



<b>Title</b>	<b>Checking the healthiness of commitment profile from its prediction of burnout</b>
<b>Author(s)</b>	<b>Jia, Y; Rowlinson, S; Kvan, T; Lingard, H; Yip, B</b>
<b>Citation</b>	<b>The 18th CIB World Building Congress 2010 on Building a Better World, Salford, U.K., 10-13 May 2010. In Proceedings of the CIB 2010, 2010, p. 276-287</b>
<b>Issued Date</b>	<b>2010</b>
<b>URL</b>	<b><a href="http://hdl.handle.net/10722/127994">http://hdl.handle.net/10722/127994</a></b>
<b>Rights</b>	<b>Creative Commons: Attribution 3.0 Hong Kong License</b>

# Checking the Healthiness of Commitment Profile from Its Prediction of Burnout

Jia, Y.

The University of Hong Kong, Hong Kong  
(email: yunyanbright@gmail.com)

Rowlinson, S.

The University of Hong Kong, Hong Kong,  
(email: steverowlinson@hku.hk)

Kvan, T.

University of Melbourne, Australia  
(email: t.kvan@unimelb.edu.au)

Lingard, H.

RMIT University, Australia,  
(email: helen.lingard@rmit.edu.au)

Yip, B.

The University of Hong Kong, Hong Kong  
(email: brenda@hku.hk)

## Abstract

This paper examines the commitment profiles of Hong Kong Chinese architecture students with the 3-factor model of professional commitment and its impact on burnout. The Chinese version of Maslach Burnout Inventory – Student Survey and adapted version of Occupational Commitment Questionnaire are administered to measure burnout and commitment profile. Multiple regression models are performed with burnout dimensions as dependent variables, the three facets of commitment, namely affective, continuance and normative commitment, as independent variables, and demographic variables as controlling variables. The findings are consistent across different models that continuance commitment is positively, affective and normative commitment negatively, associated with burnout. The study suggests, from its relationship with burnout, a healthy commitment profile is composed of more affective and normative commitments and less continuance commitment in the population of architecture students. Architectural schools are advised to be more aware of the types of commitments encouraged in their curriculum and pedagogy.

**Keywords:** student burnout, healthiness of commitment profile, affective commitment, continuance commitment, normative commitment

# 1. Introduction

Student drop rate of architectural schools has been one of the highest among university faculties, especially in the first year (Lazell, 2007). Those who remain are committed to architecture program by a mixture of different motives. Individual students are committed to architecture partly by affection, partly by norm, and partly by the concern of the cost of leaving. How healthy the commitment profile of architecture students can be examined through its relationship with burnout, a stress syndrome that kills creativity in design learning and prohibits productivity in their future career (Amabile, 1998).

Commitment is defined as people's psychological link with their job in a working context, or with their study in an educational context. Students' motives of study can be understood through the three-dimensional construct of commitment. Commitment is a people's psychological attachment to and identification with their profession, organization or study program. People choose to stay for three kinds of motives: they want to (affective commitment), they have to (continuance commitment), or they think they ought to (normative commitment) (Meyer *et al.*, 1993). All of the three facets of commitment functions as retaining personnel in an organization or profession. But different motives in the commitment profile will result in different outcomes. Affective commitment (AC) is found to be positively related with job performance, while continuance commitment (CC) is found to be negatively related with the outcome variables. That is, more AC and less CC in individual's commitment profile are associated with better outcome. Burnout reflects a relationship of hostility and alienation between the person and his/her job, the opposite of which is engagement, a relationship of reconciliation and acceptance (Schaufeli *et al.*, 2002). Burnout is found to be the mediator between working context and work-related outcomes such as diminished commitment and turnover (Leiter and Maslach, 2004). The three symptoms of burnout—exhaustion, cynicism and inefficacy—are developed from different aspects of work environment and contribute differently to the outcomes. For architecture students, burnout is especially damaging in that it shifts motives of study, paralyze creativity, and develops unhealthy coping styles for future professional's burnout.

