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The experience of burnout among future construction professionals: a cross-national study

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A survey of undergraduate students in Australia and Hong Kong revealed that a specially adapted version of the Maslach Burnout Inventory (the MBI-SS) possesses good internal consistency reliability among construction students. A three-component model of student burnout, comprising emotional exhaustion, cynicism and personal efficacy was supported in both the Australian and Hong Kong samples. Burnout levels among construction students were similar to those reported in previous non-construction student samples. Both Australian and Hong Kong construction students reported higher personal efficacy than non-construction students. Australian students expressed considerably higher cynicism in relation to their university education than the Hong Kong students. The three dimensions of burnout were differentially correlated with work, study and socio-economic variables. In Australia, student burnout was associated with a perceived tension between paid work and study. In Hong Kong, the demands of study and concern with the economy were significant correlates of student burnout.

Keywords: Burnout, work–study conflict, stress, higher education, culture

Introduction

The evolution of the burnout concept

In recent years the burnout phenomenon has attracted a great deal of attention in the management literature. Early definitions of burnout conceptualized the phenomenon as ‘a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment’ (Maslach *et al.*, 1996). Originally, this concept was closely linked to human services, such as health-care, education and social work. Consequently, the early studies of burnout were unnecessarily limited to groups of employees who did ‘people work’ of some kind (Cordes and Dougherty, 1993). In these early studies, emotional exhaustion was characterized as a lack of energy or the feeling that one’s emotional resources are depleted. Depersonalization referred to a

distancing from the recipients of one’s care or services, often resulting in a demonstration of emotional callousness. Diminished personal accomplishment was characterized as a tendency to evaluate oneself negatively.

However, this traditional approach to burnout has been broadened to reflect the fact that people outside the human service occupations are similarly affected (Maslach and Leiter, 1997; Cordes and Dougherty, 1993; Schaufeli *et al.*, 2002a). Thus, burnout has been found in samples of civil servants, information technologists, military personnel, clerical workers and managers. One notable difference between the original conceptualization of burnout in human service fields and the general model, applicable outside human services is that the dimension of depersonalization was reframed as cynicism. Rather than referring to a personal distancing from one’s human ‘clients’, cynicism reflects a more general withdrawal from work involvement.

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Burnout in the construction industry

Burnout is reported to be high among construction professionals and engineers in Australia (Lingard, 2003; Lingard and Francis, 2004). In one sample, burnout was found to be significantly higher among site-based employees than among their office-based counterparts (Lingard and Francis, 2004), while two of the burnout dimensions (emotional exhaustion and cynicism) significantly predicted turnover intention among civil engineers (Lingard, 2003). Levels of burnout in a sample of Hong Kong construction professionals were found to be comparable to those of the Australian construction professionals (Yip *et al.*, 2005). Consistent with the results of the Australian research, emotional exhaustion and cynicism were also found to predict turnover intention among Hong Kong construction professionals.

Burnout has been associated with the defensive coping mechanism of escape (Lee and Ashforth, 1990), including a stated desire to leave one's job (Weisberg, 1994). Lingard (2003) suggests that construction professionals' disenchantment with their work is not restricted to the company for which they work but related to the profession as a whole (Lingard, 2003). As human capital is a substantial investment in the construction industry, it is important to explore the possibility that burnout occurs early in the career of construction professionals, possibly commencing prior to graduation from university (see 'Student burnout', below).

Student burnout

Several studies have investigated the issue of burnout in student samples (see Neumann *et al.*, 1990 for an early example). This research is pertinent because burnout is reported to be more prevalent among younger people than among those over 30 or 40 years of age and among highly educated compared to less educated people (Maslach *et al.*, 2001). These findings would suggest that university students are a high-risk group for burnout. In a study of medical students, Boudreau *et al.* (2004) found that burnout was associated with numerous stressors, including long hours engaged in practicum work, concern about academic grades, uncertainty about the future, low levels of control, less satisfaction with the balance between personal and professional life and low levels of support from peers and friends. Further, burnout was reported to develop progressively during the course of medical education, worsening as students progressed through their degree course.

Implications of student burnout

In professional samples, burnout is associated with negative outcomes for both individuals and organizations. At an individual level, burnout has been associated with the experience of psychological distress, anxiety, depression, reduced self-esteem and substance abuse (Maslach *et al.*, 2001). Research also consistently links burnout to lower levels of organizational effectiveness, job satisfaction and organizational commitment as well as higher levels of absenteeism and turnover (Wright and Bonnett, 1997; Maslach *et al.*, 2001; Schaufeli and Enzmann, 1998). Burnout could be the key to understanding a number of student behaviours. It is possible that, in the university context, student burnout is a causal factor in low attendance and student withdrawal from courses, low academic performance and students' future relationship with the university (Neumann *et al.*, 1990). Indeed, Schaufeli and his colleagues report that student burnout is negatively correlated with academic performance and positively associated with students' disengagement from university life (Schaufeli *et al.*, 2002b).

