

ANTECEDENTS TO MENTAL HEALTH SYMPTOMS IN THE AUSTRALIAN CONSTRUCTION INDUSTRY

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The construction industry is notorious for its stressful work environments. Excessive stress causes psychological, physiological, and sociological strains that negatively impact on performance. This research identified the stressors for construction professionals based on questionnaire survey responses collected from 289 professionals in the Australian construction industry. Factor analysis of the data found that the stressors can be classified into eight dimensions. Among them work demands, job-related stressors, and organisational stressors are the most frequent stressors experienced by the respondents. Addressing this issue requires the implementation of interventions at three levels: industry, organisation and individual. At the industry level, all influential stakeholders should participate in the effort to change the culture and work norms of the industry. At the organisational level, construction organisations can implement preventive measures by changing the organisational culture, leadership style, and management approaches to address job-related and organisational stressors. Reactive interventions should also be implemented to help those who are suffering mental health issues. At the individual level, problem-focused coping is effective to reduce depression, anxiety, and stress symptoms among construction professionals.

Keywords: industry culture, mental health, organisational culture, stressors

INTRODUCTION

The construction industry is becoming more and more dynamic and complex, which increases the stress level of construction professionals. Stress is not all bad because optimal good stress is generally transient and can stimulate, enrich, and even sustain performance. On the other hand, the complete absence of stress or severe and prolonged stress affects performance negatively. This relationship between stress and performance is reflected by the inverted-U stress model (Sapolsky, 2015).

Literature indicates that the stress level in the construction industry is excessive and counter-productive. In South Africa, construction professionals experience high levels of stress that cause psychological, physiological, and sociological strain effects (Bowen *et al*, 2014). In the US, the prevalence of mental distress among construction workers is almost twice as high as that in the general population (Jacobsen *et al*, 2013). In Australia, the suicide rate among construction workers are nearly twice the rate of non-construction workers. Statistics show that one construction worker commits suicide every two days (Hon, 2017).

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These cases indicate that stress in the construction industry is beyond its optimum level, thus causing burnout, mental distress, reduced performance, and other personal and social problems. This research aims to identify the stressors most frequently experienced by professionals in the Australian construction industry. By understanding the key stressors, proper interventions can be put in place to reduce their occurrence. Construction professionals also can use coping strategies to alleviate mental health symptoms they may have due to stressors that they experience. This research, therefore, also investigates the relationships between the stressors, coping strategies, and three mental health symptoms: depression, anxiety, and stress. Investigating these relationships is useful to determine coping strategies that can lessen mental health symptoms despite the occurrence of stressors.

LITERATURE REVIEW

The literature has identified various stressors faced by people working in the construction industry. The physical work environments, such as weather and site conditions, are typical challenges, particularly when working on site (Campbell, 2006). The organisational culture influences the conduct and leadership styles of managers and supervisors, which can affect employees' stress levels, motivation, and commitment to the organisation (Samuel, 2015). The culture also affects work relationships between peers and between managers and employees, conflict management, work norms, and human resource management (Arditi *et al*, 2013; Campbell, 2006). Other sources of work stress include job pressures, working long hours, masculine industry culture, unclear job roles and responsibilities, and lack of career progression (Campbell, 2006; Lingard *et al*, 2010; Watts, 2009). The demands in the workplace can spill over and adversely affect family responsibilities and leisure activities. Simultaneously, domestic and personal pressures can also become additional stressors that affect an employee's robustness at work. This creates a vicious cycle in which the stress caused in either area, work or home, makes coping with the other more challenging (Michie, 2002).

These stressors can trigger the occurrence of mental health symptoms, such as depression, anxiety, and stress. Depression is characterised by a loss of self-esteem and incentive, and is associated with a low perceived probability of attaining life goals of significance for an individual as a person. Anxiety is related to fear because of a perceived inability to control or obtain the desired outcomes in upcoming situations. Stress, on the other hand, is a state of persistent arousal and tension with a low threshold for becoming upset or frustrated (Lovibond and Lovibond, 1995).

There are coping strategies that individuals can use to alleviate mental health symptoms. Coping refers to an individual's ongoing efforts in thought and actions to manage specific demands appraised as taxing his/her psychological wellbeing. Coping processes can be classified into two: problem-focused and emotion-focused. The problem-focused coping aims at problem solving or doing something to change the influence of the stressor. The emotion-focused coping aims at changing the way of attending to or interpreting what is happening; i.e. focusing on managing the emotional distress associated with the situation (Carver *et al*, 1989; Lazarus, 1993).

