An examination of academic and occupational stress in the USA

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Introduction
Stress may be defined as a situation wherein factors interact with a person to change (i.e. disrupt or enhance) his/her psychological and/or physiological condition, such that the person is forced to deviate from normal functioning (Beehr and Newman, 1978). Although the literature on stress is vast, most researchers would agree that an interactionist perspective, where stress is seen as a product of the relationship between a person and his/her environment, is relevant to the study of both occupational and academic stress (Caplan et al., 1975; Greenhaus and Parasuraman, 1987; Lazarus, 1991; Stogdill, 1974; Whitman et al., 1984). Person variables include both aspects of individual personality and methods of coping, while environmental variables are depicted as a range of potential stressors. The eventual outcome of the person-environment interaction is likely to affect, in turn, the person and his/her environment (Beehr and Newman, 1978; Cooper, 1986; Cooper and Payne, 1978; Cooper et al., 1988; Greenhaus and Parasuraman, 1987; Robbins, 1993).

There is a great deal of evidence that excessive levels of stress have a negative impact on students. Numerous studies have shown that students under high levels of stress learn less than those under moderate levels (e.g. Hockey, 1979; Silver, 1968). Campus psychiatrists note that school-related stress results in an inability to do school work and the fear of academic failure (Ellis, 1969). Unfortunately, for many students this fear is realized. In fact, as many as 50 per cent of entering freshmen have been reported not to finish college four years later (Hirsch and Keniston, 1970). Other manifestations of stress among students include alcohol use, drug abuse, premature pregnancy and suicide (Shipman, 1987). With respect to suicide, statistics from the USA show that every 90 minutes a person between the ages of 15 and 24 years commits suicide (D’Aurora and Fimian, 1988). Approximately 50,000 young people in the USA attempt suicide each year and over 5,000 succeed in killing themselves (Jennings, 1984).

For example, in the USA, occupational stress-related expenses total in excess of $150 billion annually. In fact, stress-related disability claims have risen by approximately 700 per cent over the past five years with the direct cost of resolving a single stress claim estimated at between $10,000 and $15,000 (Stevens, 1992). The National Institute for Occupational Safety and Health (NIOSH) rates stress as one of the ten leading work-related diseases (Minter, 1991).

Not surprisingly, much research has been devoted to the topic of stress management in work and academic settings. In general, most methods for coping with workplace stressors may be classified as either primary (stressor reduction), secondary (stress management) or tertiary (employee assistance programmes; Murphy, 1988). Stressor reduction methods would include changes in organization design, structure, enhanced communication levels, increased employee participation and employee empowerment. Stress management methods include meditation and deep relaxation, exercise, better nutrition and other preventive stress management techniques. Employee assistance programmes and in-house counselling services represent a tertiary technique for coping with stress—they are essentially curative as opposed to preventive. Methods for dealing with academic stressors include informing students in advance of the difficulties they may face, improving campus mental health services, organizing peer counselling and self-help groups, improved orientation for new students, greater flexibility in core course requirements, expanding the role of faculty advisers, giving earlier and more frequent exams and de-emphasizing grades (Whitman et al., 1984).

The purpose of this study was to identify some important person and environmental variables which contribute to academic and occupational stress and to estimate their direct and indirect effects on various relevant outcomes (such as mental health, physical health, job satisfaction and scholastic grade point average). In particular, this study focused on two research questions. First, can the stress process be measured on the basis of information about an individual’s...
personality and the methods that people adopt to cope with stress? Similar to Marcoulides and Sadri (1995), Sadri and Marcoulides (1994a; b) and Sadri et al. (1996), it was hypothesized that at least some elements of the stress process can be measured. Second, can a model be developed consistent with previous theory that estimates the effects of several dimensions thought to represent academic and occupational stress? It was hypothesized that, through structural equation modelling techniques, a model of the dimensions of the stress process could be developed which would be consistent with previous research and which would permit us to analyse an individual's psychological, physiological and behavioural outcomes.