Precedent studies reported that burnout is associated with diminishing affective commitment (Leiter and Maslach, 1988). But few have investigated the relationship between burnout and the full profile of commitment. As part of a large project on architecture students' burnout, this study investigates burnout's consequence on individual's commitment profile among Hong Kong architecture students.

## **2. Literature review**

### **2.1 Burnout**

Burnout is defined as a crisis in people's relationship with their work (Maslach et al., 1996). A burnout person is locked into a destructive mode of interaction with his/her work. He/She perceives, interprets and reacts to the work with hostility and alienation. The broken relationship is manifested in three syndromes: exhaustion (EX), feeling of stressed-out by the work; cynicism (CY), feeling of meaningless of the work; and inefficacy (IE), feeling of low capacity for the work. The three dimensions are indispensable but distinctive factors to constitute burnout. They are related with different individual and organizational precursors and outcomes (Maslach, 2003). For example, Leiter (1991) in his study of 177 workers in hospital reports that emotional exhaustion is developed from work overload and interpersonal conflict of the working environment, depersonalization (cynicism) is developed from lack of social support and emotional exhaustion, reduced personal accomplishment (inefficacy) is resulted from lack of social support and underutilization of skills. In a review and development of the burnout studies, Maslach, Schaufeli and Leiter (2001) proposed six mismatches between the organizational context and the individual employees that can lead to burnout, among which exhaustion is proposed to be related with workload, inefficacy with reward, and cynicism with unfairness. The three dimensions of burnout are also found to be related differently with different individual coping strategies (Leiter, 1991; Yip and Rowlinson, 2006). In an Australia-Hong Kong comparative study of burnout experience among construction students, Lingard et al (2007) reported EX is related with university-to-work conflict in the Australian sample, with amount of study time and number of conflicting demands within studies in the Hong Kong sample. CY is found to be significantly correlated with peer support and conflicting demands within studies in the Hong Kong sample. IE is found to be related with both work-to-university and university-to-work conflict in the Australian sample, and with family support in the Hong Kong sample. As a consequence of the complex links, the effectiveness of intervention strategies varies. Strategies that help alleviating one dimension of burnout may bring a side effect of aggravating the other two (Maslach, 2003).

### **2.2 Commitment as a multi-dimensional construct**

Commitment in the management language refers to a psychological state that characterizes a person's tie to his/her job (Meyer *et al.*, 1993: 539). The target of commitment can be the group, organization, occupation, institution, or study program. The commitment construct explains how people would like to stay and why they stay. A widely accepted definition of organizational commitment is "the relative strength of an individual's identification with and involvement in a particular organization" (Mowday, 1982: 27), which is dealing with the "how". An in-depth examination of the "why" reveals three facets within the motives of commitment: people stay because a sense of devotion (affective commitment), because of the

profit of staying and cost of leaving (continuance commitment), because of a sense of obligation (normative commitment) (Meyer *et al.*, 1993; Meyer and Allen, 1991).

The multidimensionality of the commitment construct provides an insight into the actual targets for which people are committed. With AC, the individual is committed to the task. With NC, the individual is committed to the community. With CC, the individual is committed to the expected reward. Although all the three factors of commitment retain people in the target occupation or organization, the different motives are related differently with the quality of work (Meyer *et al.*, 1993; Scholl, 1981). Meyer *et al.* (1989) in their study of 114 first-level managers in a Canadian food service company found that AC is positively, and CC negatively, related with supervisor-rated performance. Meyer *et al.* (1993) proposed that “affective commitment, to a somewhat lesser extent, normative commitment, should be positively related to job performance and organizational citizenship. Whereas continuance commitment was expected to be unrelated, or negatively related, to these consequence variables” (p.539). The hypotheses were verified in a sample of 603 registered nurses with a result that AC positively, CC negatively, and NC not, related with supervisor-rated performance. Iverson and Buttingie (1999) in their study of 505 Australian male fire-fighters found that “affective and normative commitment are associated with positive organizational outcomes (lower turnover intentions and absenteeism, as well as higher acceptance of change for affective commitment) while low perceived alternatives (a subset of continuance commitment) lead to greater organizational inflexibility (lower acceptance of change) (p.326).”