There are also organisational interventions that can be used to alleviate mental health symptoms. Stress management programs based on cognitive behavioural approach, such as lectures on the perception of mental health issues, measures to cope with them, recording sheets, and counselling, have been found effective to reduce mental health symptoms (Mino *et al*, 2006). These programs can also be delivered in a computer-presented format where reductions in stress indices have been observed. This computer-

presented format may have higher attrition than the traditional delivery in small, instructor-led groups (Eisen *et al*, 2008). Meta-analysis of various stress management interventions, including cognitive-behavioural, relaxation, organisational, multimodal, and alternative, found that they can reduce the negative impacts of work stress, although cognitive-behavioural interventions tend to be more effective than the other interventions (Richardson and Rothstein, 2008).

RESEARCH METHOD

A questionnaire survey method was adopted due to the need to collect primary data from many respondents. The questionnaire first collected the background details of the respondents, such as their age range, gender, income level, status, and the size of the organisation that they work for. Second, it sought respondents to indicate the frequency of occurrence of the 38 stressors identified from the literature. The literature suggests that these stressors have the potential to influence the level of stress at work. The third section assessed the coping strategies commonly used by the respondents to alleviate stress. The items in this section are based on the work of Carver *et al*, (1989), who identified 14 coping strategies that can be further classified into problem-focused and emotion-focused coping. Lastly, DASS-21 (21-item Depression Anxiety Stress Scales) was used to evaluate the mental health of the respondents. DASS-21 measures the negative emotional states of depression, anxiety, and stress, and has been widely used in a variety of settings by researchers and clinicians (Lovibond and Lovibond, 1995).

Following the scale used in DASS-21, a four-point Likert scale, comprising never, sometimes, often, and almost always, was also used to assess the frequency of occurrence of the stressors and coping strategies adopted. The questionnaire was distributed randomly to professionals in the Australian construction industry via different channels. Emails containing the link to the online questionnaire were sent to the members of the Australian Institute of Building and the National Association of Women in Construction. Professionals working in construction organisations were also contacted via corporate communications and individual emails. In total, 1085 requests were sent and 289 valid responses were obtained (26.6% response rate).

ANALYSIS AND DISCUSSION

Table 1 presents the profiles of the respondents. Nearly 60% of the respondents were under 40 years old, aligning with the workforce profile of the Australian construction industry. Most respondents (71%) worked for medium and large organisations (employing 20 or more people), while more than 98% of construction organisations in Australia are small organisations. Furthermore, about 41% of the respondents were women, a higher proportion than the 11% of women representation in the industry. Therefore, research findings should be carefully interpreted within this context. Within those who reported their income levels, about 74% had an annual income of \$80,000 or more, higher than the average Australian earning. This profile is important because individuals with a low income tend to have higher rates of a range of health problems, including disability, mortality, psychological distress, and mental disorder than those in more advantaged socioeconomic positions (Thoits, 2010). Nearly 74% of the respondents were in a relationship or married. Married individuals tend to have better mental health than singles in various aspects, including depression, happiness, life satisfaction, psychological wellbeing, and suicide (Amato, 2015).

Table 1: Profile of respondents

Participant attribute		Frequency	%
Age	18 - 29 years old	86	29.8
	30 - 39 years old	82	28.4
	40 - 49 years old	60	20.8
	50 - 59 years old	47	16.3
	60 years and above	14	4.8
Gender	Female	119	41.2
	Male	170	58.8
Organisation size	1 - 4 employees	28	9.7
	5 - 19 employees	55	19.0
	20 - 199 employees	128	44.3
	200 employees or more	78	27.0
Income	Less than \$60,000	30	10.4
	\$60,000 - \$80,000	32	11.1
	\$80,000 - \$100,000	48	16.6
	\$100,000 - \$150,000	76	26.3
	Above \$150,000	58	20.1
	Prefer not to answer	45	15.6
Status	Single	61	21.1
	In a relationship	46	15.9
	Married or de-facto	167	57.8
	Divorced/separated/ widowed	15	5.2

Item analysis and factor analysis were conducted on the 38 stressors to ensure that only those items that provide the best representation of the construct were retained. The item analysis was performed to retain only those with the highest item-to-total correlations (0.3 and above) and to remove items that negatively affect the Cronbach's Alpha of the questionnaire. The remaining items were further evaluated to identify those that could not load to any factor or generate loading exceeding 0.35 (Hair *et al*, 1998). Three items, i.e. working night shifts, caring for family members, and previous exposure to traumatic events, were discarded as a result.