The remaining paper is divided into three sections. The first section presents a conceptualization of the model used to examine the effects of various components of personality, academic and occupational stress on outcome measures. The second section focuses on the methods used in gathering the data and presentation of the results. The final section discusses the implications of the findings for improving research and practice in education and management.

Testing a model of the stress process

Figure 1 presents our proposed theoretical model of academic and occupational stress. The outcomes of interest are mental and physical health, scholastic grade point average (GPA) and job satisfaction. The proposed model posits the existence of several latent variables which together comprise various aspects of an individual's personality and stressors that, in concert, are believed to influence stress-related outcomes. Type A behaviour, locus of control (LOC) and coping are all seen as exogenous variables, in that their variability is determined by factors outside the model. Stressors (academic and occupational) are viewed as endogenous, in that their variability is determined by other variables in the model. The exogenous variables, therefore, are seen as indirectly affecting the outcome through the endogenous variables in the model. This group of latent variables is viewed as loosely comprising the four groups of personality, coping, stressors and outcomes originally suggested by Cooper and Baglioni (1988), Robertson et al. (1990) and Sadri and Marcoulides (1994a).

Precursors of stress

There are three latent variables that are considered precursors of stress. These include type A behaviour, locus of control (LOC) and coping. As presented in Figure 1, it is proposed that personality variables (i.e. type A behaviour and LOC) and methods of coping determine the perception of occupational and academic stress.

Type A behaviour

Type A behaviour is characterized by a chronic sense of time urgency and an excessive competitive drive. Past research has demonstrated that this type of behaviour has a clear link with stress-related outcomes (e.g. Zylanski and Jenkins, 1970). Type A individuals underestimate the time required to accomplish tasks and, therefore, experience time pressures. They work quickly and show impatience and decreased work performance if forced to work slowly. Type As ignore, suppress or deny physical or psychological symptoms while working under pressure, and report such symptoms only when the work is finished. They work harder and experience physiological arousal when a task is perceived as challenging; express hostility and irritation in response to a threat; and need to be in control of the immediate environment to such an extent that a lack of control may elicit a hostile, competitive response (Friedman and Rosenman, 1974; Froggatt and Cotton, 1987; Ganster et al., 1989; Williams, 1989).

Locus of control

Locus of control (LOC) is represented by a continuum with individuals who believe that they are masters of their fate falling on the internal side of the continuum, and those who believe that their lives are reliant on luck, chance, fate or powerful others falling on the external side (Rotter, 1966). A number of studies imply that internals perceive their jobs to be less stressful than do externals (e.g. Gemmill and Heisler, 1972). Internals report fewer psychological strains resulting from job specificity, fewer somatic complaints as a result of role conflict, and are less likely to respond to normal organizational frustrations with aggression, sabotage or withdrawal than are externals (Anderson et al., 1977; Fusilier et al., 1987; Gemmill and Heisler, 1972; Marino and White, 1985; Storms and Spector, 1987).

There is a distinction in the literature on whether LOC is measured as a state or a trait variable (Parkes, 1984). Trait measures represent a generalized belief about the extent to
which important outcomes are controllable (Rotter, 1966). The measure used in the present study represents a state measure, or a subjective appraisal of control of the individual’s work situation and has demonstrated a relationship with important aspects of the individual’s work experience and wellbeing (Marcoulides and Sadri, 1995; Rees and Cooper, 1992; Sadri and Marcoulides, 1994a). Consequently, a link is suggested between this state measure of LOC and work stressors, but none with academic stressors (as shown in Figure 1).