Implications for the construction industry

Tertiary students are the professionals of the future. If students are becoming progressively burnt out prior to graduation, this is also likely to impact upon the professions they are studying to enter. The construction industry already suffers from an image problem, often being characterized as a context in which chaotic work practices, long hours, excessive workloads and stressful work conditions prevail (Loosemore *et al.*, 2003). Already, construction is dropping in career appeal and shortage of skills has been highlighted as an issue for the 21st century. In the 1999 edition of the *Jobs Rated Almanac*, civil engineering fell from 18th to 70th position in expressed job preference and 14 construction occupations were rated in the bottom ranks (Francis and Lingard, 2002). This image has implications for the recruitment and retention of talented employees within the industry. Burnout prior to graduation may increase the likelihood of construction graduates' early departure from the industry upon graduation, or even their outright failure to enter the professional jobs that they have been educated to perform. The long-term cost to the construction industry of student burnout in loss of talent and underperformance is, of course, unknown but could be considerable if student burnout levels are high and the problem is widespread. Thus, student burnout has implications for university administration as well as the construction industry, which exerts considerable influence upon the nature and magnitude of the demands

experienced by students through its course accreditation processes and advisory boards.

Aim and objectives

Little research has examined the issue of burnout among construction students. Given that burnout levels have been found to be very high in samples of construction professionals this is an important issue. Further, in other disciplines, the onset of burnout is reported to commence prior to graduation and it is therefore pertinent to investigate the level of burnout experienced by undergraduates studying to enter the construction professions. This paper presents the results of preliminary research exploring the issue of student burnout in undergraduate students in built environment disciplines. The aim of the paper is to explore the concept and correlates of burnout among undergraduate construction students in two geographically distinct populations. The paper seeks to:

- examine the factorial structure of burnout, in an attempt to confirm the three-factor structure described in previous research;
- compare levels of student burnout between construction undergraduate students in Australia and Hong Kong;
- compare the construction students' burnout with levels reported in international studies of non-construction students; and
- examine the correlates of burnout in the Australian and Hong Kong student samples.

Procedures and samples

Sample 1 consisted of 102 undergraduate students enrolled in the third year of a Bachelor of Property and Construction degree course in an Australian university. This response represented a 93% response rate among students in attendance at the scheduled lecture at which questionnaires were distributed. Characteristics of the sample are presented in Lingard (2005). Questionnaires were administered in 2003, during a scheduled lecture. The questionnaire was administered four weeks prior to the end of semester when student attendance at lectures is generally high. However, this sampling method could introduce bias as students whose burnout levels were highest may not have been in attendance. The questionnaire was comprised of five sections as follows:

- Information about the students' course enrolment and residential status (e.g. living with parents, friends, in a university college, with a spouse/partner, etc.);

- Students' participation in paid work, including hours, schedule requirements, nature of employing organization and rate of pay;
- Students' participation and feelings about university life, including contact hours, hours spent on campus and feelings of burnout (see below);
- Students' experiences in balancing work and study, including perceived work-study conflict and perceptions of the relative ease/difficulty experienced in meeting university requirements; and
- Students' level of satisfaction with university life and paid work.

Owing to the sensitivity of data being collected, students were not asked to provide detailed demographic information, such as gender and age, as this could have compromised their anonymity.

Sample 2 consisted of 125 students (41 students from Year 1, 49 students from Year 2 and 35 students from Year 3) enrolled in the Bachelor of Surveying course¹ within a Hong Kong university. This response represented a 96% response rate among students in attendance at the scheduled lecture at which questionnaires were distributed. The survey was first administered to Year 2 students in 2004, during a scheduled lecture. It was then followed by administering the same survey to students in Years 1 and 3 during scheduled lectures. All participants completed the questionnaire anonymously and on a voluntary basis. Demographic information collected included the respondent's age, gender, residential status (living with parents or friends) and job background (if any). Study-related variables previously identified to be linked to burnout, such as long study/work hours, subjective overload and the requirement to fulfil the demands of conflicting roles, were determined. The number of days classes were missed during the semester due to personal and sickness reasons, among others, was recorded. Relationships with and levels of support from fellow students were also measured. Students were also asked to indicate the extent to which they were satisfied with university life and social-economic issues, such as their amount of leisure time, relationships with family and/or partner, financial status and the economic situation in Hong Kong.