In order to determine the factor structure of the remaining 35 items, factor analysis with varimax rotation was performed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.905 and Bartlett's test of sphericity is significant ($p < 0.05$), indicating that factor analysis is suitable for analysing the data. Based on the eigenvalues (greater than one) and the scree plot, eight dimensions of stressors were extracted, representing 63% of the variance. The eight dimensions were then named based on the items that represent them. Table 2 presents these dimensions along with the stressors in each dimension, the mean of each stressor, and the mean of each dimension.

As presented in Table 2, the most frequent stressors experienced by construction professionals are those related to work demands.

Table 2: Frequency of stressors experienced by construction professionals

Dimension	Item	Mean	Mean total
Work demands	Unpleasant nature of work (high physical/mental demand, meaningless work, high uncertainty/sudden changes)	2.38	2.64
	Excessive workload	2.65	
	High level of time pressure	2.80	
	Long work hours	2.74	
Work conditions	Inflexible work schedule	1.84	1.63
	Unpredictable work hours/shifts	1.66	
	Poor work environment (space constraint, extreme weather, excessive noise, poor air/water quality, odours/chemical, unsafe)	1.56	
	Unfavourable equipment conditions (unsuitable, faulty or inadequate)	1.46	
Organisation	Lack of job autonomy (lack of control over workload/content or participation in decision making)	1.83	1.81
	Low level of support for problem solving	1.78	
	Inadequate communications between work colleagues & superiors	2.05	
	Social or physical isolation from others	1.61	
	Poor relationships with superiors	1.57	
	Conflicts with co-workers/colleagues	1.66	
	Excessive formalisation/centralisation and rigidity in the organisation	1.75	
	Under valuing of your skills/qualifications	1.99	
	Lack of appreciation /rewards for efforts	2.01	
Job	The tasks you perform do not match your skills (under use of skills or over expectations)	1.99	1.96
	Role ambiguity (unclear job roles and responsibilities)	2.00	
	Insufficient salary/wage for the work	1.96	
	Career stagnation / lack of career development opportunities	1.89	
Discrimination and harassment	Differential treatment due to gender, ethnic background, etc.	1.54	1.38
	Sexual harassment at work, e.g. unwelcome / inappropriate comments/ behaviours by colleagues, superiors, clients, etc.	1.30	
	Bullying, i.e. slander/humiliation, intimidation, abusive language, aggressive behaviours, etc.	1.53	
	Violence at work, e.g. assault, threat, etc.	1.15	
Family	Work-home conflicts, i.e. lack of family time due to work	1.98	1.63
	Low support at home	1.40	
	Dual career challenges (working couples struggling to balance family affairs)	1.69	
	Poorly functioning home, i.e. tensed relationships between couples /family members	1.44	
Personal	Housing/accommodation/living conditions	1.23	1.54
	Financial difficulties	1.64	
	Excessive responsibilities in personal life	1.81	
	Poor personal health conditions	1.48	
Wellbeing & security	Job insecurity	1.66	1.58
	Lack of welfare	1.50	

Note: 1 = Never; 2 = Sometimes; 3 = Often; 4 = Almost always

Key stressors frequently experienced by construction professionals. The mean of this dimension is 2.64, considerably higher than the other dimensions, and this mean also

indicates that the respondents experienced these stressors often. The construction industry expects its professionals to work long hours and to work non-standard work schedules, including on weekends (Lingard *et al*, 2010). The industry demands the full and flexible availability of its employees and this condition has become more pronounced in today's global competitive environment. Long work hours and visibility hold a symbolic meaning and act as indicators for excellence and commitment. These values are difficult to change, particularly in an industry that has shown itself resistant to change of any kind (Watts, 2009) and have led to all sorts of mental health problems and work-family conflicts (Lingard *et al*, 2010).