Coping methods
Coping refers to behaviour that mediates the impact that societies have on their members through protecting people from being psychologically harmed by problematic social experience (Pearlin and Schooler, 1978). The present model suggests that there are likely to be individual differences in the methods that people adopt to cope with given situations, and that the coping alternatives which are perceived to be available to each person will affect his/her subsequent perception of stressful events. There is prior evidence that coping is an active, continuous force, shaping what will occur during subsequent coping episodes, and that individuals are relatively consistent in the coping strategies which they adopt (Cohen and Edwards, 1988; Dolan and White, 1986; Fleishman, 1984). Research also indicates that the mere existence of some forms of coping, such as social support networks (irrespective of whether or not they are used), serves to act as a buffer against stress (Cummings, 1990; House, 1981; Jayaratne et al., 1988).

In this study, six methods which people commonly adopt to cope with stress are measured:
1. social support (the degree to which individuals rely on others as a means of coping with stress);
2. task strategies (the degree to which individuals cope through strategies directed at reorganizing their work, such as planning ahead, setting priorities and delegating);
3. logic (coping through attempts to be rational and handle situations in an objective manner);
4. home and work relationship (the extent to which home is viewed as a refuge, and the existence of interests and activities that a person engages in outside of work);
5. time (the individual’s use of time, e.g., whether he/she deals with problems immediately rather than stalling);
involvement (the degree to which the individual forces himself/ herself to come to terms with reality, through strategies like recognizing his/ her limitations, being able to release tension, and concentrating on specific problems).

Stressors

The present study is concerned with both academic and occupational stressors. Four potential sources of academic stress and six sources of occupational stress are examined. As presented in Figure 1, it is suggested that academic and occupational stressors will negatively affect an individual’s health, grade point average and job satisfaction. In addition, it is believed that higher levels of academic stressors will lead to the experience of higher levels of occupational stress.

Occupational stressors

There are a range of environmental factors, in the workplace and at the work/non-work interface, which have been linked to stress-related outcomes (Cooper, 1986; Cooper and Marshall, 1976; Frew and Bruning, 1987; Jackson and Schuler, 1985; Van Sell et al., 1981). The present paper examines six potential sources of stress. These include stress arising from:

1. factors intrinsic to the job, e.g. having too much work to do, and having to work long hours;
2. a lack of power and influence, ambiguity, conflicting tasks and demands arising from multiple roles that the individual plays;
3. relationships with other people, such as coping with office politics, having to supervise others, lack of support from colleagues and lack of encouragement from superiors;
4. how valued people feel and whether or not they are satisfied with their opportunities for advancement at work;
5. the structure or climate of an organization, in terms of inadequate guidance from superiors, poor quality training and development programmes and evidence of discrimination or favouritism; and
6. the home-work interface, which may include things like having to take work home, or inability to forget about work when the individual is at home.

Academic stressors

There are a number of factors in the academic environment which have been linked to stress-related outcomes (Cahir and Morris, 1991; Fimian et al., 1989; Gadzella, 1994; Whitman et al., 1984). The present study examines four potential sources of academic stress. These include stress arising from:

1. frustrations which a student may experience, such as daily hassles which interrupt the attainment of goals or failures in accomplishing the goals that a student has set;
2. conflicts arising from different academic experiences, such as conflicts produced by two or more desirable alternatives, or conflicts when a goal had both positive and negative alternatives;
3. pressures as a result of competition, deadlines or interpersonal relationships;
4. changes owing to academic life which students may experience as unpleasant or disruptive.

Figure 1 shows that academic stressors are predicted to have a negative impact on relevant outcomes such as health and scholastic grade point average (GPA). A link is also predicted between academic stressors and occupational stressors, such that the experience of greater levels of academic stress will lead to greater experiences of stress at work. This causal flow is predicted because the subjects included in the present study are essentially students who work largely as a means to pay for their school and other living expenses. The vast majority view their jobs as temporary.

Outcomes

Most researchers studying the stress process typically categorize the consequences associated with the experience of stressful events under the headings of physiological, psychological and behavioural outcomes. The present study attempted to examine all three stress-related outcomes.