Measurement of burnout

Burnout is most commonly measured using the Maslach Burnout Inventory—Human Services Survey (MBI-HSS). Originally, this Inventory was developed to measure burnout in the human services (see 'The evolution of the burnout concept', above). Thus questions often referred to care recipients. For example, depersonalization items include 'I treat some

recipients as if they were impersonal objects'. This measurement approach is not appropriate for occupations outside the human services and the original measure of burnout was revised to be generally applicable. The new instrument was called the Maslach Burnout Inventory—General Survey (MBI-GS).

One difficulty with early studies of student burnout was that the phenomenon was measured using a slightly adapted version of the *original* Maslach Burnout Inventory, rather than the MBI-GS. In this adaptation the word 'instructors' was substituted for 'recipients.' This was problematic because such rewording changed the meaning of items. For example, rather than reflecting a student's indifferent attitude towards the activity of *study*, an item like 'I treat some instructors as if they were impersonal objects' reflected a student's negative attitude towards an *individual person*, i.e. the instructor.

In response to this inadequacy, a new student version of the MBI was developed based upon the MBI-GS. This revised student burnout inventory, known as the Maslach Burnout Inventory—Student Survey (MBI-SS) does not refer specifically to other people. (See Schaufeli *et al.*, 2002a and 2002b for a detailed description of the scale development process.) In the revised student burnout inventory, the word 'studies' is substituted for the words 'work' or 'job'. Operationalized in this way, burnout in a student sample means 'feeling exhausted because of study demands, having a cynical and detached attitude towards one's study and feeling incompetent as a student' (Schaufeli *et al.*, 2002a, p. 73).

In both surveys, students' burnout was measured using the MBI-SS (Schaufeli *et al.*, 2002a, 2002b). Like the MBI-GS, this scale is made up of three sub-scales: emotional exhaustion, cynicism and personal efficacy. All items are scored on a 7-point frequency rating scale ranging from 0 (never) to 6 (every day). High scores on emotional exhaustion and cynicism and low scores on personal efficacy are indicative of burnout. It is important to note that none of the versions of the MBI measure the presence or absence of burnout *per se*. Rather, experienced levels of burnout fall on a continuum. No predictions have been made concerning critical threshold values, i.e. there is no single point at which one should be considered 'burnt out' (Cordes and Dougherty, 1993).

Analysis

Initially, the structure of burnout among the sample was examined using principal components analysis (PCA) with varimax rotation. The MBI-SS is a relatively new measure, which, to the authors' knowledge, at the time of the research had not been tested in Australian or Hong Kong samples. Therefore, the PCA

was performed in order to examine the factorial structure of student burnout and compare this to the factor structure reported by other researchers. The second step was to determine the internal consistency reliability of each of the component sub-scales in both the Australian and Hong Kong samples. Internal consistency reliability was examined by computing Cronbach's alpha (α) for each sub-scale. Finally, bivariate Pearson correlations between the burnout dimensions, work- and study-related variables and socio-economic factors were investigated to identify correlates of burnout in both samples. Owing to the fact that the questionnaires used in Australia and Hong Kong differed somewhat, direct comparisons of correlates of burnout could not be made. However, some differences were observed.

Results

Australian sample

The largest proportion of respondents in the Australian sample ($n=45$, 43.3%) indicated they lived with their parents. Another 35 respondents (33.7%) indicated they lived with friends in a flat or house-share arrangement. Seven students (6.7%) reported living with a spouse/partner and two (1.9%) reported living with a spouse/partner and dependent child(ren). Seven students (6.9%) reported living alone while one student (0.8%) lived with a dependent child. Only two students (1.9%) reported living in a university college. The remaining two students (1.9%) did not indicate where or with whom they lived.

Hong Kong sample

In the Hong Kong sample, the mean number of days missed from class in the semester at the time of conducting the survey was 0.78 ($SD=1.325$) due to sickness, 4.82 ($SD=5.156$) due to personal matters and 1.48 ($SD=3.086$) due to other reasons. The majority of the respondents ($n=70$, 56%) indicated that they were living with their parents/relatives, while 43 respondents (35%) reported that they were living in a university college. A further 12 respondents (9%) indicated that they were sharing flats with their friends. The sample comprised 48 students (38%) who were involved in paid employment and 77 students (62%) who were not.

Principal components analysis

In the Australian sample, the initial, unconstrained PCA yielded four components with eigenvalues larger than 1, explaining 56% of the total variance. Items

loading on these four factors were examined but no theoretical distinction between items loading on the third and fourth factor could be determined. Consequently, a forced three-factor solution was generated. Both the four- and three-component solutions were submitted to varimax rotation and the item loadings were compared. The three-factor solution was the less complex and the three rotated components were consistent with the underlying factor structure suggested by Schaufeli *et al.* (2002a). Further details of the PCA, including factor loadings can be found in Lingard (2005) (for the Australian sample) or obtained by contacting the second author (for the Hong Kong sample).²

Table 1 shows the eigenvalues and percentages of variance explained by each of the three factors emerging from the PCA of the Australian data. The total percentage variance explained by the three-factor solution was 54% with cynicism, personal efficacy and emotional exhaustion accounting for 19%, 18% and 17% of the variance respectively. Further convergent evidence regarding the underlying factorial structure is indicated by Cronbach's alpha coefficients, which were 0.76, 0.78 and 0.78 for the exhaustion, cynicism and personal efficacy scales respectively. This indicates that each of the burnout sub-scales has satisfactory internal consistency and reliability in the Australian student sample.

