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**Occupational Stress in Academic Life:
A Study of Academics of Malaysian Public Universities**

**A Thesis Submitted in Fulfillment of the Requirement for the Degree of
Doctor of Philosophy at The University of Waikato, New Zealand**

by

MOHD KAMEL IDRIS

The University of Waikato

2009

DEDICATED

to

Allahyarham Dr Mohd Ashari Idris (Abang Yi),

and

Allahyarhamah Ramlah Mat Junoh (Mak Lah)

whom I loss during my struggle to complete this thesis.

AL-FATIHAH

**Occupational Stress in Academic Life:
A study on Academics of Malaysian Public Universities**

Mohd Kamel Idris

Abstract

Stress can lead to poor health and loss of productivity among employees across occupations. Stress does not only affect individuals but also organizations by causing work absence and staff turnover. Academics in Malaysian public universities are no exception. Due to the rapid developments in tertiary education, academics in Malaysian public universities are believed to be experiencing increased job demands that potentially lead to increased stress.

This study was carried out to examine: i) the direct effect of role stressors (i.e. role overload, role ambiguity and role conflict) on strain; ii) the direct effect of strain on the outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment); iii) the moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressors and strain; iv) the mediation effect of strain on the relationship between role stressors and strain; and v) the mediation effect of outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment) on the relationship between strain and intention to leave among those academics.

This study used a non-experimental two-wave panel design. Eleven of the 12 study variables were measured using pre-existing scales except for self-efficacy,

which was measured by items specially developed for this study. A longitudinal survey with a six-month time interval yielded 357 respondents (academics) at time 1 and 210 respondents at time 2. Data were analyzed using multiple regression, hierarchical regression, and structural equation modeling (SEM) to test for direct effects, moderation effects and mediation effects respectively.

The findings of this study indicate that academics who experienced increased levels of role stressors were more likely to have increased levels of strain. Subsequently, the strained academics were more likely to show higher levels of cynicism and lower levels of professional efficacy and organizational commitment. The predicted moderators (i.e organizational support, peer support, and self-efficacy) had no significant influence on the relationships between role stressors and strain. Mediation analyses consisted of two parts. In the first part, I found that strain strongly mediated the relationship between role ambiguity and outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment). In the subsequent mediation analysis, I found that cynicism and organizational commitment fully mediated the relationship between strain and intention to leave, but not professional efficacy.

ACKNOWLEDGEMENTS

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I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at the University of Waikato or other institutions.

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TABLES OF ABBREVIATIONS

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CFI	Comparative fit index
Cy	Cynicism
COR	Conservation of resources theory
d.f	Degrees of freedom
GFI	Goodness of fit index
GHQ12	12 items of General Health Questionnaire
ITL	Intention to leave
JDC	Job demand control model
OC	Organizational commitment
OS	Organizational support
PE	Professional efficacy
PS	Peer support
RA	Role ambiguity
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RMSEA	Root mean square error of approximation
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SEM	Structural equation modeling

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RC	Role conflict
RMSEA	Root mean square error of approximation
RO	Role overload
SEM	Structural equation modeling

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Stress is a complex multivariate process, resulting from a broad system of variables involving inputs, outputs and the mediating activities of appraisal and coping (Lazarus & Folkman, 1984). According to the transactional approach developed by Lazarus and colleagues, the stress process is dynamic, and is constantly changing as a result of the continual interplay between person and environment (Folkman & Lazarus, 1988; Lazarus & Folkman, 1984). The multidimensionality of stress is evidenced by the fact that it takes different forms, results from different factors and occurs in all types of environments.

Despite the positive function of a certain amount of stress on an employee, research has consistently demonstrated that excessive occupational stress has adverse effects for both physiological and psychological well being (Cooper & Cartwright, 1994). As a positive influence, stress can bring a sense of excitement in an individual and compel an individual to take actions that can result in improved performance. As a negative influence, it can result in an array of feelings such as rejection, anger and depression, which can lead to decreases in physical well being including headaches, elevated blood pressure and heart disease (Landsbergis, Schnall, Belkic, Baker, Schwartz, & Pickering, 2001). Equally, research indicates that elevated stress levels in an organization are associated with increased turnover, absenteeism, and low morale (Jackson, 1983; Geurts, Schaufeli, & Rutte, 1999). These phenomena have been reported among

numerous occupational groups (Cooper, 1984; Cooper, Cooper, & Eaken, 1988), including academics, who are the focus of the present thesis.

Academics have been reported as experiencing increased workloads, pressure to attract external funds and pressure to produce more research publications (Dua, 1994). Academics who are exposed to stress have shown multiple physiological and psychological consequences, such as having a distant attitude towards students, lack of commitment to teaching and research, and intention to quit their academic life (Gillespie, Walsh, Winefield, Dua, & Stough, 2001; Taris, Schreur, Silfhout, & Van Iersel, 2001). Stressed academics are more likely to withdraw themselves from their work, colleagues, and students (Taris et al., 2001).

1.2 Academic stress in the Malaysian context

This study focuses on stress among academics in Malaysian public universities. This subsection will explain the history of the Malaysian economy that has shaped the background of its higher education sector that may lead to stress among academics.

Since the independence of Malaysia in 1957, the Malaysian economy has been driven by the agricultural sector in terms of gross domestic product (GDP) contribution, export earnings and employment. However, with rapid economic transformation towards industrialization, the agricultural sector's share of GDP has declined substantially. For example, in 1975 that sector's share of GDP was 18.6 percent, but by 2005 it had shrunk to 7.9 percent (Ninth Malaysia Plan, 2006). In an effort to provide employment, the Malaysian government introduced an import substitution industrialization strategy. This is a trade and economic

policy based on the premise that a developing country should attempt to substitute products that it imports with local products (Kuruvilla, 1998). Because of Malaysia's relatively small domestic market, its import substituting strategy reached a saturation point. By 1968, this strategy was widely acknowledged to have been a failure, and this failure led to social riots in May 1969 (Anantaraman, 1997). Therefore, government chose to pursue an export-oriented development based largely on cheap labour in order to provide more employment. This low cost export-oriented strategy depends on foreign capital investment to revive the Malaysian manufacturing sector. It was an economic strategy that looked beyond existing export capacity and worked towards ensuring that new export capacities were generated. It was a successful strategy, and for a decade Malaysia experienced a nearly two-digit growth rate. Income per capita increased considerably from RM400.00 per month in 1970 to RM3500.00 in 2004 (The Malaysian Economy in Figures, 2005).

The liberalization of the Malaysian economy involved the education sector too. The higher education sector was given special attention so that it could provide enough qualified manpower to the manufacturing sector. The Eighth Malaysian Plan of 2001-2005 reported that the Malaysian government had set the objective to become a regional center of excellence for higher learning. The government encouraged foreign universities to set up branch campuses in Malaysia to cater to a huge number of applicants. The government provided incentives such as cheap land premiums for foreign universities to set up their branch campuses. In 2005 there were seventeen public universities, sixteen private universities and about 690 private colleges in Malaysia (Ministry of Higher Education, 2005).

Malaysian universities are divided into two types, public and private. Public universities receive funding from the government and are considered non-profit organizations. Of the seventeen public universities in Malaysia, five are categorized as teaching and research universities, while the others are teaching (only) universities. The five teaching and research universities were established more than thirty years ago while the others are relatively new. Some of the new universities were formerly university colleges that were upgraded to fully fledged universities following the liberalization of education policy (Ministry of Higher Education, 2005). Since public universities have not been able to offer enough places for school graduates, the Malaysian government encouraged the establishment of private universities and allowed foreign universities to set up branch campuses in Malaysia. In 1996, the Malaysian Parliament passed the Private Higher Educational Institutions Act (PHEIA) to allow the private sector to enter the higher education market in a more regulated way.

University education was established in Malaysia in 1949. The University of Malaya, the oldest university, was founded on October 8, 1949, to serve the needs for tertiary education. Since then, tertiary education has become important on the government agenda as it was identified as being closely related to the standard of living. In Malaysia, a public university is a state institution. The university and college staff are state employees and the buildings are state property. The Minister of Education appoints vice chancellors. As statutory bodies, public universities in Malaysia have been given autonomous control over their budgets and buildings.

In its commitment to human resources development, the government in the Third Outlined Perspective Plan (OPP3, 2001) introduced the concept of the

knowledge-based economy that would be the key factor for national competitiveness. The knowledge-based economy is based on the concept that the generation and utilization of knowledge contributes a significant part to economic growth and wealth creation (Mustapha & Abdullah, 2004). In this respect, higher education institutions are expected to play a greater role in creating, innovating, generating and implementing new ideas. The Third Malaysian Plan (3MP, 1976) stated that "The education and training system will be geared to equip youth with knowledge and skills necessary for their effective participation in the development of the country" (p. 398). The Malaysian government realized that R&D activities are crucial for national competitiveness. Therefore, the government increased grants to research institutions, including public universities, to encourage research and development activities. In the Eighth Malaysian Plan the government clearly expressed disappointment with the low productivity of research findings (Eighth Malaysian Plan, 2001).

In an effort to control the standard of public higher education institutions, the National Higher Education Council was formed in 1996. In 1997, the Ministry of Education launched the National Accreditation Authority to monitor the quality of both public and private higher education institutions. In an attempt to sustain high economic growth in the 1990s, the Malaysian government decided to speed up the production of its knowledge workers by increasing student enrolment in universities. However, there is evidence showing public universities are facing resource constraints such as a lack of lecture theatres, lecturers and student accommodation. The government has admitted these constraints and has often expressed its concern about the high turnover of academic staff in higher education institutions (Morris, Yaacob, & Wood, 2004). Morris et al. (2004)

found that the relative deprivation experienced by academics, due to perceived unfairness of the pay and promotional procedures, was the main factor causing high turnover among Malaysian academics. Although there is no precise statistic on turnover among academics in Malaysia, Kirkland (2006) noted that it is clearly substantial.