Ill health

The measure of ill health in this study is essentially a symptom checklist which examines physical and mental health. Physiological symptoms measured include headaches, indigestion, shortness of breath, increases in blood pressure and feelings of exhaustion. Psychological symptoms include an inability to think clearly, feeling restless and feelings of irritability. Behavioural symptoms measured include changes in eating, drinking, sleeping and smoking patterns.

As noted above, higher levels of stress have a negative impact on student learning through such mechanisms as an inability to perform school work, fears of failure and higher attrition rates (Ellis, 1969; Hirsch and Keniston, 1970; Hockey, 1979; Silver, 1968).
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Figure 1 shows a link between both work stress, academic stress and GPA. It is predicted that the higher the level of stress experienced, the lower will be the student’s GPA.

Job satisfaction

Five aspects of job satisfaction are included in the study. These include satisfaction with:
1. the extent to which one is valued and opportunities for growth;
2. aspects of the job itself (e.g. security);
3. organization design and structure;
4. organizational processes (e.g. supervision); and
5. relationships with others (e.g. peers, superiors, subordinates).

Method

Subjects

Data were collected from 247 college students employed in diverse companies in the Orange County and Los Angeles areas. All subjects were enrolled in either undergraduate or graduate courses at a major university in the southern California area. The response rate for the sample was approximately 95 per cent. Because the authors were interested in developing a general model that would link components of occupational and academic stress to outcomes, they attempted to sample a wide variety of students and organizations. The organizations varied along several important dimensions. In terms of output type, 37 per cent manufactured products, 59 per cent provided services and 4 per cent did both. The companies also ranged in size: 34 per cent of the sample worked for small companies (less than 50 employees); 25 per cent for medium-sized companies (50-250 employees); and 41 per cent for large companies (over 250 employees). In terms of ownership, 62 per cent were privately-owned firms and 38 per cent publicly owned. The main objective was profit for 85 per cent of the companies included here, while 15 per cent were non-profit organizations.

The students were 53 per cent male and 47 per cent female. The median age of the sample was 21-25 years at the time of data collection (66 per cent fell into this category). The majority (65 per cent) worked part-time, with a wide range of hours spent at work (52 per cent worked 16-30 hours per week; 32 per cent worked 31-45 hours; 10 per cent worked over 45 hours; and 6 per cent worked 0-15 hours per week).

Questionnaires

Multiple observed indicators were used to measure all of the variables included in the model as prescribed in the literature (e.g. Harris and Schaubroeck, 1990). All subjects completed adapted versions of the occupational stress indicator (OSI) and the student stress inventory (SSI) (see descriptions below). The questionnaires took approximately 40 minutes to complete.

SSI

The SSI has been shown to have excellent psychometric properties and is related to a range of occupations (Cooper and Marshall, 1976; Cooper et al., 1988; Kirkcaldy and Hodapp, 1989; Schuler, 1980). The OSI is made up of six questionnaires measuring different dimensions of stress: type A personality (eight items); locus of control (12 items); coping strategies (28 items); sources of pressure (61 items); job satisfaction (22 items); and current state of health (30 items). Descriptions of the observed variables grouped according to the constructs they are proposed to measure are provided in the Appendix. The observed variables are paraphrased from the original questionnaire used in the study (Cooper et al., 1988).

Analysis and results

Structural equation modelling (SEM) techniques are considered today to be a major component of applied multivariate analyses. In fact, it has been suggested that the development of SEM is perhaps the most important and influential statistical revolution to have recently occurred in the scientific arena (Cliff, 1983; Marcoulides and Schumacker, 1996). A structural model can be viewed as a guide that allows one to determine the relative strength of each variable included in explaining a desired set of outcomes. In its broadest sense, SEM is concerned with testing complex models of functional relationships between observed variables and latent variables. The functional relationships are described by parameters that indicate the magnitude of the effect (either direct or
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indirect) that independent variables have on dependent variables. Although there are currently a number of excellent computer packages available for the analysis of SEM, two stand apart from the rest in terms of popularity and widespread use: EQS (Bentler, 1994) and LISREL (Jöreskog and Sörbom, 1993).