In the Hong Kong sample, the PCA also yielded three components with eigenvalues larger than 1, explaining 56% of the total variance. As in the Australian sample, the varimax rotated components were consistent with the underlying factor structure suggested by previous research. Table 2 shows the eigenvalues and percentages of variance explained by each of the three factors. The personal efficacy, cynicism and emotional exhaustion factors accounted for 26%, 22% and 9% of variance respectively. Cronbach's alpha coefficients (α) were also calculated to determine the internal consistency and reliability of

Table 2 Factorial structure of burnout in the Hong Kong sample

Component (α)	Rotation sums of squared loadings		
	Eigenvalues	% of variance	Cumulative %
Personal efficacy (0.81)	3.851	25.676	25.676
Cynicism (0.75)	3.231	21.543	47.219
Emotional exhaustion (0.70)	1.351	9.008	56.227

Note: α =Cronbach's alpha coefficients.

the three burnout factors. These coefficients were 0.81, 0.75 and 0.70 for the personal efficacy, cynicism and emotional exhaustion scales respectively. The results of this analysis are consistent with those of Yiu (2001) and Yuen *et al.* (2002) who report that the MBI sub-scales possessed satisfactory internal consistency and reliability when tested in samples of employed adults in Hong Kong.

Levels of student burnout

The levels of burnout reported in the Australian and the Hong Kong samples were next compared to the levels of burnout reported, by Schaufeli *et al.* (2002a), to exist among Spanish undergraduates in non-construction disciplines. Schaufeli *et al.*'s (2002a) study consisted of 314 undergraduate students of the University of Castellón, Spain. The survey was conducted in 1999 and the sample was made up of students enrolled in several disciplines. The majority of students in Schaufeli's sample were enrolled in psychology degree courses (55%), followed by tourism (20%), computer science (18%) and other fields of study (7%).

In all of these samples, student burnout was measured using the specially adapted student version of the MBI, the Maslach Burnout Inventory—Student Survey (MBI-SS). Consequently, burnout levels can be directly compared. Despite using the same instrument, it is important to note that the original MBI was formulated in English but was translated into Spanish for use in Schaufeli *et al.*'s research. The MBI-SS was used in its English version in both the Australian and Hong Kong surveys reported in this paper.

Table 3 shows the levels of burnout reported by Australian and Hong Kong construction students compared to those reported by Schaufeli *et al.* (2002a). Table 3 reveals some differences. First, the mean emotional exhaustion score of Australian construction students (3.28) was considerably higher than

Table 1 Factorial structure of burnout in the Australian sample

Component (α)	Rotation sums of squared loadings		
	Eigenvalues	% of variance	Cumulative %
Cynicism (0.78)	2.870	19.136	19.136
Personal efficacy (0.78)	2.651	17.672	36.809
Emotional exhaustion (0.76)	2.619	17.460	54.268

Note: α =Cronbach's alpha coefficients.

Table 3 Cross-national comparisons of burnout scores among undergraduate students

	Australian students mean (SD)	Hong Kong students mean (SD)	Spanish students mean (SD)
Emotional exhaustion	3.28 (SD=1.25)	2.17 (SD=0.59)	3.61 (SD=1.11)
Cynicism	2.80 (SD=1.25)	2.53 (SD=0.83)	2.45 (SD=1.17)
Personal efficacy	3.51 (SD=0.99)	3.03 (SD=1.02)	1.98 (SD=1.00)

that of their counterparts in Hong Kong (2.17). The Spanish non-construction students' mean emotional exhaustion score of 3.61 was slightly higher than that of Australian construction students, but much higher than that of the Hong Kong construction students. Australian construction students reported the highest mean cynicism score (2.80). This was higher than the mean cynicism score of the Hong Kong construction students (2.53) and the Spanish non-construction students (2.45). Australian students also reported the highest mean score for personal efficacy (3.51). The Hong Kong construction students (3.03), though lower in personal efficacy than the Australian construction students, still scored considerably higher than the Spanish non-construction students (1.98) on this burnout dimension.