CC can paralyze creativity and diversity by weakening both organizational and individual learning. If people are committed to their work to avoid the cost of change, they will also resist changes in their responsibilities or taking up new opportunities (Iles and Robertson, 1990). For the organization, if “...employee feels blocked, trapped or only reluctantly a member of the organization, ...(he) is not likely to be very positive about responding to new organizational demands and requirements” (Iles *et al.*, 1996: 20). Though a 12-week management development workshop to reduce CC whilst maintain NC and AC, Iles and his colleagues significantly improved personal flexibility to organizational change among their subjects of senior service managers.

## **2.3 Students' commitment and approaches of learning**

In the university context, the role of a student is both the client and the frontline worker. They won't get the best service unless they perform an excellent work. The architecture curricular are centered on design studio, where students learn to think and act architecturally, to synthesis what they learned form other courses in design project and improve through critics from teachers and fellow students (Ledwitz, 1985). A studio task used to start with an ill-defined design problem. Through a process of exploring, framing and solving, facilitated by crits, juries and public reviews, students develop analytical and synthetical thinking, sensitivity and creativity (Anthony, 1991; Koch *et al.*, 2002; Kvan, 2000; Schön, 1984a; 1984b).

The multi-dimensionality of the commitment construct reveals that students remain in the architecture study programs for various concerns. To translate it into educational language, the three factor model of commitment is an analogue of the model of three learning approaches (Biggs, 1992; 1999; Biggs and Telfer, 1987). Student approach learning in three different ways: the surface approach, the deep approach, and the achieving approach.

Students with deep learning approach are intrinsically motivated. They are driven by curiosity. Their learning strategies are characterized by meaning discovery, which will come up with understanding of structural complexities and problem solving competencies (Biggs and Telfer, 1987). Contextualized in the architecture schools, this echoes the mechanism of AC, by which students are affectively committed to the task. The commitment serves as an anchor, focusing students on the design problem throughout the process of crits, juries and reviews, to ensure the 'right' competencies being developed.

Students with surface learning approach are externally motivated to study. They are driven by avoiding failure. The subsequent learning strategies are characterized by doing the bare minimum and selected details, which lead to an outcome of "retention of factual detail at the expense of the structural relationship inherent in the data to be learned" (Biggs and Telfer, 1987: 4). For architecture student, the 'bare minimum' means to produce good-looking drawings and label them with words of concept without struggling through the thinking process. Tay (1998) describes how Asian architecture students develop personal politics to survive (which means to maintain face in) critics and juries in the design studio: "Where politics is dominant, learning is superficial. Functionality is replaced by functionalistic gesture. Rationality is replaced by rationalizing and aesthetics is an exercise in styling and private meaning" (Tay, 1998: 2). This seems to be identical to the mechanism of CC. The concerns of beneficial calculation drive students to look for the easy ways thus defocus them from the design problem. 'Pseudo-competencies' are developed when they get through the studio process.

Students with achievement learning approach are motivated by recognition from the learning community. Acquired through socialization, the norm of their learning environment drives them "to obtain highest grades, whether or not material is interesting" (Biggs and Telfer, 1987: 3). The subsequent learning strategy is to consciously "optimize organization of time and effort" (Biggs, 1992: 16). The outcome of the achievement approach depends on whether it is united with deep approach or with surface approach within the individual. This is congruent with the mechanism of NC, by which students committed to the norm, the 'right' self-image of a community member that one should fulfil.