The second most frequent stressors are job-related factors, such as poor skills utilisation, role ambiguity, insufficient salary, and lack of career development opportunities. Role ambiguity and role conflict have been suggested as sources of work stress that can lead to reduced performance and low satisfaction (Dahl and Olsen, 2013; Randeree and Chaudhry, 2012). Another job-related factor, a lack of career progression, is a common issue in the construction industry, particularly among women. The construction industry adopts the male career model predominated with expectations of full-time professionals on unbroken career pathways, forcing women to accommodate the life cycle of men whose wives do not have full-time careers. This results in the lack of career progression for women (Dainty and Lingard, 2006). The relatively high proportion of female respondents in this research may be responsible for the frequent occurrence of this stressor. In addition, the long work hours and high-pressure work environments may then create the perceptions among the respondents that their salaries are inadequate even though the average earnings in the industry are higher than the industry average in Australia.

Another dimension that should not be neglected is organisational-related stressors. Most stressors in this dimension are related to poor leadership and ineffective management. Lack of communication and coordination, conflict, and inadequate planning have been repeatedly put forward as factors that cause poor project performance (for example see Gündüz *et al*, 2013). These work conditions adversely affect the stress levels of construction professionals, which can further worsen their work performance and project performance (Leung *et al*, 2015). Poor change management, low skill discretion, lack of support from colleagues and supervisors, distributive justice or perceived fairness of decision outcomes are psychosocial hazards that can cause excessive work stress (Way, 2012).

Construction professionals often experience stressors that are related to the work demands in the construction industry. Because this is essentially about the work norms of the present-day construction industry, any intervention aimed at curtailing psychological issues among construction professionals should first focus on improving these work norms. This cannot be achieved by simply making changes in one or few organisations, but it involves the collective effort of all key players in the industry. Limiting the changes to a few organisations is likely to disadvantage them as they will be compelled to operate against the work norms of the industry. Implementing these changes requires the cooperation and involvement of influential stakeholders of the industry, such as the government, major construction clients, large construction organisations and construction industry associations. These stakeholders should introduce and promote corporate social responsibility, work life balance, and socio-psychological sustainability in the construction industry.

However, there are things that construction organisations can do to alleviate work-related stressors. The job- and organisational-related dimensions are under their control. Top management has a key role to promote organisational culture that offers role clarity, provides adequate development opportunities for all employees, facilitates effective communication, and motivates employees through empowerment and appropriate leadership styles depending on the situations.

Coping Strategies and Mental Health Symptoms

Besides industry-level and organisation-level interventions, there are coping strategies that construction professionals can adopt to alleviate mental health symptoms. Path analysis was conducted to see the relationship between the dimensions of work stressors, coping strategies, and mental health symptoms (depression, anxiety, and stress). Path analysis aims to estimate the magnitude and significance of causal connections between sets of variables (University of Exeter, 1997). The path analysis as depicted in Figure 1 shows significant relationships between discrimination and harassment dimension and personal dimensions and the use of emotion-focused coping. It should be noted that the relationship between the discrimination and harassment dimension and problem-focused coping is only marginally weaker than the relationship between the same dimension and emotion-focused coping. This indicates that the respondents used both coping strategies to curtail the occurrence of mental health symptoms.