Correlations

Bivariate Pearson correlations between the variables measured in the Australian research are presented in Table 4. Intercorrelations between the burnout dimensions were as predicted, with emotional exhaustion positively correlated with cynicism ($r=0.534$, $p=0.000$) and cynicism inversely related to personal efficacy ($r=-0.249$, $p=0.020$). All three of the dimensions of burnout were significantly correlated with satisfaction with university life. Thus, satisfaction with university life was positively related to personal efficacy ($r=0.273$, $p=0.020$) and inversely related to cynicism ($r=-0.468$, $p=0.000$) and emotional exhaustion ($r=-0.452$, $p=0.000$). Both work-to-university conflict ($r=-0.232$, $p=0.048$) and university-to-work conflict ($r=-0.285$, $p=0.015$) were significantly and inversely related to the personal efficacy dimension of burnout. University-to-work conflict was also positively correlated with emotional exhaustion ($r=0.269$, $p=0.021$). Contrary to expectations, neither the number of hours students spent in paid work or the number of course contact hours per week were significantly correlated with any of the student burnout dimensions.

Bivariate Pearson correlations between the variables measured in the Hong Kong research are presented in Table 5. Two study-related variables were positively correlated with emotional exhaustion as expected. These were the amount of study time undertaken

overall ($r=0.287$, $p=0.001$) and the number of conflicting demands within studies ($r=0.307$, $p=0.001$). The number of conflicting demands within studies was also positively correlated with the cynicism dimension of burnout ($r=0.191$, $p=0.033$). The amount of personal leave (i.e. leave taken to accommodate non-university obligations) was negatively correlated with the Hong Kong students' sense of personal efficacy ($r=-0.343$, $p=0.000$). Of the socio-economic factors measured, support given by fellow students was negatively correlated with students' cynicism regarding their study ($r=-0.221$, $p=0.013$). The amount of time students reported to spend with their family ($r=0.254$, $p=0.004$) and the level of support given to the students by members of their family ($r=0.340$, $p=0.001$) were both positively correlated with the students' personal efficacy. Students' satisfaction with the economic situation in Hong Kong at the time when the survey was conducted was also negatively correlated with both emotional exhaustion ($r=-0.231$, $p=0.009$) and cynicism ($r=-0.293$, $p=0.001$). None of the burnout dimensions was significantly correlated with the demographic variables measured in the Hong Kong study.

Discussion

Research shows high levels of stress in university students (Abouserie, 1994; Felsten and Wilcox, 1992; Cotton *et al.*, 2002) and our results indicate significant levels of burnout among students in the property/real estate and construction disciplines in both Australia and Hong Kong. Taken together, the results of these two studies provide *prima facie* evidence for the validity of the three-dimensional burnout model in samples of construction students. This three-dimensional model of student burnout is consistent across two culturally different samples and is also consistent with previous research that has confirmed the three-factor burnout model in both professional as well as student samples (Cordes and Dougherty, 1993; Maslach *et al.*, 1996 and Schaufeli *et al.*, 2002b). Furthermore, our results indicate that the modified student version of the Maslach Burnout Inventory (the MBI-SS) possesses good internal consistency reliability when used to

Table 4 Bivariate correlations between the variables in the Australian sample

	1	2	3	4	5	6	7	8	9	10
1. Hours in paid work per week	1									
2. Course contact hours per week	−0.238*	1								
3. No. of days per week on campus	−0.439***	0.469***	1							
4. Personal efficacy	0.086	0.042	0.071	1						
5. Emotional exhaustion	−0.200	0.138	0.147	−0.097	1					
6. Cynicism	−0.028	0.070	0.194	−0.249*	0.534***	1				
7. Work-to-university conflict	0.079	0.070	−0.079	−0.232*	0.216	0.156	1			
8. University-to-work conflict	−0.117	0.125	0.173	−0.285*	0.269*	0.206	0.689***	1		
9. Satisfaction with university life	0.181	−0.213	−0.255*	0.273*	−0.452***	−0.468***	−0.311**	−0.377***	1	
10. Satisfaction with paid work	0.256*	−0.028	−0.017	0.211	−0.149	0.073	−0.216	−0.106	0.244*	1

Notes: *Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed); ***Correlation is significant at the 0.001 level (2-tailed).

