of autonomy [1], bullying and harassment [3], career development barriers [4] and organisational climate [5]. As suggested by Lingard et al. [6], unlike other organisational assets, employees' needs and mental wellbeing cannot be overlooked as their capabilities cannot be easily replicated. It is critical for management to create a positive work environment, devoid of distress, for higher employee productivity and improved organisational performance.

The aim of this paper is to investigate the perceived work stress of construction professionals, by specifically examining how the perceived work stress varies across different roles; and how the perceived stress correlate with employee performance. By knowing these, company management could develop better targeted stress management strategies for different cohorts of employees.

2.0 LITERATURE REVIEW

According to Leung et al. [2], workplace stressors in construction could be classified into five categorises. *Personal stressors* are specific to individual employees' attitude toward work-life balance. *Interpersonal*

stressors refer to the relationships with supervisors, colleagues, sub-contractors or clients. *Task stressors* relate the demands of a job. *Organisational stressors* relate to an organisation's decision-making processes. Lastly, *physical stressors* refer to the work environment that each employee is exposed to.

Over the past decades, a considerable amount of research has been done to explore how construction professionals and workers perceive their work stress across different countries. For example, Loosemore and Waters' [4] analysis of the stress perception of 190 male and female construction professionals in Australia have shown that excessive workload and low salary are the key stressors for men and women, respectively. Their findings further point out that male managers perceived 'implications of mistakes' and 'conflict or confrontational situations' as the primary workplace stressors, while their female counterparts pointed to the low job control and work overload. Similarly, Lingard and Francis [7] found that there exists a strong association between job scheduled irregularity, excessive working hours and emotional exhaustion in their sample of 231 male construction professionals, managers and administrators. Later, Lingard et al.'s [1] research further showcased that there is a strong negative association between employees' quality of life and their weekly hours worked, and that when employees worked consistently for more than 25-hour overtime per week, they were very likely to feel stressed, overloaded. More recently, Sunindijo and Kamardeen's [3] research on work stress in the Australian construction industry have

* Corresponding author: b.lim@unsw.edu.au

shown that both men and female construction professionals shared the top 10 stressors, with time pressure, excessive workload, long work hours and unpleasant work environment being the most critical issues.

3.0 RESEARCH DESIGN AND METHODS

In this study, an online survey questionnaire was designed based on the stressor- and performance- related measurement items proposed by Leung et al. [2, 5]. The questionnaire was pretested, validated and amended before being distributed to employees in an Australian construction and civil engineering company. In the first section, respondents were required to provide their background information (i.e., age, years of experience, average weekly hour worked and position). For subsequent sections, the respondents were requested to rate statements, regarding to: personal/ interpersonal stressors; task stressors; organizational stressors; physical stressors; and performance, based on a seven-point Likert Scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Of these, some items had been worded reversely to increase the validity of questionnaire responses (e.g., TS2, TS3, TS4, OS1, OS2, PS1 and PS2). Table 1 summarises the measurement items used in this study.

For data analysis, the relative prevalence indexing (RPI) method, ANOVA and Pearson Correlation tests were conducted. The RPI method was preferred over the arithmetic average method because the former can derive relative indices within the range of 0-1 for each item and therefore enable researchers to undertake relative comparisons of items relating to the different types of stressors. This is an outcome that could be not achieved by directly comparing the arithmetic average of each items considering that items could have different maximum mean values (see [8]). The ANOVA test was conducted to determine if there are significant differences in the perceived stress among cadets, operational staff and middle and top management. Lastly, the Pearson Correlation test was undertaken to examine the relationship between perceived stress and performance of employees. For ease of interpretation, we had adopted Hinkle et al.'s [9] guideline to determine the magnitude of association.