A thorough literature search uncovered few stress studies in Malaysia. The general stress studies that have been carried out recently concern antecedents and consequences of organizational politics as perceived by Malaysian employees (Poon, 2003), sources of stress among private sector managers (Manshor, Fontaine, & Choy, 2003), and attitudes towards pay and promotion among academic staff of a big Malaysian public university (Morris et al., 2004). Most of these studies have focused on general issues of stress such as support, organizational politics, and motivations and none of them focus on stress among academics.

Globally, literature indicates that there is a growing prevalence of academic stress and documents its adverse effects on the learning process (Winefield, 2000). Although there is an increasing interest in stress studies among academics globally, the majority of the studies are concentrated in Western countries (Gillespie et al., 2001; Gmelch & Burns, 1994; Sharpley, Reynolds, Acosta, & Dua, 1996; Taris et al., 2001; Winefield et al., 2003). Very few studies have been done in Asian countries, (e.g. Xiao, Zhu, Jian, Rong, Rong, Yi, 2000) and no stress study has been carried out on university academics in Malaysia. Therefore, more research is needed to understand the experience of stress among academic staff in the universities of developing countries. The findings of the

present study are expected to complement those of (mostly) Western studies and provide information on stress in a different cultural and economic environment.

1.3 Statement of the research problem

Recent global research on stress among academics indicates that the phenomenon of occupational stress in universities is widespread and increasing (Winefield, 2000). Work-related stress is of growing concern because it has significant implications for universities through academics' dissatisfaction, lowered productivity and lowered emotional and physical health (Dua, 1994). Stressed academics are a cost to a university in terms of absenteeism, tardiness and turnover. A higher level of stress among academics may affect the quality of graduates, research and publications.

Role-related demands, lack of resources, lack of support and insufficient time were frequently reported as sources of stress among academics (Gillespie et al., 2001). Winefield (2000) reported that stress among academics was widespread and alarming. Stressed academics were also reported as showing a wide range of reactions such as cynicism toward work, lack of organizational commitment and intention to leave the university (Taris et al., 2001).

It is generally believed that an optimum level of pressure on individuals at work will result in higher productivity (Dollard, Winefield, Winefield & de Jonge, 2000). The Yerkes-Dodson law implies that a certain level of stimulation improves performance (Powell, 2000). However, academics may now be experiencing demand levels that are not readily manageable, which may lead to stress. This is evidenced by a line of research that linked stress among academics to resource constraints (Dua, 1994; Gilliespie et al., 2001; Taris et al., 2001),

showing that academics who experience shortages of research funding or lack of research facilities run the risk of becoming exhausted and alienated from their work lives.

It is generally believed that moderate levels of stress can stimulate creativity and encourage effort, while excessive levels of stress are liable to inhibit creativity and reduce effort. Optimum levels of stress may encourage individuals to use their energy efficiently for maximum gain. However, stress that is above the optimum level will lead to lower productivity and this is a threat to task accomplishment. Therefore, the present study also investigated variables that can reduce strain. It was predicted that organizational support, peer support and self-efficacy would serve to buffer the strain-creating effects of job demands.

It is in the best interests of any organization to retain good employees by providing a good working environment. However, prior research has shown that academics were considering leaving their academic jobs (Kusku, 2003). So, a further aim of the present study was to investigate the actual effects of strain on academics' intention to leave. Thus, the hypotheses of the present research are centered on work-related factors that cause strain and its consequences. The present study focuses on three domains: the causes of stress (stressors); the experience of stress or strain; and the outcomes of strain.

1.4 Purpose of the research

The purpose of the present study was to examine the nature of occupational stress among Malaysian public university lecturers. I chose the public universities for two reasons. First, as these universities receive full financial support from the government, especially for research grants, the

government is expecting good products in the form of quality graduates and research outputs. Excellence in research is important in maintaining the academic quality and credibility of Malaysian tertiary education. Second, without undermining the quality of education provided by private universities in Malaysia, the public universities are strongly expected by the government to set the standard for tertiary education in Malaysia. Curriculum design and research focus in public university are expected to assist Malaysian government to maintain current development and to achieve developed country status in future.

1.5 Research issues

The research attempted to explore the following general questions:-

1. What are the possible job-related stressors that cause academics in Malaysian public universities to experience feelings of strain in the work place?
2. What are some possible moderators of the relationships between job-related stressors and the feeling of strain among academics in Malaysian public universities?
3. What are the outcomes of strain among academics in Malaysian public universities?

1.6 Relevance of the study

This study will contribute to knowledge in three ways: a) by providing new insights into the experience of stress among Malaysian public university academics; b) by replicating a model that was developed by previous studies (in western countries), which established the relationship between the antecedents

and consequences of stress; and c) by adopting a longitudinal method of data collection which is expected to provide a more rigorous test of the stress phenomenon among Malaysian public university academics.

As mentioned earlier, the study of academic stress among Malaysian public university lecturers is new. A number of previous stress studies have been carried out in the US, UK, European and Australian contexts on various aspects of stress problems, such as the dimensions of stress (Gmelch et al., 1984), the nature of job stressors (Dua, 1994), sources of stress (Gmelch & Burns, 1994), the effects of job stress on physical and psychological health (Sharpley et al., 1996), stress coping strategies (Abouserie, 1996), job strain and psychological withdrawal (Gillespie et al., 2001), the causes, consequences and moderators of stress (Taris et al., 2001) and psychological strain and job satisfaction (Winefield et al., 2003). Those studies might not be applicable to the Malaysian context because of the differences in cultural and economic backgrounds. In terms of cultural difference, academics in Malaysia may have different beliefs and values that influence their perception of the working environment. Malaysia as one of an Asian countries is collectivist nation, upholding values and beliefs very different from the individualist West (Hofstede, 1980). Therefore it is valuable to obtain data from this part of the world in order to contribute to the generalization of theories in occupational stress. In terms of economic difference, academics in Malaysia may operate with fewer resources when compared to their counterparts in Western countries. Lack of necessary resources such as state-of-the-art instruments, research grants and information technology are frequently reported phenomena among universities in developing countries (Papin-Ramcharan &

Dawe, 2006). Thus, the findings of this study will complement global stress studies previously carried out on academics by using Malaysian data.

This study also aimed to replicate the stress process model that involved antecedents and outcomes of stress based on the model of previous studies using a sample of Malaysian public university academics. Several models of the stress process have been offered, most notably by Lazarus (1966), Lazarus and Folkman, (1984), Parasuraman and Alutto (1984), and Edwards (1992). Research on these and other models has also identified a number of antecedents and consequences of stress (e.g. Lee & Ashforth, 1996; Leiter, 1993). Based on the above models, the stress model tested in the present study posits that lack of resources contributes to role stress and leads to strain. The feeling of strain subsequently will lead to psychological withdrawal, but moderators can play a role in reducing strain. It is best to view and analyze the stress process via a comprehensive stress model where the variables work together to give a better prediction of withdrawal behavior. I will outline the theoretical model and hypotheses in Chapter 3.

A further strength of the study was the use of a longitudinal research design. The major advantage is that looking at the stress changes that academics experience over time will help to explain the causes of stress among Malaysian public university academics. This longitudinal study will be able to provide a better opportunity to validate hypothesized causal relationships between variables. A longitudinal study also helps in the investigation of the effects of important covariates on these patterns and will be the basis for more effective interventions.

This thesis consists of six chapters (including this introductory chapter). Chapter 2 will review previous literature. Chapter 3 will present the theoretical model and hypotheses of the study. Chapter 4 describes the methodologies that were adopted to answer the research questions. Chapter 5 will present research findings. Finally, Chapter 6 will discuss the findings and their implications, and will also highlight potential issues for further research in this area.

CHAPTER 2

REVIEW OF THE LITERATURE

2.1 Introduction

The focus of this study is the occupational stress that arises from job-related factors within organizational contexts, specifically academic stress within universities in Malaysia. This chapter reviews three bodies of literature. The first is literature describing the sources of stress known as ‘stressors’. The second body of literature examines concepts that moderate or suppress the relationships between role stressors and strain. The third is an exploration of the outcomes of stress that have been commonly investigated in the literature.

2.2 Conceptualization of stress

Numerous models have been developed to explain the circumstances in which work-related factors lead to strain. In the process of arriving at a suitable model for this study, I reviewed four models described in the literature (Edward, 1996). They are Lazarus and Folkman’s transactional model (Lazarus & Folkman, 1984), Conservation of Resources Theory (COR; Hobfoll, 1989), Edwards’ cybernetic model (Edwards, 1992), and the job demand-control model (Karasek, 1979). These four models are among the most frequently used models in occupational stress studies (Edwards, 1996; Kenny, 2000).

Lazarus and Folkman (1984) defined psychological stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her

well-being” (p. 19). The transactional approach assumes that appraisals play a crucial role in the stress process, which is a dynamic process in which person and environment constantly interact. In any encounter, when an element in the environment is appraised by the individual as threatening and endangering their well-being, stress will occur. The theory also explains how an individual reacts to the threatening environment. Coping involves determining what can be done and, subsequently, attempting to alter the person-environment relationship and to regulate emotional distress (Lazarus & Folkman, 1984). If the encounter is successfully resolved, stress is reduced. Otherwise, the encounter will negatively affect the emotional, psychological and physiological condition of the individual.