Table 5 Bivariate correlations between the variables in the Hong Kong sample

	1	2	3	4	5	6	7	8	9	10
1. Study-related time	1									
2. Conflicting demands within studies	0.344***	1								
3. Personal leave	-0.227*	-0.183*	1							
4. Support given by fellow students	0.037	-0.046	-0.138	1						
5. Personal efficacy	0.276**	0.136	-0.343***	0.165	1					
6. Cynicism	0.143	0.191*	0.140	-0.221*	-0.111	1				
7. Emotional exhaustion	0.287**	0.307***	-0.004	-0.161	0.185*	0.449***	1			
8. Amount of time with family	0.184*	-0.060	0.041	0.020	0.254**	-0.110	0.048	1		
9. Support given by family	0.053	-0.000	-.093	0.080	0.340***	0.109	0.080	0.238**	1	
10. Satisfaction of economy in HK	0.060	-0.046	-.004	0.219*	0.039	-0.293***	-0.231**	0.289**	0.033	1

Notes: *Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed); ***Correlation is significant at the 0.001 level (2-tailed).

measure burnout in construction students in both Hong Kong and Australia. The Cronbach alpha coefficients for all three dimensions in both samples exceeded 0.70, which is an accepted standard for satisfactory internal consistency reliability. Thus, these results pave the way for further research using the MBI-SS among construction undergraduates in Australia and Hong Kong.

One noteworthy difference between the structure of burnout in the Australian and the Hong Kong samples was in the percentage of variance explained by each of the dimensions of burnout. In Australian sample, the percentage of variance explained by each of the three components of burnout were similar, i.e. 19.1 for cynicism, 17.7 for personal efficacy and 17.5 for emotional exhaustion. In contrast, in the Hong Kong sample, the percentages of variance explained by personal efficacy, cynicism and emotional exhaustion were 25.7, 21.5 and 9.0 respectively. This suggests that Hong Kong students are more homogeneous in the extent to which they experience emotional exhaustion than their Australian counterparts. This is supported by the low standard deviation for Hong Kong students' emotional exhaustion scores.

The combined results also reveal that construction undergraduates in both the Australian and Hong Kong samples experience levels of burnout that are similar to those found in international samples. The fact that construction students suffer from study-related emotional exhaustion, are cynical about the value of being university undergraduates and have low personal efficacy relating to their study is a concern because of the deleterious impact of burnout on well-being and performance in professional samples. Burnout is understood to be a process that occurs over a relatively long period of time. Empirical research evidence exists to support the contention that the burnout dimensions do not occur simultaneously but that there is a developmental progression over time (Cordes *et al.*, 1997; Van Dierendonck *et al.*, 2001). However, there is continuing debate about the chronological sequencing of burnout. For example, Leiter and Maslach (1988) argue that emotional exhaustion results from overload and, in an attempt to cope, individuals become withdrawn and cynical. This leads to a deterioration in performance which results in a lowered sense of personal efficacy. An alternative sequence is proposed by Golembiewski *et al.* (1986) who suggest that cynicism develops first followed by a reduced sense of accomplishment. Finally, individuals become emotionally exhausted because they do not enjoy successes in their endeavours.

Irrespective of the correct chronological sequence, if the burnout process commences during undergraduate study, it is likely that this process will continue (or even build up) following graduation. Construction students

are the industry's professionals of the future and therefore the onset of burnout at university may explain the relatively high levels of burnout reported in professional samples within the construction industry. Given that burnout is associated with diminished individual and organizational effectiveness, the burnout phenomenon may be an important contributory factor to the oft-cited and continuing poor performance of construction industries around the world (Dainty *et al.*, 2000; CIRC, 2001). Means of preventing the onset of burnout in construction undergraduates should be explored.

Our results revealed some interesting differences in burnout scores between the Hong Kong and Australian samples and the Spanish students surveyed by Schaufeli *et al.* (2002a). Compared to the Spanish non-construction students, both the Australian and Hong Kong construction students were high in personal efficacy. Relative to both the Hong Kong construction and Spanish non-construction students, Australian construction students were high in cynicism relating to their study. Australian construction students also reported considerably higher levels of emotional exhaustion than their counterparts in Hong Kong. When considering these differences, it is necessary to comprehend both the cultural background of the sample as well as the socio-economic context in which the surveys took place. For example, students in Australia typically spend considerable time in paid employment in order to fund their education, whereas Hong Kong students tend not to work in paid employment while studying. Future research should explore the impact of cultural differences on the process of burnout and socio-economic factors impacting upon students' experience of burnout.

Despite the fact that levels of burnout were comparable between the Hong Kong and Australian student samples, the correlation analyses indicate that the burnout dimensions have different correlates in the two survey contexts. In the Australian construction student sample, the bivariate correlations suggest that burnout is associated not so much with the amount of time that students spend in paid work or in university contact hours but rather with the extent to which the students perceive that commitments in one domain interfere with performance in the other domain. In Australia, most university students combine their study with participation in paid work, with the result that inter-role conflict can occur (Vickers *et al.*, 2003; Lingard *et al.*, 2003). Markel and Frone (1998) provide empirical evidence to indicate that the number of hours spent in paid employment each week is positively associated with conflict between work and education among adolescents and young adults. Similarly, British research suggests that university students experience

difficulty in balancing work and study and experience above-average levels of stress as a result (Humphrey *et al.*, 1998). Work-to-university conflict was significantly correlated with Australian students' sense of personal efficacy, while the perception that university interferes with paid work was significantly correlated with both personal efficacy and the Australian students' cynicism about the value of their study. The impact of students' commitments to paid work should now be evaluated in the Australian context. While participation in paid work can undoubtedly yield educational and personal benefits, the possibility that students are 'over-worked' exists. Some studies suggest that students who work up to 10 and 15 hours per week benefit from this but that working longer hours than this can have a deleterious impact on students' well-being and performance (Curtis and Lucas, 2001). The average number of hours worked per week by students in the Australian sample was 17.8, with a minimum of 0 and a maximum of 45. Thus, most students in the Australian sample are working hours in excess of the desirable limit.