## **2.4 Relationship between commitment and burnout**

A handful of studies looked into the relationships between commitment and burnout, among which even fewer examined commitment from the multidimensional perspective. Wittig-Berman and Lang (1990) in a sample of 270 MBA students found strong negative association

between value commitment and stress syndromes. In this study stress syndromes are taken as outcome variables of value commitment and continuance commitment. Leiter and Maslach (1988) and Leiter (1991) reported negative association between exhaustion and commitment. In both studies, commitment was measured with the Organizational Commitment Questionnaire (Mowday et al., 1979), which measures the AC dimension in the 3-factor construct of commitment. Neumann et al (1990) identified diminished student commitment as a consequence of burnout (in terms of exhaustion and inefficacy) and the learning context. However, commitment was measured by a three-item scale focusing on students' identification with their college, which does not reflect motives of study. Draper et al (2004) in a survey of 596 cadet students found negative correlation between stress and AC and NC, but no significant correlation between stress and CC. However, stress in their study was measured by an Anxiety Scale (Warr et al., 1979) which measures general feeling of anxiety in everyday life.

In summary, previous studies of commitment and burnout failed to recognize the difference of hidden motives behind different types of commitment. Noting this gap, this study investigates the commitment profiles of Hong Kong Chinese architecture students and its relationship with burnout.

### **3. Hypotheses**

Based on the rationales of the hidden motives behind multiple dimensions of commitment, this study proposes the following hypotheses:

H1: AC is negatively, NC is not, and CC is positively associated with EX.

H2: AC is negatively, NC is not, and CC is positively associated with CY.

H3: AC is negatively, NC is not, and CC is positively associated with IE.

### **4. Design of study**

Student commitment levels, burnout, and demographic information are collected through self-administered questionnaires in Chinese. The questionnaire was translated into Chinese and checked with back-translation by two bi-lingual experts. Principal Component Analyses (PCA) were performed to validate the measures of commitment. Correlation analysis, ANOVA, and multiple-regression are employed to test the hypotheses.

## 5. Results

### 5.1 Sample

596 students from the two architecture schools in Hong Kong are administered the questionnaire through online or paper-based survey. A total of 294 responses are received, making a response rate of 49.3%. Of the respondents, 165 (56.4%) are female and 128 (43.5%) are male (one missing information); 256 (87%) are Hong Kong students, 28 (9.5%) are from mainland China, and 10 (3.4%) from Macao or other places. The information of age is collected in six intervals: 16~19 (13%), 20~22 (44%), 23~23 (20.1%), 25~26 (13.3%), 27~29 (6.8%), and above 30 (2.7%). The cohorts of students in the sample are evenly distributed: Bachelor Year 1 (18.1%), Bachelor Year 2 (22.6%), Bachelor Year 3 (18.1%), Master Year 1 (17.0%), and Master Year 2 (24.3%).

### 5.2 Measures

#### 5.2.1 Measure of student burnout

Students' burnout is measured with Maslach Burnout Inventory-Student Survey (MBI-SS) (Schaufeli et al., 2002a). Each question is rated on a 7-point scale anchored by 0 (never) to 6 (everyday). The scale has a good validity and acceptable reliability. The proposed three-factor structure broke into four factors in this sample. While exhaustion and inefficacy remain the same, cynicism broke into two factors: doubt of significance, and lack of interest. Details of the validation have been reported in Jia *et al* (2009).

#### 5.2.2 Measure of students' commitment to architecture

Students' commitment to their study is developed from Mayer *et al* (1993) occupational commitment questionnaire. The scale was validated by Irving *et al* (1997) across occupations. The three component model has been validated in the Chinese sample of 226 employees (Cheng and Stockdale, 2003). Principal Component Analysis of the current data yielded a three-factor structure accounted for 65.03% of the total variance. In terms of reliability, Cronbach's Alpha is 0.77.

### 5.3 Descriptive statistics

Levels of commitment are shown in Table 1. The commitment levels of Hong Kong construction professionals reported by Rowlinson (2001) are paralleled in the table as a comparison. The current sample of architecture students has considerable higher AC and NC, and lower CC than that of the construction professional sample. It seems that the low CC of architecture students is appropriate for the creative field. In contrast, the high CC among



construction professionals may indicate one of the problems of inflexibility in their work setting or even embedded in the knowledge of the discipline.