The second model is Conservation of Resources Theory (COR; Hobfoll, 1989). COR theory predicts that stress and well-being depend on the availability and management of resources, which Hobfoll (1998) defined as "objects, conditions, personal characteristics and energies that are either themselves valued for survival, directly or indirectly, or that serve as means of achieving these ends” (p. 54). The key concepts of COR theory are loss, investment, gain, defence, and conservation of resources. According to the theory, resource loss is the principal ingredient in the stress process. The theory predicts that individuals strive to obtain and maintain resources they believe are important and have value to them. Where there is actual or perceived loss of resources, perceived threat of loss, or limited resources to meet demand, stress will occur (Wright & Hobfoll 2004). In the coping process, COR theory offers the concepts of defence and conservation of resources. The theory posits that people will strive to defend and conserve their available resources to prevent further losses so as to halt further stress. For example, internal resources such as such as locus of control and self-efficacy and

situational resources such as social support are coping resources that alleviate the perception of stress and prevent the onset of psychological strain (Westman & Etzion, 1995).

The third model is Edwards' Cybernetic model (Edwards, 1992). This model is derived from a person-environment fit perspective on individual adaptation and adjustment to stressful environment. The model states that stress develops when a discrepancy exists between the needs of the person and the supplies of the environment (e.g. job), or between the demands of the job and the abilities of the person to meet those demands. Demands include workload and job complexity. Edwards' Cybernetic model investigates how individual differences such as personality traits moderate the relationship between work environment and strain. According to this theoretical framework, a person's reaction to stressors is a function of the degree of fit between aspects of the social or physical environment and an individual's characteristics (Edwards, 1992). Individual characteristics such locus of control, hardiness and self-efficacy are central to explaining the relationship between stressor and strain. For example, an individual's doubt in their ability to carry out the assigned tasks may lead to the judgment of incompetence to accomplish the job, which in turn may lead to stress. Therefore, this model is valuable in portraying the moderating effect of individual characteristics on the relationship between demands of the job and strain.

Finally, Karasek's (1979) Job Demand-Control model (JDC) states that stress can be characterized by the combination of two workplace factors, job demands and job control. Job demands are the workload demands (particularly work overload and time pressure) put on the individual (Karasek, 1979). Karasek

(1979) defined job as an individual's authority to make his or her own decisions at the workplace. The perception of high work control buffers the negative effects of a stressful work situation on an individual's health and well-being. Karasek's model points to the function of work control that can reduce stress. According to this model, stress may occur when an individual is facing a role stressor such as lacking precise knowledge of the goal they have to attain (Karasek, 1979). The extent of participation in making decisions by organizational members was identified as a control element that could reduce role ambiguity and subsequently reduce stress (Agarwal & Ramaswami, 1993). The opportunity to take part in the decision-making process will provide more detailed information of the responsibilities and duties that they must assume. Clarity about goals and tasks puts them in a better position to plan and implement their work to accomplish the job (Lawler, 1992). Therefore, the JDC model contributes to the understanding of the concept of moderator as a variable that can influence the relationships between job demands and strain.

There is no concrete evidence to show the superiority of any of the four models. Even though differences exist in the approaches to explaining stress phenomena, there are three major similarities between the above models. All the theories explain stress through cognitive appraisal that describes a process in which a person evaluates a particular encounter with the environment, stressors that refer to the environmental factors that are perceived as threatening and influence responses, and responses which refer to the outcomes of the stress process. First, all of these stress theories focus, in part, on the appraisal process or perception. Perception is individual-based. This means that the stress process takes place primarily in an individual although individuals may share perceptions

of stressors which can lead to “stress contagion”. So appraisal arises from the personal characteristics of the individual. Second, all the theories point to the stressors or elements in the environment that are appraised by the individual as threats and obstacles that can cause the limitation or loss of something of value to them. Third, these theories point to an undesirable state of affairs where the individual fails to cope, leading to a feeling of strain.

Since the aim of the present study is mainly to investigate stress among academics resulting from work-related factors, I adopted a combination of the above models to provide the theoretical background of the study. The strength of the Lazarus model lies in its specification of the cognitive appraisal of the causes of stress as being elements in the environment that are perceived as exceeding the individual’s ability to cope. According to Heaney (1993), occupational stress research has predominantly adopted a transactional model, and an important aspect of this model is that the characteristics of the individual and the social environment are seen as moderators of the relationship between exposure to stressors and manifestation of strain.

In order to gain a better understanding of the effects of resources, I also incorporated Hobfoll’s conservation of resources theory (COR) and Edwards’ Cybernetic model. Internal resources (such as locus of control and self-efficacy) and situational resources (such as social support) are coping resources that alleviate the perception of stress and prevent the onset of psychological strain (Westman & Etzion, 1995). Finally, Karasek’s JDC model provides an explanation of the concept of job demands that are the workload demands put on individuals and control as resources (i.e. organizational support and peer support) to buffer the effects of role stressors on strain. In the present context these job

demands referred as role stressors and control takes the form of moderators such as self-efficacy and organizational support that help to alter the relationships between role stressors and strain. The above models enable a comprehensive examination of the stress process and the linkages between all elements in that process.

In conclusion, stress is conceptualized as a process occurring in an individual involving stressors that cause strain, which subsequently lead to several outcomes including cynicism, diminished professional efficacy, and diminished organizational commitment. In the process, internal and external resources play a role in moderating the relationships between stressors and strain. Thus, stress is the overall process that comprises a broad range of concepts. In order to avoid ambiguity, the terms ‘stressors’, ‘strains’ and ‘outcomes variables’ will be used in this thesis. Outcomes refer to ‘cynicism’, ‘professional efficacy’, ‘organizational commitment’ and ‘intention to leave’. Reviews of those concepts follow.

2.3 Stressors

Lazarus and Folkman (1984) defined a stressor as an element in the environment that is appraised by the individual as threatening their well-being. Their transactional model posits personal and situational factors as important in explaining the effect of stressors (Lazarus, 1999). The individual’s optimism about mastering the stressor may have an effect on individual appraisal and behaviour toward the stressors. Threatening environmental elements might take the form of barriers or obstacles that cause extra work, time pressure or monotonous conditions (Greiner, Ragland, Krause, Syme, & Fisher, 1997).

Factors that may hinder the individual's task performance in an organization might be their surrounding environment and poor job design. These elements then limit an individual's role performance at the workplace. Since the focus of this study is on the occupational stress of academics in a university setting, I defined stressors as resource constraints and job-related demands that may affect an academic's role fulfillment. These stressors fall into two categories: resource constraints, and role stressors consisting of role overload, role ambiguity and role conflict.

2.3.1 Resource constraints

Research on academic stress indicates that resources play a contributing role in academic stress (Dua, 1994; Gillespie et al., 2001; Taris et al., 2001). Literature also indicates that academics are operating under increasing resource constraints. For example, increased student: staff ratios and increased class sizes are viewed as efforts by university management to maximize resource utilization (Noble, 2000). With relatively greater constraints, the university has to manipulate existing resources, and that results in increased difficulties in carrying out tasks by academics.

Constraints can be defined as the forces that prevent individuals from doing what they desire (Frese & Zapf, 1994). Frese and Zapf (1994) noted that stress occurs when individuals are blocked in their efforts towards goal accomplishment. Based on this understanding, constraints could occur in two forms: (i) physical or work-related constraints, and (ii) social and psychological constraints. Physical or work-related constraints represent conditions within an organization that make it difficult for individuals to perform the roles that are

expected of them (Peters & O'Connor, 1980). Common elements of constraint within organizations are poor equipment, inadequate training, interruption from others and lack of human resources (Smith & Holdaway, 1995; Spector & Jex, 1998). Social and psychological constraints include conflicting goals, incongruent values and incompatible belief systems (Holden & Roberts, 2004). In terms of psychological constraints, stress may occur when individuals feel that they are not moving toward goal accomplishment or their personal work values differ from the group values.

An individual is said to fit into an organization when there is compatibility between the individual and the organizational roles and the capacity of the individual to adapt to job roles (James, 1999). With the help of resources, roles then provide motivation, gratification and social meaning to the role occupants. In the case of limited or depleted resources, stress will occur (Wright & Hobfoll, 2004). Despite the importance of resources in helping individuals to fulfill the demands that are placed on them, prior research has shown that resource constraints have affected academics. Lack of resources has been frequently reported in the stress studies involving academics (Dua, 1994; Gillespie et al., 2001; Sharpley et al., 1996; Taris et al., 2001). Diminishing resources were also identified as a primary barrier to carrying out an academic role efficiently (Gillespie et al., 2001), while Taris et al. (2001) found that those having few resources in addition to higher job demands experienced more strain and more frequently exhibited withdrawal behaviours. Excessive job demands threaten an individual's resources and therefore trigger strain. Bogler (1994) noted that in addition to the difficulties in securing research allocation, academic researchers have to face restrictions in producing research outcomes. An example of the

restriction is where a researcher who receives private funding in order to satisfy the demands of private funders has to focus on applied research instead of basic research. At the end of their research, the results may become the property of the funders (Bogler, 1994). The private funders can affect academics in terms of limiting their ability to carry out research with honesty, rigor, self-examination, respect for divergent views, and more importantly in publishing their research in academic journals (Nixon, Marks, Rowland, & Walker, 2001).