Table 1. Measurement items

Code	Description
<i>Personal Stressors</i>	
PS1	My personal relationships are not affected by my work commitments
PS2	My role requirements allow me plenty of time to spend with my family
PS3	My role is flexible as long as I work my required hours
<i>Interpersonal Stressors</i>	
IP1	I have a good relationship with my colleagues
IP2	My colleagues are trustworthy and personable
IP3	My supervisor gives me recognition when I do a good job
IP4	I feel comfortable talking to my supervisor when I make a mistake
IP5	I feel comfortable requesting and using my leave entitlements

Task Stressors

- TS1 I am in control of my workload
- TS2 I often need to shorten or skip my lunch breaks to stay on top of my work demands
- TS3 Sometimes I must work from home or on my annual leave to stay on top of my work
- TS4 I work more hours than most people I know
- TS5 I rarely need to work overtime
- TS6 I am happy with the hours I work each week
- TS7 My job responsibilities are often vague or unclear
- TS8 I am often caught between conflicting demands from different supervisors

Organisational Stressors

- OS1 Small matters often require referral to senior management for decision making
- OS2 Most decisions I make need my supervisors' approval
- OS3 I am often asked to complete a job differently to how I prefer
- OS4 I am often required to carry out complicated procedures that do not make sense to me
- OS5 I have control over when I start and finish work
- OS6 I feel stable within my role in the company
- OS7 I feel there are promotional opportunities available to me throughout my career with the company
- OS8 My company provides mentoring, peer support and other training to support my professional development

Physical Stressors

- PS1 My office is overcrowded
- PS2 My office is too noisy
- PS3 The temperature of my office is uncomfortable
- PS4 The safety equipment where I work is in good condition
- PS5 The safety equipment where I work is regularly checked
- PS6 I am satisfied with the overall levels of health and safety implemented by my company

Performance

- P1 I always meet my required deadlines
- P2 I always meet the quality requirements of my tasks
- P3 My planned schedules of programmes are effective
- P4 I am a good communicator
- P5 I feel confident in developing good relationships with others
- P6 People enjoy working with me
- P7 I believe in my company's goals and objectives
- P8 I work hard to achieve the objectives of my role
- P9 I have no intentions of leaving my company

For the data collection, 483 employees were invited to complete the online questionnaire survey. After three weeks, a total of 187 valid and complete responses were collected. Generally, about two-fifth of the 187 respondents were from middle management (38%), aged at least 40 years (47%) and had more than 16 years of working experience (46%) in the construction industry. More than 50% of them had worked about 50-60 hours per week on average.

4.0 RESULTS AND DISCUSSION

Table 2 summarises the perceived work stress among cadets, operational staff, middle and top management. The overall results reveal that most participants perceived the "Interpersonal Stressors (IS)" and "Physical Stressors (PYS)" as quite positive, with the corresponding overall RPIs of 0.79 and 0.78. On the other hand, it appears that the "Task Stressors (TS)" and "Personal Stressors (PS)" had caused distress to employees, with the corresponding overall RPIs ranging

from 0.45 to 0.52. These collectively add weight to the current debate that poor work life balance and work overload are the key negative stressors for construction professionals [1]. Our findings also tend to agree with Loosemore and Lim's [10] conclusion that middle management were the main victims of workplace injustice; as they were found to have suffered excessively poor work-life balance and task uncertainty comparing to other groups of employees.