*Table 1: Levels of burnout in this study compared with that reported in Rowlinson (2001)*

	<i>Hong Kong architecture students mean (SD)</i>	<i>Hong Kong construction professionals mean (SD)</i>
<i>Affective commitment</i>	4.96 (SD=1.33)	1.79 (SD=0.45)
<i>Normative commitment</i>	4.03 (SD=1.02)	2.81 (SD=0.66)
<i>Continuance commitment</i>	4.60 (SD=1.10)	5.46 (SD=1.10)

## 5.4 Testing of regression models

Pearson correlation among continuance variables, and Spearman's rho involving year of study, gender and age are computed. Sample size of the correlation analysis ranges from 220-295. Significantly correlated variables were entered into four regression models, with the four dimensions of burnout as dependent variables respectively. Hierarchical regressions using step-wise method were performed to test the four models. Demographic variables were entered into the model at first step, followed by the three dimensions of commitment. The optimized models were exhibited in Table 4. All the four models were significant at the .000 level. Among the demographic variables, year of study and age are significantly related with EX. Gender is significantly related with IE and CY in terms of doubt in significance. Female students experience significantly higher inefficacy than their male counterpart; while male tend to doubt the significance of their architecture study more often than their female counterpart. Cynicism in terms of lack of interest in architecture does not vary with demographic variables. The three dimensions of commitment showed consistent results in the prediction of burnout dimensions: AC and NC are significantly negatively associated with burnout dimensions; CC is significantly positively associated with burnout dimensions, with only an exception that it is not related with IE.

*Table 2: Results of regression model testing (sample size is 295)*

<i>No.</i>	<i>Dependent</i>	<i>Independent</i>	<i>Beta</i>	<i>Adj. R2</i>	<i>F</i>	<i>Sig.</i>
<i>Model 1</i>	<i>Exhaustion</i>	<i>Year</i>	0.290**			

		<i>Age</i>	<i>-0.291**</i>			
		<i>CC</i>	<i>0.419***</i>			
		<i>AC</i>	<i>-0.247***</i>			
		<i>NC</i>	<i>-0.202**</i>	<i>0.278</i>	<i>15.021</i>	<i>.000</i>
<i>Model 2</i>	<i>Cynicism</i>	<i>Gender</i>	<i>0.132*</i>			
	<i>(significance)</i>	<i>CC</i>	<i>0.349***</i>			
		<i>AC</i>	<i>-0.386***</i>			
		<i>NC</i>	<i>-0.301***</i>	<i>0.383</i>	<i>23.653</i>	<i>.000</i>
<i>Model 3</i>	<i>Cynicism</i>	<i>CC</i>	<i>0.210***</i>			
	<i>(interest)</i>	<i>AC</i>	<i>-0.528***</i>			
		<i>NC</i>	<i>-0.217**</i>	<i>0.424</i>	<i>27.874</i>	<i>.000</i>
<i>Model 4</i>	<i>IE</i>	<i>Gender</i>	<i>-0.130*</i>			
		<i>AC</i>	<i>-0.317***</i>			
		<i>NC</i>	<i>-0.348***</i>	<i>.0298</i>	<i>16.481</i>	<i>.000</i>