COR theory states that among others, money, good working conditions and teammates are important resources that help individuals to deal with work-life stressors (Hobfoll & Lilly, 1993). However, research has shown that academics experience a limited supply of needed resources. For example, Winefield (2000) concluded that academic work has become more stressful, not because of the nature of teaching and research, but more because of the threats that arise from the work environment such as decline in salaries, lack of tenure and limited funds for research and publication. In the pursuit of productivity, many universities have implemented a post-tenure review so as to excise ‘deadwood’ and non-performers (O’Meara, 2004). O’Meara (2004) posited that post-tenure review has threatened established faculty values such as autonomy, collegiality, integrity and creativity. To her, tenure is a resource for academics and it should be protected. In another study, Noble (2000) argued that the university inclination to use “freelance talent-for-hire”- adjunct faculty and untenured faculty – can be construed as a threat to permanent academics. This situation can be perceived by academics as unfair management practices. Moreover, academics are expected to perform a variety of tasks such as writing textbooks, publishing articles in journals, and supervising students’ projects.

These situations place academics under pressure and result in their having a lack of time to complete all expected tasks.

In conclusion, the literature indicates that demands and resources are antecedents of the feeling of strain (Lazarus & Folkman, 1984; Lee & Ashforth, 1993; Lee & Ashforth 1996; Leiter & Maslach, 1988). The major demands of work include role ambiguity, role conflict, stressful events, heavy workload, and pressure. Examples of resources include job enhancement opportunities, decision-making roles, reward, self esteem, self-efficacy, and social support (Lee & Ashforth, 1996; Sonnentag & Frese, 2002). A closer look at these antecedents revealed that demands serve as stronger correlates than resources (Lee & Ashforth, 1996). In comparing the effects of these antecedents, Lee and Ashforth's (1996) meta-analysis found that individuals were more sensitive to demands placed on them than to the resources received. The long term imbalance between demands and resources has the potential to create feelings of strain. The literature also indicates that organizational constraints such as resource scarcity, perceived resource distribution inequity and resource-based conflict, potentially create role pressure on academics. The present study explored three types of role pressure that have differing effects on the stress process. These will be discussed in the following sections.

2.3.2 Conceptualization of role pressure as a stressor

In addition to lack of resources, another source of strain in the workplace is role pressure. A role stressor can be defined as the pressure experienced by an individual as a result of organizational and job-specific factors in the form of demands and constraints that have been placed on them (Kahn, Wolfe, Quinn, &

Snoek, 1964). Role stress theory states that organizational factors generate role expectations among role senders, who then transmit these as role pressures to the person. Experienced and prolonged pressure can create symptoms of ill health (Kahn et al., 1964).

Role attributes have various effects on different individuals. People are willing to accept roles because they provide important psychological benefits such as status, ego gratification, and increased self-esteem (Williams & Alliger, 1994). However, there are also potential costs associated with the roles when individuals are not able to perform those roles as expected. The literature has established the relationships between role stressors and the feeling of strain (Lee & Ashforth, 1996; Fogarty, Singh, Rhoads, & Moore, 2000; Peiro, Gonzalez-Roma, Tordera & Manas, 2001; Posig & Kickul, 2003). According to Posig and Kickul (2003), strain occurs mainly because of fatigue that results from pressure to comply with the set of demands. Researchers agree that role stressors are made up of three separate but related constructs: role overload, role ambiguity and role conflict (Kahn, 1980; Kelloway & Barling, 1991; Peiro et al., 2001; Schaubroeck, Cotton & Jennings, 1989). Role overload exists when role expectations are greater than the individual's abilities and motivation to perform a task (Conley & Woosley, 2000; Schaubroeck et al., 1989; Spector & Jex, 1998). Role ambiguity arises when individuals do not have clear authority or knowledge about how to perform the assigned jobs (Ashforth & Lee, 1990; Ivancevich & Matteson, 1980; Rizzo, House & Lirtzman, 1970). Role conflict refers to incompatibility of expectations and demands associated with the role (Ashforth & Lee, 1990; Ivancevich & Matteson, 1980; Rizzo et al., 1970).

Role overload creates strain because of the pressure to do more work, having a heavy workload that interferes with work quality, and the feeling of not being able to finish a given task within a specified period of time (Conley & Woosley, 2000). The workload by itself is not harmful but rather the perception of threats related to the workload causes strain (Smith & Lazarus, 1990). In other words, perceptual process plays important role to determine the levels of strain among individuals. The organization may unintentionally put a heavy workload on its employees to increase productivity. However, in the long run, the perceived unbearable load causes the feeling of strain among those employees.

With regard to the experience of role stressors in academics, the literature provides clear evidence that academics are experiencing role overload (Dua, 1994; Gillespie et al., 2001; Taris et al., 2001). For example, academics have been described as having difficulty in completing their assigned jobs properly due to task overload (Dua, 1994; Gillespie et al., 2001; Gmelch et al., 1984; Sharpley et al., 1996). New academic members felt the pressure of role overload especially strongly and Lease (1999) found that role overload significantly related to strain. Being new in the job, they tend to have a low level of perceived ability to handle teaching and research. In his meta-analysis, Winefield (2000) concluded that increased stress levels in academics were associated with increased workloads and reduced rewards.

In the case of role ambiguity, individuals experience strain when they consistently do not have a clear picture about their work objectives, their co-workers' and supervisor's expectations of them, and the scope and responsibilities of their jobs (Ivancevich & Matteson, 1980). Role ambiguity may also be due to the complexity of the job, that is, the job contains many tasks. An individual has

to acquire multiple skills to perform all related tasks. Failure to acquire the required skills may increase role ambiguity. For example, PhD training can be considered necessary for an academic to become a supervisor to a PhD student, and failure to get this training may reduce his or her ability to face the complexity of teaching and research. Lee and Schular (1980) argued that leader behaviour that provides adequate communication mechanisms and knowledge of goal specificity allows subordinates to obtain information that will reduce the perception of role ambiguity and subsequently reduce strain. Whenever individuals do not have clear guidelines regarding their role's authority and responsibility, they will experience strain, become dissatisfied, and perform less effectively (Lee & Schular, 1980). Employees are concerned about their work roles and goals because their rewards are based on the accomplishment of the work goals and fulfillment of role expectations (Ashforth & Lee, 1990). When goals, roles and performance criteria are ambiguous, employees may perceive these ambiguities as threatening their interests. Subsequently, this will lead to the feeling of strain.

Prior research has identified role ambiguity as a significant problem among academics (Dua, 1994; Sharpley et al., 1996). Sharpley et al. (1996) reported that lack of regular feedback about how well academics were doing was the highest source of strain. Prior research has found that academics reporting receiving less regular feedback about their performance at work (Dua, 1994). Feedback is important to enable the academics to evaluate their performance on the job and how they are progressing in their effort toward task accomplishment. Since positive feedback may serve as reinforcement to the self-efficacy belief that leads to higher performance and less strain, academics who do not receive regular

feedback may experience considerable uncertainty about their role performance (Bandura & Locke, 2003). Higher ambiguity may also arise due to lack of clarity regarding how to juggle different academic activities of teaching, research and professional services that are necessary for the successful accomplishment of the academic role. Regular, formal, direct, verbal and written feedback from a supervisor and informal feedback throughout the year may reduce role ambiguity, which in turn reduces strain.

The third role stressor is role conflict. Role conflict occurs when individuals experience conflict between their capabilities and the defined role behaviour or have competing demands on their time and energy (Rizzo et al., 1970). For example, academics experience role conflict when they feel conflict between different demands such as teaching, research and student supervision. It becomes more difficult for an academic to perform each role successfully due to time constraints, lack of energy and incompatible behaviours among those demands (Kahn et al., 1964). For individuals who experience high levels of role conflict, the overextended pressure from incompatible work demands such as the differences in subordinate-superior working styles, interdependence of work groups and incompatible requests from two or more people will create the feeling of strain (Rizzo et al., 1970).

A line of stress studies has detected the experience of role conflict among academics (Dua, 1994; Gillespie et al., 2001; Sharpley et al., 1996; Taris et al., 2001). Academics experiencing role conflict include those who are without adequate resources, who have to bend a rule or policy, and who receive conflicting requests (Rizzo et al., 1970). For example, in order to accomplish assigned tasks with inadequate resources, academics are sometimes forced to

violate organizational policies and procedures. For example, in order to expedite the procurement of urgent materials to support research academics may purchase the required materials without going through the standard procurement process. In the case of receiving conflicting requests, some academics were reported as having to reconcile the tasks of teaching and research (Rowley, 1996). For example, the pressures put on academics to focus simultaneously on quality of teaching and research under higher demands but tighter resource constraints have created strain (Rowley, 1996). The combination of higher teaching loads, tighter resources and higher demands from various stakeholders, has the potential to produce greater strain.

The literature provides no concrete evidence in terms of the relative importance of the three role stressors in terms of their effects on strain. It may depend on the type of occupation or working environment. For example, a study of accounting professionals revealed that role ambiguity was a stronger correlate of strain than were role overload and role conflict (Forgarty, Singh, Rhoads, & Moore, 2000), while role conflict was more influential among sales people (Babakus, Cravens, Johnston, & Moncrief, 1999). Previous research has provided evidence of the different effects of different types of role stressors on strain (Badeian & Armenakis, 1981; Kemery, Badeian, Mossholder & Touliatos, 1985). As the academic job differs from other occupations in terms of professional networking, different tasks and conditions of work and reward, and different career paths, it is important to investigate the relative effects of role overload, role ambiguity and role conflict on strain among academics.