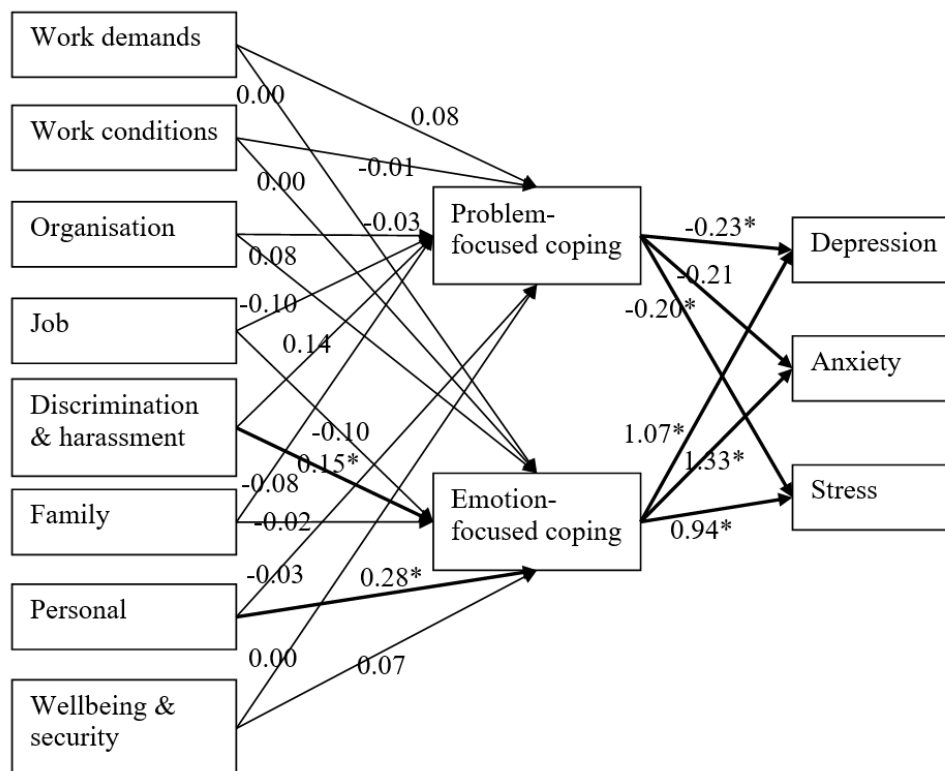


Figure 1: Path analysis

The respondents, however, used emotion-focused coping more frequently than problem-focused coping to manage stressors caused by personal issues. Problem-focused coping is generally used in situations that are controllable, while emotion-focused coping is common to address situations that have to be accepted (Folkman, 2013). In this case, the personal dimension seems to be related to stressors that have become an integral part of

the respondents' daily lives, thus explaining the high use of emotion-focused coping to reduce their negative impacts.

The relationships between emotion-focused coping and mental health symptoms are positive, while the relationships between problem-focused coping and mental health symptoms are negative. This shows that problem-focused coping is effective in alleviating the levels of depression, anxiety, and stress. Construction professionals, therefore, are recommended to adopt problem-focused coping which aims at problem solving or doing something to change the influence of the stressors. These results support previous studies indicating that problem-focused coping is more effective than emotion-focused coping in warding off mental health problems. However, emotion-focused coping can also be effective when the stressors cannot be altered and during the immediate aftermath of the stressors (Carr and Umberson, 2013).

CONCLUSION

Construction professionals operate in stressful work environments. Although an optimum level of stress is beneficial for performance, high levels of stress can be detrimental to mental health and job performance. This research has found that the most frequent stressors experienced by construction professionals are those related to the work demands of the construction industry, job-related stressors, and organisational stressors. The work demands dimension is by far the most frequent stressors experienced by construction professionals. Since these demands are the results of the work norms in the construction industry, interventions to improve the condition should involve all key stakeholders, such as large construction organisations, influential clients, professional bodies, and the government. Implementing the interventions in few organisations may disadvantage the organisations because they are compelled to operate against the norms.

The job-related and organisational stressors are areas under the control of construction organisations. Reducing the occurrence of these stressors mainly falls on the shoulders of top managers who have the authority and power to adjust the culture, leadership styles, and management approaches in respective organisations. These measures are preventive and, therefore, are preferable. There should also be a system in place to help those who are suffering from mental health problems. Workplace interventions, such as cognitive-behaviour programs and relaxation techniques, have been found effective in reducing mental health symptoms.

At the individual level, construction professionals can use coping strategies to reduce their mental distress. Emotion-focused coping is effective to address issues that have to be accepted or to alleviate distress right after the occurrence of the stressors. Problem-focused coping aims to solve the problems or do something to change the negative impacts of the stressors. This research found that problem-focused coping can reduce depression, anxiety, and stress symptoms among construction professionals.

There are limitations in this research. The proportions of female respondents and those working in large organisations are higher than those in the construction industry, thus they may skew the results. Furthermore, despite effort to review existing literature, there may be other stressors that have not been included. Future research should collect more data, particularly from professionals working in small organisations and from blue collar workers to test the factor structure of the stressors. Research has found that female and male respond to stressors differently. Future research can also investigate the impacts of gender on the occurrence of stressors, coping strategies adopted, and mental health conditions.