Table 2 Perceived stress among different employees

CODE	Roles				
	Cadet	O.S.	M. M.	T.M	F statistic
PS1	4.03(0.57)	3.41(0.48)	3.02(0.43)	3.2(0.45)	2.528
PS2	4.15(0.59)	2.9(0.41)	2.59(0.37)	3.5(0.5)	6.999*
PS3	3.69(0.52)	3.07(0.43)	2.85(0.40)	3.5(0.5)	1.719
IP1	6.03(0.86)	5.94(0.84)	5.87(0.83)	6.05(0.86)	0.477
IP2	5.92(0.84)	5.72(0.81)	5.74(0.82)	6.05(0.86)	1.177
IP3	5(0.71)	4.6(0.65)	4.67(0.66)	4.6(0.65)	0.445
IP4	5.61(0.80)	5.28(0.75)	5.43(0.77)	5.55(0.79)	0.678
IP5	4.84(0.69)	5.3(0.75)	5.25(0.75)	5.5(0.78)	0.758
TS1	5.07(0.72)	4.57(0.65)	4.52(0.64)	4.55(0.65)	0.84
TS2	3.30(0.47)	2.87(0.41)	2.45(0.35)	2.2(0.31)	3.435**
TS3	4.84(0.69)	3.92(0.56)	3.07(0.43)	2.75(0.39)	9.428**
TS4	3.69(0.52)	2.27(0.32)	2.11(0.30)	2.75(0.39)	10.68**
TS5	3.30(0.47)	2.35(0.33)	1.94(0.27)	2.4(0.34)	6.535**
TS6	4(0.57)	3.48(0.49)	3.11(0.44)	4.3(0.61)	3.817*
TS7	4.65(0.66)	4.72(0.67)	4.95(0.70)	4.9(0.7)	0.379
TS8	5.15(0.73)	4.47(0.63)	4.25(0.60)	4.3(0.61)	1.896
OS1	4(0.57)	4.61(0.65)	5.05(0.72)	4.35(0.62)	3.124*
OS2	2.61(0.37)	4.07(0.58)	5.07(0.72)	4.75(0.67)	17.56**
OS3	4.73(0.67)	4.7(0.67)	4.76(0.68)	4.75(0.67)	0.022
OS4	4.76(0.68)	5.14(0.73)	5.11(0.73)	4.75(0.67)	0.771
OS5	3.5(0.5)	3.98(0.56)	3.56(0.50)	4.9(0.7)	3.596*
OS6	5.03(0.71)	5.11(0.73)	5.14(0.73)	5.55(0.79)	0.587
OS7	4.19(0.59)	4.11(0.58)	4.04(0.57)	4.8(0.68)	1.003
OS8	4.07(0.58)	4.28(0.61)	3.71(0.53)	4.15(0.59)	1.271
PYS1	5.84(0.83)	5.21(0.74)	5.25(0.75)	4.95(0.70)	2.045
PYS2	5.03(0.71)	4.77(0.68)	4.61(0.65)	4.9(0.7)	0.47
PYS3	4.84(0.69)	4.78(0.68)	4.85(0.69)	5.2(0.74)	0.361
PYS4	5.76(0.82)	5.85(0.83)	6.01(0.85)	5.8(0.82)	0.674
PYS5	5.65(0.80)	5.91(0.84)	6.04(0.86)	6.1(0.87)	1.242
PYS6	5.73(0.81)	5.91(0.84)	5.97(0.85)	6.1(0.87)	0.619

NB: O.S, M.M. and T.M. stand for operational staff, middle management and top management, respective. Mean value and RPI of respective items are reflected outside and inside the parenthesis respectively. * and ** denote p significant at < 0.05 and < 0.001 , respectively.

It is notable that there were significant differences in the perception of PS2, TS2, TS3, TS4, TS5, TS6, OS1, OS2 and OS5 among employees, with the F statistics ranging from 3.124 to 10.68. Of these, the post hoc test results reveal that cadet employees had significantly more time than their operational and middle management counterparts in spending time with their family (PS2).

Our findings further indicate that cadet employees were significantly less stressful than other employees in performing their tasks; considering that they were less likely to: shorten or skip their lunch to stay on top of their work (TS2); work from home or during annual leave (TS3); and work for a longer hour (TS4) and overtime (TS5). This could partially be explained to the supportive role of cadets to senior and more experienced employees. Furthermore, we found operational staff

were significantly less likely to work from home or during annual leave than middle and top management did. This thus could indicate that the higher the position an employee hold, the more likely she or he would need to work from home or during annual leave. Interestingly, the post hoc test results further reveal that middle management were significantly less content than top management in terms of their working hour (TS6). An overall picture that emerges from here is that middle management could have spent more time than top management in managing subordinates and aligning project requirements and organisational priorities. This tends to agree with Caye et al.'s [11] assertions that middle management is the link between top management and team members, and that if top management set aspirations and strategy, they would then be responsible to translate those strategies into business plans and communicate them with other employees.