Research also indicates that role stressors have effects beyond strain. Other stress outcomes that have been frequently investigated include job

satisfaction, organizational commitment and intention to leave (Forgarty et al., 2000; Jackson & Schuler, 1985; Netemeyer, Johnston & Burton, 1990; O'Driscoll & Beehr, 2000). Jackson and Schuler (1985) concluded that role ambiguity and role conflict tend to be correlated negatively with job satisfaction. In the teaching profession, Conley and Woolsey (2000) found that role ambiguity and role conflict affect teachers' job satisfaction. Role stressors also have been mentioned as causes of decline in organizational commitment among employees (Forgarty et al., 2000). However, the literature indicates that the relationships between role stressors and intention to leave are rather indirect. Numerous studies have looked at intention to leave as an outcome of strain (Jackson, 1983), job satisfaction (Forgarty et al., 2000), and organizational commitment (Good, Sisler & Gentry, 1988; Johnston & Parasuraman, 1990). In other words, role stressors produce an intention to leave through mediator variables. The relationships between mediator variables and intention to leave will be discussed later.

In summary, it can be concluded that generally role stressors are associated with strain. Overload, ambiguity and conflict threaten an individual's capability to accomplish assigned tasks. Task accomplishment will bring wellness, whereas failures will lead to the feeling of strain. One aim of the present research was to investigate the relative contributions of role overload, role ambiguity, and role conflict to the experience of strain among academics.

2.4 Conceptualization of strain

Lee and Ashforth (1996) defined strain as affective, feeling states of the individual characterized by depleted emotional resources and lack of energy. There are many ways to explain the feeling of strain. Lazarus' transactional

theory uses the concept of strain to explain the pain which is experienced by individuals when environmental factors are perceived as overtaxing and exceeding their ability to cope with them (Lazarus & Folkman, 1984). In battles to fight strain, individuals adjust or manage their cognitions, emotions and behaviour to adapt to the perceived stressors. When there is a failure to handle these stressors, strain will occur. In order to avoid strain, individuals need resources to provide the strength to face the stressors. From the perspective of COR theory, strain occurs when individuals are lacking the power to obtain, retain and protect valued resources (Hobfoll, 1989). Over time, strained individuals feel that they no longer have necessary resources to predict, understand and control the stressors confronting them (Wright & Hobfoll, 2004).

Strain is associated with psychological and physiological reactions. Psychological strain refers to a particular form of emotional distress arising in response to a situation involving perceived threat to a person's well-being. Transactional models of stress emphasize the perceptual nature of stress-induced emotions (Cox, 1978; Folkman & Lazarus, 1988). Emotion can take positive and negative forms. Examples of positive emotions are happiness, pride, relief and love. Negative emotions include anger, fright, anxiety, shame, guilt, sadness, envy, jealousy and disgust (Smith & Lazarus, 1993). Psychological strain centers on negative emotions, though positive emotions often serve as breathers (a break from stress), sustainers and restorers (replenishing damaged resources) (Lazarus & Folkman, 1980).

Strain may also be manifested in terms of physiological or somatic disturbance. Somatic disturbances include stomach complaints, ill health, sleep disorders and complaints (DeLongis, Folkman & Lazarus, 1988). In more serious

manifestations, work-related stressors are associated with hypertension and cardiovascular disease (CVD) (Landsbergis et al., 2001). Previous research has established the relationship between stress and the neuroendocrine immune adaptive response (Lazarus & Folkman, 1986). Even though work-related stressors are associated with psychological and physiological strain, the present study focuses only on psychological strain as well as its antecedents and consequences.

In conclusion, I adopted the transactional model of Lazarus and Folkman (1984) to operationalize the feeling of strain among academics in Malaysian public universities. Recent studies on academics around the world indicated that strain was a common problem associated with job demands (Winefield, 2000). Research also points to role stressors (i.e. role overload, role ambiguity and role conflict) as antecedents to strain. In general, strain defined as a depletion of energy is a result of excessive role demands. The excessive demands that stem from difficult tasks that require high effort levels may diminish emotional and physical energy and subsequently lead to the feeling of strain. This situation would be expected to occur when academics work under such pressure. Even though academics were reported as having moderate levels of strain (Winefield, 2000), the effects of this strain on students may be substantial. For that reason, strain is regarded as an integral part of this study. It serves as a link between stressors and various outcomes.

2.5 Moderators of the stressor-strain relationship

This section explains moderators of stress, the factors that moderate the relationships between role stressors and strain. Because of the importance of

preventing strain from occurring or minimizing it, I reviewed the elements in the job environment and also personal resources that can help to reduce the effect of stressors on strain, called moderators of stress. A moderator is a third variable that affects the correlation between two other variables (Baron & Kenny, 1986). Thus, one aim of the present study was to investigate the process through which certain moderators reduce the relationships between role stressors and strain. There are many potential moderators reported in the literature, such as perceived organizational support (Rhoades, Eisenberger & Armeli, 2001), self-efficacy (Bandura, 1991; Cordes & Doherty, 1993, Shirom, 1989), hardiness (Kobasa, 1979), and locus of control (Foqua & Couture, 1986).

In the present study, the moderators included organizational support, peer support and self-efficacy. In order to provide a clear explanation of supports which function as moderators of stressor-strain relationship in academic life, social support was separated into organizational support and peer support. A number of studies separated social support into several facets of support, typically organizational support and peer support (e.g. Brough & Pears, 2004; Kaufmann & Beehr, 1986). Organizational support has been found to be significantly related to reduced employee strain (Rhoades et al., 2001). Also, Sorcinelli (1994) reported that a supportive collegial relationship was important for academics. With regard to self-efficacy, it is believed that a sense of strong capability to carry out academic task is crucial. This personal resource will serve as a moderator that helps academics to deal with role stressors. Thus, I included self-efficacy as a variable in the hypothesized model. The following subsection explains the moderators (i.e. organizational support, peer support and self-efficacy) and their effects on the relationships between role stressors and strain.

2.5.1 Perceived organizational support as a moderator

Organizational support theory, based on social exchange theory, emphasizes the importance of understanding employees' motivation and its relation to achievement of organizational goals (Aselage & Eisenberger, 2003). This theory assumes that employees increase their effort on behalf of the organization to the degree that the organization is perceived to be willing to reciprocate by providing valued resources and rewards. Specifically, perceived organizational support (POS) refers to the situation in which the organization is ready to reward the efforts made on its behalf and it also describes the organization's readiness to provide a sense of assurance that aid will be available when needed (Rhoades et al., 2001). Because of that, POS will create a felt obligation among individual employees to care about their organization's welfare and help the organization reach its objectives.

There are potential benefits for both organizations and individuals in taking proactive steps to eliminate or minimize strain at the workplace. Literature indicates that perceived organizational support moderates the relationship between stressors and strain (Rhoades et al., 2001; Rhoades & Eisenberger, 2002). Organizational support can take a number of different forms: emotional, instrumental and informational. These supports moderate the stressor-strain relationship because they provide important resources for individuals to perform their roles more effectively. For example, the perceived availability of support from management in terms of research and teaching facilities helps academics to carry out their teaching and research activities. Emotional support refers to the willingness of the organization to listen to and care about the needs of its employees, whereas instrumental support is often characterized by the availability

of tangible assistance and expertise in completing a job responsibility or task (Kaufmann & Beehr, 1986). Beehr (1985) illustrated that emotional support is seen as one possible coping resource which may serve to buffer the effect of stressors on strains. Emotional support from management, such as caring or listening sympathetically, helps to ease task difficulty (Fenlason & Beehr, 1994). Emotional support was found to be a significant predictor of cognitive function (Hillgard, 1980; Leventhal & Scherer, 1987) in which individuals who receive emotional support will be in a better position to perceive role stressors in a proper manner. Informational support refers to information that helps individuals to cope effectively with the problems on hand (House, 1981). For example, in the case of an individual experiencing role overload such as time pressure and a difficult task, assistance provided by the organization in terms of additional and up-to-date information might ease the tension being experienced by this person. These informational support which may take the forms of suggestions and ideas from top management about many different aspects of work have the potential to help employees to deal with role stressors.

A study of strain among teachers revealed that support from top management reduced perceptions of workload (van Dick & Wagner, 2001). The availability of new information and communication technologies (ICT) to support new ways of teaching and learning as well as to develop capabilities and programmes can help ease the burden on teachers. The perceived availability of support may influence the teacher to evaluate a stressor in a more positive way and accept it as a challenge rather than a problem. Therefore, it is in the best interest of organizations to take the initiative to intervene and prevent the development of strain right from the very beginning by providing necessary

resources and supports for their employees (Giga, Cooper, & Faragher, 2003). The perception of availability of instrumental, emotional, and informational support may help employees to redefine their perceptions of role stressors and bolster their ability to cope with the stressor.

According to Burke (2003), perceived organizational support results from the generalized beliefs of employees that their organization values their contribution and cares about their well-being. Antecedents of perceived organizational support include employees' perceptions of the ability to make decisions, fulfill their needs, and availability of rewards (Rhoades et al., 2001). In other words, the ability of organizations to provide resources and treatment such as fairness of policies and procedures, supervisor support, organizational rewards, and job conditions were identified as important factors to boost employees' confidence in their organizations (Rhoades & Eisenberger, 2002). The support elements include perception of security, mutual interest, skills and abilities, guidance, assistance in any circumstances and nurturing for well-being (Russell, Altmaier, & Van Velzen, 1987). Harvey and colleagues noted that employees who believe that their organizations care for their well-being were less affected by role overload (Harvey, Kelloway, & Duncan-Leiper, 2003). This perceived organizational support serves to alleviate the negative evaluation by individuals that might follow from high job demands so that the perception of threat from high workload will be reduced. Furthermore, management credibility in providing support and rewards when necessary helps the individuals to see role overload as a challenge in which the accomplishment of the task will bring rewards and recognitions.