All three dimensions of burnout were also significantly correlated with the Australian students' reported satisfaction with university life. The more emotionally exhausted and cynical the Australian students were, the less satisfied they were with university life and the stronger their sense of personal efficacy, the more satisfied they were with university life. This suggests burnout is associated with a general dissatisfaction with and disengagement from university life. This interpretation was borne out by qualitative comments made by the majority of the Australian students which indicated that they would prefer to spend more time at work and less time at the university.

Among the Hong Kong students, burnout was associated with satisfaction with the general economic situation in Hong Kong. Uncertainty about the future can also be a source of student stress (Boudreau *et al.*, 2004). While Australia is facing a labour skills shortage and the employment prospects for construction undergraduates are good, this is not the case in other economies. During recent years, Hong Kong has faced serious economic recession. The GDP decreased 5% from HK\$1,345 billion in 1997 to HK\$1,282 billion in 2004 (Census and Statistics Department, 2004). The unemployment rate in the Hong Kong construction industry increased from 3.1% in 1997 to 15.8% in 2004 (compared with an overall local industry increase from 2.3% to 6.7% in the same period). Thus, macroeconomic factors, the threat of unemployment and/or job insecurity may also act as student stressors in certain contexts. In Hong Kong, the less satisfied the students were with the economy, the greater their cynicism and emotional exhaustion.

Study-related time was also significantly related to the Hong Kong students' personal efficacy and emotional exhaustion. Interestingly, the more time spent in study, the greater the students' sense of personal efficacy but the more emotional exhaustion they report. The Hong Kong students' levels of cynicism and emotional exhaustion were also significantly correlated with their perception of the need to fulfil conflicting demands *within* their study activities, rather than *between* work and study, as was the case in the Australian sample. The significant association between study-related time and the number of conflicting demands within studies in the Hong Kong sample suggests that course redesign may be an effective preventive strategy for student burnout in Hong Kong.

The other noteworthy observation among the Hong Kong results was the importance of peer and family support. Support given by fellow students was significantly associated with cynicism, such that the more support the students perceived, the less cynical they were. Time with family and support from family members were also positively correlated with the Hong Kong students' sense of efficacy relating to their study. These findings are consistent with those of Boudreau *et al.* (2004), which revealed that lower levels of support from administration, faculty, friends, family and classmates were significantly associated with burnout in medical students. The Hong Kong findings suggest that peer and family support might be important factors mitigating student burnout in the cultural context of Hong Kong.

In Hong Kong, the students' sense of personal efficacy was significantly negatively correlated with 'the number of days missed from classes due to personal reasons'. This is consistent with the belief that burnout is a causal factor predicting absenteeism (Smith, 1999). Absenteeism involves indirect costs in respect of both the university and students. The relationship between student burnout and attendance should be investigated in future research. Owing to the cross-sectional nature of the research, the causal direction of relationships between variables could not be ascertained and it is also theoretically possible that absenteeism causes burnout, with students feeling unable to cope with the demands of study when they have missed classes due to sickness or other personal reasons (see 'Future research', below).

Taken together, the Australian and Hong Kong results suggest that construction students experience burnout; however, the correlates of burnout may be different in the two contexts. Moreover, the three burnout dimensions are differentially related to study, work and socio-economic factors in each of the samples. This means that there will be no single cure

for student burnout and multiple preventive strategies will be needed. Although the distinction between burnout and stress has not been clearly delineated, burnout is sometimes viewed as a type of stress, specifically a chronic response to long-term exposure to stressful conditions in one's environment (Cordes and Dougherty, 1993). We adopt this view of burnout as distinct from short-term stress caused, for example, by an examination. However, we prefer to use the term burnout rather than stress because, as Kenny and Cooper recently suggest, 'it might be useful if we stopped talking and writing about occupational stress because there is no such disease state' (Kenny and Cooper, 2003, p. 279). Kenny and Cooper argue that focusing on occupational *stressors* is more helpful because 'there is a point where even the most resilient worker will break down' (p. 279). With this in mind, we regard burnout as a strain outcome arising as a result of ongoing stressors in a person's environment, be it work, university or another environment.