Adding to the above, the results suggest that cadet employees were significantly more inclined to experience organisational stress than the other employees; as they lacked autonomy and control over their work (OS5), and often required to seek approval from their supervisors (OS1 and OS2). Further to this, there seems to be a spill-over effect of deficiency of autonomy between operational staff, and middle and top management. Particularly, it is found that operational staff were more inclined to consult their supervisors for decision making than middle management required (OS2), while the latter had lesser control than top management in controlling work schedule. Interestingly, this further point to the "sandwiched" role of middle management.

Table 3 summarises the correlations between employees' perceived work stress and performance. It is notable that most of the stressor-related items have moderately strong positive correlation with employees' trust with their company (P7). Overall, the results reveal that employees are more likely to trust their employers, when there exists a positive, friendly and safe organisational climate where employees are trustworthy and encouraged to interact among each other, and have been given opportunities for career progression. These results tend to support McCarthy et al.'s [12] claim that employees, who experience high levels of organisational support, are more likely to portray high job satisfaction, and low turnover intentions. This further helps explaining the low positive correlation between P9 and OS8, pointing that employees are less likely to think of leaving the company when they had been given proper guidance and sufficient training for their professional development. This also tends to support Lim and Ling's [13] findings that effective competence development strategies could help improving employees' soft skills and gaining their behavioural commitment.

Turning to their task performance, we found that when employees can control their overload (TS1) and receive less conflicting but challenging work orders from their supervisors (TS8 and OS3), they are more likely to be efficient (P1) and effective (P3). This adds weight to Crane's [14] conclusion that task autonomy and interest play a key role in dictating an individual's goal setting

behaviour and overall performance. Lastly, we found that peer relations (IP1) are positively correlated with individuals' ability and confidence of building up social relationships (P5) and developing a positive and interactive work environment (P6). This tends to support Lim and Ling's [13] assertion that effective intra-organisational relationship management is a key driver in promoting learning culture and a 'no-blame' attitude among employees.

Table 3 Correlations between perceived stress and performance

Items	P1	P2	P3	P4	P5	P6	P7	P8	P9
PS1		.219	.170						
PS2							.218		.203
IP1		.193		.259	.508	.429	.333	.160	.152
IP2					.295	.318	.342		.193
IP3					.152	.156	.440		.222
IP4	.208	.150	.285	.202	.254	.198	.454		.171
IP5			.244				.278		
TS1	.300	.286	.387	.152			.231		.215
TS2							.175	-.212	
TS3							.227	-.160	.162
TS4							.179		.161
TS5	.239	.178	.149				.237		.223
TS6			.159				.229		.209
TS7							.209		.192
TS8	.309	.148	.198	.162	.156		.202		
OS1							.198		
OS2		-.169							
OS3	.353		.224		.168	.156	.228		
OS4	.183						.204		
OS5							.164		.162
OS6			.235		.201	.156	.351		.221
OS7			.145				.344		.294
OS8			.214		.175	.210	.403		.352
PYS1							.172		
PYS2			.166				.248		.174
PYS3							.229		
PYS4			.152	.192	.164	.153	.273		
PYS5		.168	.223	.232	.196	.244	.335		
PYS6		.179	.224	.225	.177	.246	.333		.148

NB: Those insignificant relationships had been removed from the table. Moderately strong relationship (0.5 to 0.7) and low relationships (0.3 to 0.5) are highlighted in dark and light grey colours respectively.

5.0 CONCLUSION

This exploratory research aimed to investigate the perceived work stress of 187 employees in a large construction company. The overall findings show that employees were more disposed to be distressed by personal work-life imbalance and task uncertainty. Particularly, the findings highlight the plight of middle management, who appear to consistently suffer the highest levels of work stress. Furthermore, the findings shed light on the key function of interpersonal climate and organisational supports in stimulating or undermining employees' performance.

Lastly, it is acknowledged that there are limitations in this study and the findings are indicative and not conclusive. First, the sample size of 187 is small and not representative. Particularly, data was collected from a single company. However, the findings could further add to the existing knowledge of stress management for future studies. Further analyses (such as predictive

modelling) should be conducted to examine the multilevel effect of perceived work stress on performance. A cross-cultural investigation of work stress should also be considered in future studies

6.0 REFERENCES

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