Academics also need organizational support to persist in the face of difficulties at work. Support that is perceived by academics as fair and adequate will create a sense of equity in the exchange relationship with their universities. Prior research has shown that perceived lack of organizational support is related to strain among academics. For example, Sharpley et al. (1996) reported that “lack of equipment and/or infrastructure support” (page 81) was revealed as being among the important stressors for university staff at a large Australian university. Good infrastructural support will ease the difficulty of delivering lectures and carrying out research activities. Academics will then perceive the university as being caring and responsible for their well-being.

Despite the great emphasis given to the research component of academic tasks, literature indicates that top management does not really provide enough facilities for research activities. For example, Van Staden and colleagues found that the main cause of difficulty in planning and executing research activities among academics was reported to be a perceived lack of departmental support, guidance and recognition for research (Van Staden, Boon, & Dennill, 2001). Organizational support in that study referred to technical/statistical, software, research assistants and sponsors. The perceived availability of these instrumental supports provides motivation to face the complexity of research and then reduce strain.

In conclusion, job demands such as role overload, role ambiguity and role conflict have detrimental effects on strain, particularly when there is lack of support from the organization to deal with the demands (Karasek, 1979; Theorell & Karasek, 1996). The perceived availability of support from the organization may have motivational potential in which a difficult task may be perceived as

being easier (Rhoades & Eisenberger, 2002), which in turn reduces the feeling of strain. Based on the explanation above, I therefore hypothesized that perceived organizational support would moderate the relationships between role stressors and strain. Specific hypotheses concerning moderation effects will be outlined in Chapter 3.

2.5.2 Peer support as a moderator

Peer support can be defined as helping relationships regarding work-related matters (Price, 1997). The helping relationship refers to perceived friendly and supportive environment that result from peer cohesion. Peer support takes the forms of emotional, instrumental, and informational support, which are important to protect an individual's health and well-being (Frese & Zapf, 1994). In the interaction process, teammates provide useful insight into how to do one's job or how to approach particular tasks in the organization.

There is evidence of a buffering effect of support on strain as well as a direct effect (Cohen & Wills, 1985; van Vegchel, de Jonge, Soderfeldt, Dormann, & Schaufeli, 2004). The buffering model of support posits that support buffers a person from the potentially adverse effects of stressors. In other words, support reduces the impact of stressors on strain. In contrast, the direct effect model of support on strain proposes that support will reduce strain irrespective of the levels of stressors (Cohen & Wills, 1985). The perceived availability of support from colleagues provides individuals with positive feelings, such as a sense of self-worth and confidence that help them to avoid negative experiences (Thoits, 1983).

Empirically, peer support has been found useful in helping the individual to buffer the effects of stressors on strain. Van Vegchel et al. (2004) found that support from coworkers buffered the emotional exhaustion that resulted from high emotional demands. Russell et al. (1987) found that a reliable co-worker who the stressed person can turn for assistance in an emergency emerged as an important source of support in relation to feelings of cynicism. These co-workers may provide emotional and informational support to help the stressed person in defining, understanding, and coping with job demands (Cohen & Wills, 1985), leading the job holder to gain a sense of attachment to the group and also to the organization as a whole. Bliese and Britt (2001) found that positive social environment at the workplace moderated the relationship between job stressors and strain. The positive social environment that is characterized by the sense of security and trust, effective communication, and positive self-regards is conducive for peer support to work well.

With regard to the function of peer support to academics, research indicates that peers help academics to deal with role stressors and subsequently reduce the feeling of strain. For example, Neumann and Finaly-Neumann (1990) found that support from colleagues and supervisors made the research work easier among faculty, which then led to increased research performance. Teamwork and a mutually agreed research mission and agenda were identified as the most useful measures to cope with stress resulting from research work (Graham, 1989). Van Staden et al. (2001) posited that it is important to create a thinking environment with colleagues and other academics concerning academic issues. Van Staden et al. (2001) also found that research assistants, co-authors, and students were viewed as important sources of motivation to persist during difficult times.

A study by Van Emmerik and colleagues provides useful insight into the role of peer support on stressor-strain relationships. A closer look at the functions of support for academic staff at a Dutch university revealed that socio-emotional assistance was more important than practical assistance to buffer the effect of unsafe working conditions and subsequently reduce strain (Van Emmerik, Euwema, & Bakker, 2007). Colleagues might help the academic to identify the probable sources of pressure, provide them with practical assistance and, most importantly, provide encouragement to endure in the face of high demands and limited resources. It is logical that maintaining self-esteem is important for individuals. Therefore, academics need emotional assistance to be able to perform the task themselves. The emotional assistance from colleagues can serve to replenish the depleting emotional energy and can keep individuals moving to complete the task.

However, support does not always bring positive effects. Support can increase the relationship between stressor and strain rather than decrease it (Kaufmann & Beehr, 1986), a phenomenon referred to as “reverse buffering”. In other words, individuals who receive high support experience higher levels of strain as compared to individuals who receive low support. One possible reason is that the direct effect of support on strain that cause the stronger relationships between stressors and strain. Other possibility is individuals do not receive the right kind of support that they need. LaRocco and colleagues suggested that in order to be effective, support must be needed by individuals (LaRocco, House & French, 1980). Prior research indicated that individuals responded negatively to support that was not needed or desired (Deelstra, Peeters, & Schaufeli, 2003). Deelstra et al. (2003) explained that the threat-to-self-esteem served as a reason

for this negative response. It seems that, in normal situations, people want to be proud of their own abilities. Individuals may perceive themselves as incapable as a result of high levels of instrumental support from others when it is highly important for them to perform tasks independently.

Even though team membership has proved its usefulness in handling stress, prior research has shown that academics report not receiving enough support from colleagues. For example, in a recent study on satisfaction among academics and administrative staff in Turkish universities, Kusu (2003) revealed that academics were not content with their colleagues with respect to cooperation and interest in their academic activities. These academics were experiencing perceived competition from their colleagues instead of cooperation. For example, Gmelch and Burn (1994) reported that conflicts among academics caused stress among department chairpersons. Also, the perceived inequity of the exchange relationship with one's colleagues was found to be an important determinant of strain (Leiter & Maslach, 1988; Schaufeli, Van Dierendonck, & Van Gorp, 1996). To a certain extent, poor relationships with colleagues can cause academics to withdraw from the job and organization (Taris et al., 2001).

In conclusion, peer support in its interactions with role stressors either through emotional, instrumental or informational support, is expected to be beneficial to reduce strain. At the same time peers support is also expected to be directly related to strain. Based on the reasons above, I included peer support as a moderator of relationships between role stressors and strain. Further explanation of the moderation effect will be outlined in Chapter 3.

2.5.3 Self-efficacy as a moderator

Self-efficacy serves as a moderator of stressors-strain relationships because it can induce a perception of control over stressors (Bandura & Locke, 2003) and the ability to perform the given tasks (Appelbaum & Hare, 1996). When confronted with a stressor, individuals will rely on confidence in their capabilities to make an appropriate response (Schaubroeck & Merritt, 1997). According to Schafer (2000), the interpretation of stressors, not the stressors themselves, causes strain. This notion is in line with the basic assumption of Lazarus's transactional model, in which subjective perception and appraisal mediate the relationships between environmental demands and individuals' stress responses (van Dick & Wagner, 2001). It is clear that self-efficacy can influence cognition and help individuals to persevere in a stressful situation. In brief, self-efficacy can reduce the effect of role stressor on strain in three ways: a) by inducing a feeling of control over stressors, b) creating an overall feeling of mastery, and c) leading to positive evaluations of situations.

Even though strong evidence points to the moderating effect of self-efficacy, some disagreement still exists when research also indicates that self-efficacy directly related to strain. There are researchers who regard self-efficacy as a moderator of stress (Jex & Bliese, 1999; Jex, Bliese, Buzzell, & Primeau, 2001; Jex & Gudanowski, 1992). For instance, Jex and Bliese (1999) found that self-efficacy moderated the relationships between work overload and some consequences of strain such as organizational commitment and intention to leave. The effects of self-efficacy in handling the stressors would be stronger in the presence of high levels of attempts made by individuals to remove or circumvent the perceived stressor (Jex & Bliese, 1999). Individuals with high self-efficacy

will put extra effort into facing the stressor by actively redefining the problems, seeking more information, and seeking organizational and peer support. For example, in the case of perceptions of role ambiguity as a stressor, proactive coping individuals would seek further clarification of what was expected of them (Jex et al., 2001). Over time, this active coping will become a stable trait that may enable them to face other stressors more successfully.

As explained earlier, resources include objects, conditions and personal resources. Self-efficacy is considered to be a personal resource that can buffer the effect of a stressor on strain. Lazarus's transactional model also implies the moderation effect of self-efficacy on stressor-strain relationship. Lazarus (1999) points to the function of personal and situational resources that help individuals to reevaluate the stressors and reduce their effects on strain. The availability of internal and situational resources such as self-efficacy and social support can contribute to positive emotions. Even though psychological stress centers on negative emotions, positive emotions often serve as breathers, sustainers and restorers (Lazarus & Folkman 1980). In other words, positive emotions help the individual to re-evaluate the stressor positively in order to reduce its impact. Positive emotions also help the individual to develop their confidence to replenish the damaged resource. Self-efficacy as a sense of confidence can be construed as a positive emotional state.