The proposed model in this study was tested using LISREL VIII (Jöreskog and Sörbom, 1993). In the specification of the model, Lomax’s (1982) recommendations were followed: parameters relating reference observed variables to underlying constructs were constrained to equal one (1.0), and the corresponding error measurement parameters for those variables were fixed at zero (0.0).

In Table I and Figure 2, we present the LISREL parameter estimates of the proposed model. These parameter estimates are indices that represent the simultaneous contribution of each observed and latent variable to the overall model. While these estimates provide important information about the structural components of occupational and academic stress and their relationship to the outcome measures, they do not provide any indication of the assessment of the fit of the hypothesized model to the actual data. Since an a priori defined model was posited to be tested, primary interest is in the model fit. Once the model fit is determined, the significance of the various parameter estimates can be ascertained. Without a significant model fit, however, the model would have to be reconceptualized.

Table II presents the criteria describing the overall fit of the model. The coefficient of determination (COD) for the measurement model is 0.92, suggesting a relatively strong relationship between the observed variables and the latent variables included in the model. This coefficient may be considered as a measure of the reliability for the whole measurement model, indicating how well the observed variables jointly serve as instruments for measuring the latent variables. Assessment of fit may also be determined by the goodness-of-fit index (GFI) and the comparative fit index (CFI). It is generally recognized that values close to or above 0.90 indicate a good model fit. For this model the GFI is 0.92 and the CFI is 0.96, which indicate a reasonably good model fit. These indices are measures of the relative amount of variance and covariance in the data accounted for by the model under examination. In contrast, the root mean square (RMS) residual is a measure of the average unexplained variances and covariances in the model. This index should be close to zero if the model fits the data well. For this model, the RMS is 0.08, similarly indicating that very few of the variances and covariances are left unexplained.

The ratio of the chi-square to the degrees of freedom ($\chi^2/df$) can also be used to examine the fit of the model. It is generally recognized that a ratio of the chi-square that is less than 2 indicates a reasonable fit of the model. In this study the observed ratio is 1.36. Finally, parameter estimates with t-ratios that are greater than 2 are considered to provide evidence that the parameter is significantly different from zero and important to the proposed model. The estimates of the direct and indirect effects between variables in the model were tested through t-ratios (the ratio of the estimate to its standard error), and all were found to be significant ($p < 0.01$). Given the variety of tests that were used to assess the fit of the model, it is considered that the proposed model fairly accurately accounts for the variability observed in the data.

**Table I**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Construct</th>
<th>Estimate</th>
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<tr>
<td>Y1</td>
<td>Occupational stressors</td>
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<tr>
<td>Y2</td>
<td></td>
<td>0.96</td>
</tr>
<tr>
<td>Y3</td>
<td></td>
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<tr>
<td>Y4</td>
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<tr>
<td>Y5</td>
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<td>Y6</td>
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<td>Y7</td>
<td>Academic stressors</td>
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<td>Y8</td>
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<td>Y10</td>
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<td>Y13</td>
<td>Grade point average</td>
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<td>Y15</td>
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<td>Y16</td>
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<td>Coping strategies</td>
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Discussion

In this study we proposed a model of how personality, locus of control and the methods
which people adopt to cope with stress affect perceptions of academic and occupational stressors and, in turn, how they affect mental and physical health, grade point average, and job satisfaction. In this section we examine the degree to which our results are consistent with other research findings, and offer some thoughts on the implications of these findings for improving research and practice in the fields of education and management.