Our results identify tension between two or more roles as a stressor directly relevant to student burnout. However, the nature of this tension differed between samples. In the Australian sample, tension arose as *inter*-role conflict between paid work and study, whereas in the Hong Kong sample the tension was manifest as *intra*-role conflict arising within one's study. Kenny and Cooper (2003) argue that a focus on stressors, such as role tension, provides an opportunity to identify and implement interventions to prevent adverse strain outcomes.

One important strategy applicable to both contexts might be the introduction of training courses to teach construction students effective coping strategies. Empirical research suggests that coping strategies moderate the relationship between stressors and burnout (Maslach *et al.*, 1996), hence the development of appropriate coping strategies could help to alleviate burnout in construction students. Future research should explore what are effective coping strategies for those construction undergraduates at risk and how these coping strategies might be facilitated.

Conclusions

The results of these surveys undertaken in culturally diverse contexts suggest that burnout is a phenomenon experienced by university students enrolled in construction degree courses in both Hong Kong and Australia. In both contexts, the three-dimensional structure of burnout was supported. Thus, in both the Hong Kong and Australian samples, the three-component model of burnout hypothesized by Maslach

and her colleagues, i.e. emotional exhaustion, cynicism and personal efficacy, appears to be valid. Further, the modified student version of the Maslach Burnout Inventory was tested and found to be reliable in measuring burnout within both the Australian and Hong Kong contexts. The level of burnout among construction undergraduates was found to be comparable to the level reported in previous research using non-construction student samples. However, the correlates of burnout appear to differ between the Hong Kong and Australian samples. In Australia, university students' burnout was found to be significantly correlated with a sense of conflict between paid work and study and a general dissatisfaction with university life. In contrast, in Hong Kong, construction students experience of burnout was related to learning conditions that require considerable amounts of study-related time and a perception that university study imposes conflicting demands. In the Hong Kong sample, peer and family support appear to be important factors mitigating student burnout. In both samples, intervention strategies to prevent or manage student burnout might include the provision of supportive mechanisms that facilitate effective coping.

Future research

The research was limited in several important respects. No attempt was made to examine the impact of student burnout on important student behaviours, such as attendance, participation in study activities and engaging in independent learning. Neither was the relationship between student burnout and educational outcomes, such as grades and course completion rates evaluated. Secondly, the research in both Australia and Hong Kong was cross-sectional. As such, it is impossible to ascertain the causal direction of relationships between the variables. For example, dissatisfaction with university life was significantly correlated with emotional exhaustion and cynicism in the Australian sample but it is impossible to determine whether dissatisfaction is an outcome or a cause of student burnout in the Australian context. However, future research will resolve these issues by utilizing a longitudinal design as well as incorporating measures of student behaviour and educational outcomes.

Future research will involve the collection of data from a number of student cohorts while they are progressing through their undergraduate degree courses and following their graduation. This will enable the causes and consequences of burnout to be identified allowing effective preventive strategies to be developed. At present, the debate about the chronological sequencing of burnout stages is not resolved. Thus, our longitudinal design will make an important

contribution to theory in the field as it will clarify the chronological sequence with which the stages of burnout occur in student populations.

The fact that the questionnaire administered in the two student samples was subtly different could have had an impact upon the results. We are unable to ascertain with certainty whether the inclusion of demographic variables in the Hong Kong questionnaire may have created systematic differences between students' responses in the two samples. While we acknowledge this possibility, steps were taken to ensure that the inclusion of demographic information did not alter responses of the Hong Kong students. For example, the demographic data were collected at the end of the survey. Also, the primary reason for not collecting demographic data in Australia was the diversity of the student population, which included a number of mature aged students with dependant-care responsibilities. In contrast, the Hong Kong sample was much more homogeneous, with little variance in age and family status. For this reason, we do not believe that the Hong Kong students' responses would have been significantly skewed by fear of identification. Despite this, future cross-national research will utilize an identically worded questionnaire. Notwithstanding this limitation, the data collected in the two samples still confirms a consistent factorial structure of student burnout in both countries as well as independently indicating relatively high levels of burnout in both samples.

Another limitation of this initial stage of the research was the relatively small sample sizes. Our results cannot be generalized to the entire population of construction undergraduates in Australia and Hong Kong because data were collected in only two institutions. However, the response rates of both surveys were relatively high and our results are therefore representative of the student populations of the institutions involved. Future research will involve the collection of data from construction undergraduates in multiple institutions, within Australia and Hong Kong, improving the generalizability of our results.

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Notes

1. Both the Australian and Hong Kong undergraduate programmes provide education in the field of quantity

surveying, real estate and construction management, they are both multi-disciplinary and founded on similar principles, although the course titles are different (i.e. surveying/property and construction).

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