There are also studies that point to the direct effect of self-efficacy on strain (Evers, Brouwers, & Tomic, 2002; Greenglass & Burke, 2002; Kalimo, Pahkin, & Mutanen, 2003; Wright & Cropanzano, 1998). Evers et al. (2002) found that self-efficacy beliefs among teachers were significantly and negatively related to strain and cynicism, and positively related to personal accomplishment.

Greenglass and Burke (2002) also found that self-efficacy among medical service workers was more likely to contribute to professional efficacy. The perception of low self-efficacy puts the individual at risk of increased threat of the danger of failure. Thus, the feeling of inability to perform is strongly related to the feeling of reduced professional efficacy.

To conclude, I regard self-efficacy as playing a role in moderating the relationships between role stressors and strain as well as having a direct effect on strain. During the appraisal process, individuals may receive encouragement from others to boost their confidence and provide a sense of ability to deal with the stressor that helps them to accomplish the given tasks (Appelbaum & Hare, 1996). Successful efforts in dealing with the stressor develop a sense of mastery. The sense of mastery helps these individuals to perceive the stressor as something within their control or that can be eliminated (Jex et al., 2001). Over time, these individuals with a strong belief in their ability to accomplish the assigned task will invest more effort and will persist longer than those low in self-efficacy, especially when they can see the benefits of accomplishing the given task.

Unfortunately, only few studies examined the effect of self-efficacy among academics. In a study of perceived self-efficacy and productivity in carrying out scientific research among academics, Vrugt and Koenis (2002) found that prior publications increased the perceived ability to produce more publications in the future. Neumann and Finaly-Neumann (1990) noted that psychological studies show that research productivity can be explained by the function of personal characteristics such as intelligence, motivation and other personality traits. This seems to imply that personality characteristics in which self-efficacy is one of them interact with job demands to increase research

productivity among academics. That is, in addition to organizational and peer support, the individual academic needs personal resources such as self-efficacy to overcome role stressors that arise in the workplace. Further explanation of the moderation effect of self-efficacy on the relationships between role stressors and strain will be given in Chapter 3.

In summary, for the present research I hypothesized that organizational support, peer support and self-efficacy serve as moderators of the relationships between role stressors and strain. The transactional model developed for the present research (outlined in Chapter 3) posits that the relationships between role stressors and strain will differ depending on the level of support an individual can obtain, and the level of self-efficacy an individual has acquired.

2.6 Outcomes of strain

This section describes four outcomes of strain which were examined in the present research: cynicism, professional efficacy, organizational commitment, and intention to leave. Numerous studies have looked at these four aspects of stress as outcomes of the feeling of strain (Schaufeli, Leiter, Maslach, & Jackson, 1996). However, only a few studies have been done on academics (e.g. Taris et al. 2001). Since there have been few studies investigating the outcomes of strain among academics, the present study was developed to fill the shortfall.

2.6.1 Cynicism

Schaufeli et al. (1996) defined cynicism towards work as a feeling of indifference or a distant attitude towards one's work in general. A prolonged exposure to certain stressors will result in strain. Subsequently, individuals may develop cynicism as a response to strain. Over time, these individuals may

generalize this negative feeling toward all individuals around them, their jobs and their organization. Highly cynical people tend to avoid voluntary involvement in interpersonal relationships and organizational activities. In the original Maslach burnout model (Maslach & Jackson, 1986), the concept of cynicism was referred to as depersonalization. Since depersonalization applies most to human service workers, this concept was later broadened to cynicism, which can be applied to a variety of occupations (Schaufeli et al., 1996).

Cynicism is considered a dysfunctional mode of coping with the feeling of strain in which individuals distance themselves emotionally from work (Lee & Ashforth, 1993). As a result of prolonged and severe strain, workers develop emotional callousness and become cynical toward work, peers, clients, and the organization as a whole (Cordes & Dougherty, 1993). This reaction may lead to lower performance and other negative consequences, such as lack of commitment and turnover intention. From the transactional perspective, a cynical attitude occurs when the efforts-reward relationship between an employee and organization is perceived as being inequitable. Taris and colleagues reported that employees who perceived imbalance between investments and outcomes were more likely to report high levels of cynicism (Taris, Kalimo, & Schaufeli, 2002).

With regard to cynicism's antecedents, there are conflicting views about the effects of environmental demands, resource constraints, role pressures, organizational support, peer support and self-efficacy on cynicism. Based on the Job Demand-Control-Support model, Bakker and colleagues concluded that cynicism was better predicted by lack of job resources than by job demands per se (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003). Job resources that take the form of physical, psychological and social assistance are important in

achieving work goals, reducing job demand and stimulating personal growth. Therefore, the lack of such resources will have a detrimental effect on individual performance, which in turn will result in a feeling emotional detachment and personal disengagement at work (cynicism). Prior research has demonstrated this notion (Lee & Ashforth, 1996; Leiter, 1993). Research based on COR theory has illustrated that lack of resources, rather than job demands per se, lead to higher cynicism. For example, Greenglass and Burke (2002) found that loss of valued resources (e.g. job security) was directly related to cynicism among hospital workers. Job security was considered a valued resource because a sense of security provides positive emotions and put employees in a better position to perform their tasks. Cynicism also can develop when a person feels that his or her efforts to improve job performance do not lead to any changes. In this situation, cynicism can be associated with reduced self-efficacy.

In the university setting, academics have to balance the different tasks of teaching, conducting research and providing professional services. Academic cynicism refers to the feeling of indifference and development of a callous attitude toward students, co-workers and work as a whole. Academics may think that students have taken much of their time from research or they may perceive that relationships with colleagues contribute to their fatigue. For example, academics who do not receive support during stressful encounter with job demands may blame the unavailability of support that cause strain and subsequently they tend to avoid interpersonal relationships with their colleagues. Moreover, the perception of limited time for research may be because of the perceived importance of research outputs as a precondition for promotion and tenure. Taris et al. (2001) have shown that relationships with one's colleagues

were the main cause of cynicism among Dutch university staff. They noted that colleagues who were incompetent and who did not adhere to mutual decision and agreement have caused them to withdrawal psychologically from the jobs. This is consistent with Dua (1994), who found that stress due to work politics and interpersonal relationships at work was associated with almost all measures of health and job dissatisfaction. Reciprocally, cynical academics can also damage relationships with their colleagues. Greenglass and Julkunen (1989) suggested that a highly cynical person may be less receptive to receiving help from others or giving help to others. The feeling of indifference and a distant attitude toward colleagues may lead to social isolation. This syndrome may also result in a strong intention to leave the job and even actual turnover (Maslach, Schaufeli, & Leiter, 2001).

2.6.2 Professional Efficacy

Professional efficacy refers to employees' expectations of continued effectiveness at work (Schaufeli et al., 1996). An individual with low professional efficacy does not have a positive opinion of their work performance (Evers & Tomic, 2003). It has been found that people suffering from burnout appeared to be less effective in their daily work, and work performance suffers because of negative work attitudes and behavior (Schaufeli, Maslach, & Marek, 1993). The negative opinion about past performance can influence their continuing effort and then reduce productivity and performance. Given the fact that individual reward is based on their performance, it is crucial to investigate the professional efficacy through occupational stress studies.

Professional efficacy has been largely associated with various personality dimensions such as self-efficacy (Bandura, 1991; Cordes & Doherty, 1993, Shirom, 1989), hardiness (Kobasa, 1979), and locus of control (Folqued & Couture, 1986). The essential distinction between professional efficacy and self-efficacy is that professional efficacy is a measure of general confidence in one's ability to perform the job (Schaufeli et al., 1996), whereas self-efficacy refers to the perception of personal ability to perform specific component of the job (Schwarzer & Schmitz, 2005). As documented by Leiter (1992), low self-efficacy is a cause of reduced professional efficacy. In this context, individuals with low self-efficacy can not accomplish the given tasks. The feeling of competence that is a core element of professional efficacy will be lower. Bandura (1997) showed that employees with high levels of self-efficacy persisted better in challenging tasks and tasks that involve responsibility. Cordes and Doherty (1993) suggested that low self-efficacy tends to make one feel incompetent to accomplish the given task, which would contribute to a low level of professional efficacy. The mastery experience that is normally a result of previous task accomplishment will strengthen self-efficacy beliefs (Bandura, 1997). With strong self-efficacy beliefs, individuals will be less fearful, less anxious and less tense, leading to increased levels of the feeling of competence at work. Kobasa (1979) proposed that individuals who possess a 'hardy personality' experience and respond to stressors in a more adaptive and effective way. Hsieh et al. (2004) found that levels of hardiness were positively correlated with professional efficacy. These empirical findings seem to suggest that professional efficacy is associated with those personality dimensions such as locus of control and self-esteem.

With regard to the outcomes professional efficacy, research has not yet established the relationship between professional efficacy and intention to leave. Some studies have failed to find a significant relationship between reduced professional efficacy and intentions to leave (Fogarty et al., 2000; Huang, Chi, James, Hao, & James, 2003; Lingard, 2003). Theoretically, individuals who have the feeling of reduced professional efficacy may perceive that all effort repeatedly fails to produce positive results, so they plan to leave the job (Maslach, 1982). However, previous studies have shown that the intention to leave was not related to actual turnover (e.g. Seigall & McDonald, 2004; Somers & Birnbaum, 2000). This is bad for organizations if employees who lack confidence in themselves are still holding their jobs. Goodman and Boss (2002) reported that a large percentage (84%) of those who experience low levels of professional efficacy remained in their position. Kusku (2003) reported that only one quarter (24.8%) of those intending to leave indicated that they were actively looking for a new job. The process of looking for another job outside the organization can be construed as a loss in productivity (Siegall & McDonald, 2004).