\*\*\*  $p < .001$  ; \*\*  $p < .01$  ; \*  $p < .05$

## 6. Discussion and Conclusion

To summarize, the results partially support the hypotheses that different types of commitment have diverse effect on burnout among Hong Kong architecture students. As burnout scale yielded into a four-factor structure in this sample, in which cynicism was further divided into doubt of significance and lack of interest in architecture, four models were tested with multiple regressions. The results are consistent across the predictive models of the four dimensions of burnout: AC is negatively and CC is positively associated with burnout dimensions. However, NC, instead of being neutral, is found to be negatively associated with all the four dimensions of burnout. This result implies that among the population of architecture students, normative commitment has a similar effect as affective commitment does on stress syndromes. Professionalism in architecture is more of a positive aspect than in other professions or disciplines. Consistent results were found in three of the four models that CC is a strong predictor of burnout among architecture students. Students who are “locked” in architecture are vulnerable to burnout. However, CC was not found to be correlated with IE, which implies the motivation of study is not related to students’ self-evaluation of effectiveness. In conclusion, from its relationship with burnout, a healthy commitment profile contains more affective and normative commitment, and less continuance commitment in the population of Hong Kong architecture students. To avoid burnout among students, architectural schools are advised to build healthy student commitment profiles by encouraging the right motives in their curriculum and pedagogy.

## Acknowledgement

This paper is partly the work of a research project -- Job Burnout and Construction Project Performance (Code No. HKU 711303) supported by Research Grants Council of the Hong Kong Special Administrative Region, P. R. China.

## References

- Amabile, T. M. (1998) How to kill creativity. *Harvard Business Review*, **September-October**.
- Anthony, K. H. (1991) *Design Juries on Trial: the Renaissance of the Design Studio*, New York, Van Nostrand Reinhold.
- Biggs, J. (1999) *Teaching for Quality Learning at University: What the Student Does*, Buckingham :, Society for Research into Higher Education, Open University Press.
- Biggs, J. B. (1992) *Why and how do Hong Kong students learn?* , Hong Kong, Faculty of Education, University of Hong Kong.
- Biggs, J. B. & Telfer, R. (1987) *The Process of Learning*, Sydney, Prentice-Hall.
- Cheng, Y. & Stockdale, M. S. (2003) The validity of the three-component model of organizational commitment in a Chinese context. *Journal of Vocational Behavior*, **62**, 465-489.
- Draper, J., Halliday, D., Jowett, S., Norman, I., Watson, R., Wilson-Barnett, J., Normand, C. & O'Brien, K. (2004) NHS cadet schemes: student experience, commitment, job satisfaction and job stress. *Nurse Education Today*, **24**(3), 219-228.
- Iles, P., Forster, A. & Tinline, G. (1996) The changing relationships between work commitment, personal flexibility and employability: An evaluation of a field experiment in executive development *Journal of Managerial Psychology*, **11**(8), 18-34.
- Iles, P. & Robertson, C. M. I. (1990) HRM Practices and Employee Commitment: Possibilities, Pitfalls and Paradoxes. *British Journal of Management*, **1**(3), 147-157.
- Irving, P. G., Coleman, D. F. & Cooper, C. L. (1997) Further assessments of a three-component model of occupational commitment: generalizability and differences across occupations. *Journal of Applied Psychology*, **82**(3), 444-452.
- Iverson, R. D. & Buttigieg, D. M. (1999) Affective, normative and continuance commitment: can the 'right kind' of commitment be managed? *Journal of Management Studies*, **36**(3), 307-333.

Jia, Y. A., Rowlinson, S., Kvan, T., Lingard, H. C. & Yip, B. (2009) Burnout among Hong Kong Chinese architecture students: the paradoxical effect of Confucian conformity values. *Construction Management and Economics*, **27**(3), 287-298.

Koch, A., Schwennsen, K., Dutton, T. A. & Smith, D. (2002) *The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force*, American Institute of Architecture Students, Available at: <http://www.aias.org/studioculture/studioculturepaper.pdf> [Accessed 13th March 2008].

Kvan, T. (2000) Teaching architecture, learning architecture. IN TAN, B.-K., TAN, M. & WONG, Y.-C. (Eds.) *Proceedings of CAADRIA 2000*. Singapore.pp.181-190.

Lazell, M. (2007) High drop out rate for architecture. *Building Design*, **Aug 3** (2007), 3.

Ledwitz, S. (1985) Models of design in studio teaching. *Journal of Architectural Education*, **38**(2), 2-8.

Leiter, M. P. (1991) Coping patterns as predictors of burnout: the function of control and escapist. *Journal of Organizational Behavior*, **12**(2), 123-144.