Based on the model presented in Figure 1, we aimed to test seven hypotheses through the present analysis. Our first hypothesis predicted that type A behaviour – expectations of control over the work environment and methods of coping – would directly affect perceptions of occupational stressors. This hypothesis was partly supported by our findings. As predicted, individuals reporting more type A behaviour experienced greater levels of occupational stress and those with less perceived control over their work environment (external state LOC) also experienced more occupational stress. However, we did not find that greater levels of coping led to lower experiences of occupational stress.

Second, we predicted that type A behaviour and the existence of coping mechanisms would directly affect perceptions of academic stressors. Again, this was partially supported through our findings. Individuals higher in type A behaviour reported higher levels of academic stress. However, higher levels of coping did not lead to lower experiences of academic stress for the present sample.

Third, we predicted that higher levels of occupational stress would lead to greater levels of mental and physical ill health, lower GPAs and lower levels of job satisfaction. Two of these relationships were supported by our findings. While higher levels of occupational stress were found to lead to more symptoms of ill health (such as inability to sleep, headaches, indigestion and feelings of anxiety) and lower job satisfaction, greater experiences of occupational stress did not lead to lower GPAs in this sample.

Our fourth hypothesis predicted that academic stressors would influence the experience
of occupational stressors and negatively affect health and GPA. These relationships were supported by our results. In fact, two of the strongest findings in this research were the influence of experiences of academic stress on experiences of stress at work (0.22) and the negative influence of student stress on health (0.32).

Fifth, we hypothesized that mental and physical ill health would be higher for individuals experiencing more academic and occupational stress, for type As, those with an external LOC and those who practised fewer coping mechanisms. The direction of these relationships was supported for all five of the predictor variables; however, type A behaviour was a very weak predictor of ill health in the present research (0.06). Academic stress was the highest predictor (0.32) followed by work stress (0.24) and external LOC (0.18).

Sixth, we predicted that GPA would be lower for individuals experiencing higher levels of academic and occupational stress. Academic stress did show a negative relationship with GPA (–0.18), while occupational stress was not found to affect GPA adversely.

Our seventh and final hypothesis was that job satisfaction would be lower for individuals experiencing more occupational stress, for type As, those with an external LOC and those who practised fewer coping mechanisms. All of our predictions were supported but, as with ill health, type A behaviour emerged as a weak predictor of job satisfaction for the present sample. The strongest predictor of job satisfaction was LOC (–0.29), followed by occupational stress (–0.24).

Stress-related outcomes have been viewed as either a function of maladaptive personal lifestyles or as a consequence of environmental factors (DeFrank and Cooper, 1987; Neale et al., 1992). The present study shows that stress is a function of both the individual and his/her environment. Thus, attempts to cope with the outcomes of stress need to focus on the environment as well as the individual.

For the present sample, the stressors encountered in the academic and occupational environments are the two strongest predictors of ill health. Our results show that the experience of academic stress is dysfunctional for students; it leads to experiences of distress in other aspects of their lives (such as their work), leads to lower levels of physical and mental health, and lower GPAs. This general pattern of findings is consistent with previous research which has demonstrated that students under high levels of stress learn less than those under moderate levels (Hockey, 1979; Silver, 1968), that school-related stress results in an inability to do school work and the fear of academic failure (Ellis, 1969), and that, as a consequence, many students (approximately 50 per cent of entering freshmen) do not finish college four years later (Hirsch and Keniston, 1970).

A number of environment-focused methods to help students cope with their academic stress were outlined earlier in this article. As indicated, such techniques might include reducing the ambiguity and confusion involved with being a new student by improving new student orientations and informing students in advance of the difficulties which they may face. For existing students, reduced environmental stress might be achieved through greater flexibility in core course requirements, expanding the role of faculty advisers, giving earlier and more frequent exams and de-emphasizing grades (Whitman et al., 1984). The present results show that all of the academic stressors measured here are dysfunctional for students (i.e. frustrations, conflicts, pressures and changes). Nevertheless, the two factors which load highest on the academic stress factor are frustrations and pressures. Reducing some of the pressures and frustrations experienced by students would assist in lowering their experiences of academic stress and, thereby, improve the quality of their academic lives.