REFERENCES

- Amato, P (2015) Marriage, cohabitation and mental health. *Family Matters*, **96**, 5-13.
- Arditi, D, Gluch, P and Holmdahl, M (2013) Managerial competencies of female and male managers in the Swedish construction industry. *Construction Management and Economics*, **31**(9), 979-990.
- Bowen, P, Edwards, P, Lingard, H and Cattell, K (2014) Workplace stress, stress effects, and coping mechanisms in the construction industry. *Journal of Construction Engineering and Management*, **140**(3), 04013059.
- Campbell, F (2006) *Occupational Stress in the Construction Industry*. Ascot, UK: The Chartered Institute of Building.
- Carr, D and Umberson, D (2013) The social psychology of stress, health, and coping. In: J DeLamater and A Ward (Eds.) *Handbook of Social Psychology 2nd Edition*. Dordrecht, Netherlands: Springer.
- Carver, C S, Scheier, M F and Weintraub, J K (1989) Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, **56**(2), 267-283.
- Dahl, Ø. And Olsen, E (2013) Safety compliance on offshore platforms: A multi-sample survey on the role of perceived leadership involvement and work climate. *Safety Science*, **54**, 17-26.
- Eisen, K P, Allen, G J, Bollash, M and Pascatello, L S (2008) Stress management in the workplace: A comparison of a computer-based and an in-person stress-management intervention. *Computers in Human Behavior*, **24**(2), 486-496.
- Folkman, S (2013) Stress: Appraisal and coping. In: M D Gellman and J R Turner (Eds.) *Encyclopaedia of Behavioral Medicine*. New York: Springer, 1913-1915.
- Gündüz, M, Nielsen, Y, and Özdemir, M (2013) Quantification of delay factors using the relative importance index method for construction projects in Turkey. *Journal of Management in Engineering*, **29**(2), 133-139.
- Hair, J F, Tatham, R L, Anderson, R E and Black, W (1998) *Multivariate Data Analysis Fifth Edition*. Prentice-Hall: London.
- Hon, C (2017) *Suicide Prevention Programs in Construction*. Construction News at Sourceable. Available from <https://sourceable.net/suicide-prevention-program-in-construction/> [Accessed 28th Mar 2017].
- Jacobsen, H B, Caban-Martinez, A, Onyebeke, L C, Sorensen, G, Dennerlein, J T and Reme, S E (2013) Construction workers struggle with a high prevalence of mental distress and this is associated with their pain and injuries. *Journal of Occupational and Environmental Medicine*, **55**(10), 1197-1204.
- Lazarus, R.S (1993) From psychological stress to the emotions: A history of changing outlooks. *Annual Review of Psychology*, **44**(1), 1-22.
- Leung, M-y, Chan, I Y S and Cooper, C L (2015) *Stress Management in the Construction Industry*. Chichester, UK: Wiley Blackwell.
- Lingard, H, Francis, V and Turner, M (2010) The rhythms of project life: A longitudinal analysis of work hours and work-life experiences in construction. *Construction Management and Economics*, **28**(10), 1085-1098.
- Lovibond, S H and Lovibond, P F (1995) *Manual for the Depression Anxiety and Stress Scales 2nd Edition*. Sydney: Psychology Foundation.
- Michie, S (2002) Causes and management of stress at work. *Occupational & Environmental Medicine*, **59**(1), 67-72.

- Mino, Y, Babazono, A, Tsuda, T, and Yasuda, N (2006) Can stress management at the workplace prevent depression? A randomized controlled trial. *Psychotherapy and Psychosomatics*, **75**(3), 177-182.
- Randeree, K and Chaudhry, A G (2012) Leadership - style, satisfaction and commitment: An exploration in the United Arab Emirates' construction sector. *Engineering, Construction and Architectural Management*, **19**(1), 61-85.
- Richardson, K M and Rothstein, H R (2008) Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology*, **13**(1), 69-93.
- Samuel, O B (2015) The effects of organisational culture and stress on organisational employee commitment. *Management*, **5**(3), 96-106.
- Sapolsky, R M (2015) Stress and the brain: Individual variability and the inverted-U. *Nature Neuroscience*, **18**(10), 1344-1346.
- Thoits, P A (2010) Stress and health: Major findings and policy implications. *Journal of Health and Social Behavior*, **51**(S), S41-S53.
- University of Exeter (1997) *PSY6003 Advanced statistics: Multivariate analysis II: Manifest variables analyses, Topic 3: Path analysis*. Exeter, UK: Department of Psychology, University of Exeter.
- Watts, J H (2009) 'Allowed into a man's world' meanings of work-life balance: Perspectives of women civil engineers as 'minority' workers in construction. *Gender, Work & Organization*, **16**(1), 37-57.
- Way, K A (2012) *Psychosocial Hazards and Occupational Stress*. Tullamarine, Australia: Safety Institute of Australia.