Leiter, M. P. & Maslach, C. (1988) The Impact of Interpersonal Environment on Burnout and Organizational Commitment. *Journal of Organizational Behavior*, **9**(4), 297-308.

Leiter, M. P. & Maslach, C. (2004) Areas of worklife: a structure approach to organizational predictions of job burnout. IN PERREWE, P. L. & GANSTER, D. C. (Eds.) *Emotional and physiological processes and positive intervention strategies: research in occupational stress and well being (Volume 3)*. Amsterdam ; London, JAI.pp.91-134.

Lingard, H. C., Yip, B., Rowlinson, S. & Kvan, T. (2007) The experience of burnout among future construction professionals: a cross-national study *Construction Management and Economics*, **25**(4), 345-357.

Maslach, C. (2003) Job burnout: new directions in research and intervention. *Current Directions in Psychological Science*, **12**(5), 189-192.

Maslach, C., Jackson, S. E. & Leiter, M. P. (1996) *Maslach Burnout Inventory Manual (3rd ed.)*, Palo Alto, CA, Consulting Psychologists Press.

Maslach, C., Schaufeli, W. B. & Leiter, M. P. (2001) Job burnout. *Annual Review of Psychology*, **52**, 397-422.

Meyer, J., P., Paunonen, S. V., Gellatly, I. R., FGoffin, R. D. & Jackson, D. N. (1989) Organizational commitment and job performance: it's the nature of the commitment that counts. *Journal of Applied Psychology*, **74**(1), 152-156.

- Meyer, J. P., Allen, N. J. & Smith, C. A. (1993) Commitment to organizations and occupations: extension and test of a three-component conceptualization. *Journal of Applied Psychology*, **78**(4), 538-551.
- Meyer, J. P. & Allen, N. J. (1991) A three-component conceptualization of organizational commitment. *Human Resource Management Review*, **1**, 61-89.
- Mowday, R. T. (1982) *Organizational Linkages: the Psychology of Commitment, Absenteeism, and turnover*, San Diego, CA, Academic Press.
- Mowday, R. T., Steers, R. M. & Porter, L. W. (1979) The measurement of organizational commitment. *Journal of Vocational Behavior*, **14**(2), 224-247.
- Neumann, Y., Finaly-Neumann, E. & Reichel, A. (1990) Determinants and consequences of students' burnout in universities. *Journal of Higher Education*, **61**(1), 20-31.
- Schön, D. A. (1984a) The Architectural studio as an exemplar of education for reflection-in-action. *Journal of Architectural Education*, **38**(1), 2-9.
- Schön, D. A. (1984b) Toward a marriage of artistry & applied science in the architectural design studio. *Journal of Architectural Education*, **41**(1), 4-10.
- Schaufeli, W. B., Martinez, I. M., Pino, A. M., Salanova, M. & Bakker, A. B. (2002) Burnout and engagement in university students: a cross-national study. *Journal of Cross-cultural Psychology*, **33**(5), 464-481.
- Scholl, R. W. (1981) Differentiating organizational commitment from expectancy as a motivating force. *Academy of Management Review*, **6**(4), 589-599.
- Tay, K. S. (1998) Towards a new concept of Asian architectural education. *Report at the ARCASIA Council Meeting*
- Warr, P., Cook, J. & Wall, T. (1979) Scales for the measurement of some work attitudes and aspects of psychological well-being. *Journal of Occupational Psychology*, **52**(2), 129-148.
- Wittig-Berman, U. & Lang, D. (1990) Organizational commitment and its outcomes: differing effects of value commitment and continuance commitment on stress reactions, alienation and organization-serving behaviours. *Work & Stress*, **4**(2), 167-177.
- Yip, B. & Rowlinson, S. (2006) Coping strategies among construction professionals: cognitive and behavioural efforts to manage job stressors. *Journal for Education in the Built Environment*, **1**(2), 70-79.