Our results also show that lack of control over the work environment is dysfunctional – it leads to greater symptoms of ill health (0.18), higher perceptions of occupational stressors (0.19) and lower levels of job satisfaction (–0.29). The above-mentioned result also supports prior research findings into the stress process (e.g. Anderson et al., 1977; Fusilier et al., 1987; Gemmill and Heisler, 1972; Sadri and Marcoulides, 1994a; b; Sadri et al., 1996; Spector, 1987). We recommend that organizations attempt to give people more control over their work environments by providing extra information on relevant issues (such as assessment procedures, company policies and regulations and organizational change). Control over the work environment can also be enhanced by permitting employees to participate in decision making (e.g. developing work schedules collaboratively), providing greater job autonomy and empowering employees where possible. Prior studies have demonstrated that increasing the control which workers have over their environment results in positive individual and organizational outcomes (Jackson, 1983; Marcoulides and Heck, 1993; Pierce and Newstrom, 1983; Wall and Clegg, 1981).

Individual-focused methods to help students cope with their academic and occupational stress would include techniques designed to help students improve their coping skills and adapt their lifestyles. Improved
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observed results to groups of students who do not work and go to school at the same time may also be problematic. Finally, the majority of our measures are self-report indices and this opens up the possibility of bias in our findings. As such, any future research on models of this nature should include more behavioural indices such as medical records and work productivity. Nevertheless, the results presented in this study represent an initial step towards describing and evaluating important aspects of academic and occupational stress. Expanding on this beginning will be a profitable goal for future research in education and management.

References and further reading
Byrne, B.M. (1989), A Primer on LISREL, Springer-Verlag, New York, NY.


House, J.J. (1981), Work Stress and Social Support, Addison-Wesley, Reading, MA.


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Appendix: observed variables included in study

Type A behaviour (eight items – two subscales)
X1: style of behaviour, e.g. impatience when listening to another
X2: ambition, e.g. competitiveness

Locus of control (12 items – three subscales)
X3: control over organizational forces, e.g. importance of upper management
X4: control over management processes, e.g. influence of hard work on performance appraisals
X5: individual influence, e.g. belief in luck, chance, fate

Coping strategies (28 items – six subscales)
X6: social support, e.g. seeking advice from superiors
X7: task strategies, e.g. reorganizing work
X8: logic, e.g. attempting to approach problems objectively
X9: home and work relationship, e.g. activities outside work
X10: time management, e.g. forcing oneself to slow down
X11: involvement, e.g. recognizing one's limitations

Occupational stressors (61 items – six subscales)
Y1: factors intrinsic to the job, e.g. having too much to do
Y2: the managerial role, e.g. lack of power and influence
Y3: relationships with other people, e.g. having to supervise others
Y4: career and achievement, e.g. overpromotion
Y5: organizational structure and climate, e.g. inadequate guidance from superiors
Y6: home-work interface, e.g. having to take work home

Academic stressors (20 items – four subscales)
Y7: frustrations, e.g. delays in reaching goals
Y8: conflicts, e.g. choosing between two or more desirable alternatives
Y9: pressures, e.g. attempting to do too many things at one time
Y10: changes, e.g. a change which disrupts some preset goals

Job satisfaction (22 items – five subscales)
Y11: satisfaction with achievement, value and growth, e.g. how much one's efforts are valued
Y12: satisfaction with the job itself, e.g. job security
Y13: satisfaction with organizational design and structure, e.g. communication flow
Y14: satisfaction with organizational processes, e.g. style of supervision
Y15: satisfaction with personal relationships, e.g. peers

Current state of health (30 items – two subscales)
Y16: mental health, e.g. changes in self-confidence at work
Y17: physical health, e.g. sleeplessness
Y18: grade point average (GPA)