People with low self-efficacy tend to have pessimistic thoughts about their performance and professional efficacy (Bandura, 1997). Thus, I anticipated that self-efficacy would be important antecedent of professional efficacy for academics. As Maslach and Leiter (1997) pointed out, individuals experiencing reduced professional efficacy tend to disregard past performance and no longer feel they are able to make a difference through their work. This phenomenon has the potential to become a threat to the performance of academics. Therefore, introducing self-efficacy a moderator is important to investigate the role of personal variable that influence the level of strain or that influence the

relationships between role stressors and strain. This prior process is expected to determine the levels of professional efficacy among academics.

In summary, when exposed to continually high demand but limited resources, academics will experience role pressure. Overextended exposure to this pressure and failure to use internal resources (self-efficacy) and situational resources (supports) will cause strain to occur. In their effort to reduce the feeling of strain, academics tend to have the feeling of low levels of professional efficacy. In other words, strain reduces professional efficacy when academics are unable to perform academic tasks such as carrying out research and publishing journal articles since these tasks are part of their professional role.

2.6.3 Organizational commitment

Organizational commitment is defined as the relative strength of an individual's identification with, and involvement in, a particular organization (Mowday, Steers, & Porter, 1979). Allen and Meyer (1996) defined organizational commitment as consisting of three separate concepts: affective commitment, continuance commitment, and normative commitment. Affective commitment refers to feelings of belonging and a sense of attachment to the organization (Meyer & Allen, 1991). Individuals with a strong affective commitment strongly identify with the goals of the organization and desire to remain a part of the organization. Continuance commitment relates to the perceived costs of leaving the organization, including a perceived lack of alternatives as well as material benefits in staying (Meyer & Allen, 1991). Normative commitment is concerned with employees' feelings of obligation to

remain with an organization (Meyer & Allen, 1991). The three separate concepts have their own contribution to employees' engagement with their organization.

Rhoades & Eisenberger (2002) found that among the three components of Meyer and Allen's (1991) construct of commitment, affective commitment prevails as an important component of individuals' commitment toward their organization. Meyer and Allen (1997) illustrated that work experiences such as organizational rewards, procedural justice, and supervisor support have strong associations with affective commitment. Employees' belief that the organization values their contributions and cares about their well-being increases their affective commitment (Rhoades et al., 2001). In another study to identify the antecedents of affective commitment, Agarwal and Ramaswami (1993) found that role ambiguity and role conflict were related negatively to affective commitment. Role ambiguity reduces affective commitment because its presence clouds the perceived linkage between the individual's role and the attainment of organizational goals. Role conflict reduces affective commitment because its presence interferes with the individual's identification with the organization and willingness to exert considerable effort on behalf of the organization (Agarwal & Ramaswami, 1993). High levels of experienced role conflict may increase the possibility of violation of organizational rules and procedure as individuals use their discretion to accomplish the given tasks. Therefore, given that role ambiguity and role conflict are related to organizational commitment and also related to strain, it was anticipated in this research that strain will mediate the relationships between role stressors and affective organizational commitment.

There is rich empirical evidence showing relationships between affective organizational commitment and intention to leave (Mor Barak et al., 2001;

Rhoades et al., 2001; Wasti, 2003). Affective commitment describes an individual's emotional state toward their organization, whereas intention to leave represents individual's decision to leave his or her organization. In other words, affectively committed employees are more likely to have positive feelings towards their organization, while those with a lack of affective commitment tend to leave their organizations. Moreover, affectively committed employees are more likely to be motivated because they are involved with organizational activities. However, constant exposure to strain may alienate these employees from organizational activities. Over time they may distance and separate themselves from their job and organization. The feeling of detachment has been found to predict intention to leave and actual turnover (Mathieu & Zajac, 1990; Mowday et al., 1982; Rhoades & Eisenberger, 2002).

Even though there is a lack of evidence for the direct effect of strain on organizational commitment among academics, research indicates that job-related characteristics such as supervisor support, co-worker support, role clarity and resource availability are related to organizational commitment among academics (Joiner & Bakalis, 2006; Taris et al., 2001). A study of stress among Dutch university staff by Taris et al. (2001) revealed that lack of commitment correlated most with emotional exhaustion and cynicism. These university staff responded to the feeling of strain by withdrawing themselves from work and university.

Marchiori and Henkin (2004) found that long term tenure in higher education emerged as a significant factor in affective commitment among academics. Long term affiliation to a particular organization such as being employees increase individual's organizational identification (Aranya, Pollock & Amernic, 1981), in which this individual tends to accept organizational work

values and goals as their own. This is supported by Cetin (2006), who found that job tenure positively related to affective organizational commitment. Job tenure may imply the self-efficacy belief in which long service academics may perceive that job demands are under control. Wood and Bandura (1989) suggested that self-efficacy beliefs determine how much effort employees will spend in order to achieve organizational goals. The successful efforts will increase their positive emotional feeling and this will increase their commitment toward their academic jobs and also universities. The positive emotional bond includes the feeling of devotion and belongingness (Meyer, Allen & Smith, 1993) can encourage academics to devote their efforts to teach difficult subjects and carry out complex research work.

The explanation above provides an argument for the importance of affective commitment in occupational stress studies. In essence, Meyer and Allen's (1991) affective commitment is similar to Mowday et al.'s (1979) original construct. Affective organizational commitment in the present study represents the type of commitment utilized in the Rhoades et al.'s (2001) model. Therefore, I focused on affective commitment among academics rather than continuance commitment and normative commitment. Literature also has established the strong negative correlation between affective organizational commitment and intention to leave. Therefore, I include affective organizational commitment as a mediating variable between strain and intention to leave. Further explanation of this relationship will be outlined in Chapter 3.

2.6.4 Intention to leave

The term 'intention to leave' refers to the situation in which an individual is consciously making a decision whether to leave an organization (Weisberg, 1994). Since excessive employee turnover rate is detrimental for organizations, an alternative estimate to future turnover may be derived from employees' intention to leave. However, results from studies of the relationships between intention to leave and actual turnover have been mixed. Parasuraman (1982) found a positive significant relationship, while Seigall and McDonald (2004) did not. Somers and Birnbaum (2000) suggested that the strong labor market at the time of the study was identified as a factor that deterred professional hospital employees from leaving their organization. This is supported by Hughes (2001), who argued that the intention to leave one's job is likely a function of cognitively appraised factors such as the perceived availability of alternatives, the labor market and economic conditions, and so forth. Whatever it is, intention to leave is costly to the organization, as the stayers may divert their resources for their personal gain (Seigall & McDonald, 2004).

Literature indicates that intention to leave is a negative outcome of job stressors (Janssen, De Jonge & Bakker, 1999). However the relationship between job stressors and intention to leave has been found to be indirectly related (Igarria & Greenhaus, 1992; Koeske & Koeske, 1993). For example, Igarria and Greenhaus (1992) found that lack of commitment to organization mediated the relationship between job stressors and intention to leave. Since labor turnover is an inevitable phenomenon in organizations and involves monetary and non-monetary costs, it is important to predict a worker's intention to leave as this can lead to termination of their relationship with their organizations.

Kusku (2003) reported that 35.6 per cent of academic staff in Turkish universities indicated that they intended to leave their university in the near future. A better salary in private sector organizations was a main reason for leaving their jobs as academics. Taris et al. (2001) reported that health problems and relationships with colleagues were related to turnover intention among Dutch university staff. The more serious problem here is the phenomenon of the feeling of detachment from the university but continuing to stay without contributing significantly to the university. Academics with the intention to leave also spent less time on teaching, service tasks and professional development activities (Seigall & McDonald, 2004). Comm and Mathaisel (2003) reported that the majority of academic staff who were disappointed with faculty workload and compensation spent less of their time in universities.

In conclusion, the literature has indicated that strain is correlated with several outcomes such as cynicism, professional efficacy and organizational commitment (Cherniss, 1980), and these result in intention to leave (Maslach & Florian, 1988). This seems to suggest that the relationship between strain and intention to leave is rather indirect. Based on that understanding, this study investigated the effect of strain on intention to leave through mediator variables (i.e. cynicism, professional efficacy and organizational commitment).

2.7 Chapter summary

It is clear that strain serves as a link between role stressors and the proposed outcomes of strain. In the present study, role stressors refer to role overload, role ambiguity, and role conflict. Strained individuals will withdraw psychologically from their work. The proposed outcomes of strain include

cynicism, professional efficacy, and organizational commitment. The present study also focused on perceived organizational support, peer support, and self-efficacy in the relationships between role stressors and strain. At the same time, I predicted the direct effects of these variables on strain. The study also included the mediation effects of cynicism, professional efficacy, and organizational commitment on the relationship between strain and intention to leave.

Based on the above review of previous research, the next chapter will outline the theoretical model and hypotheses for the present study.

CHAPTER 3

THEORETICAL MODEL AND HYPOTHESES

3.1 Introduction

This chapter explains the model and hypotheses for the present research. I developed the theoretical model with the aim of answering the following five research questions:

- a) Do role stressors influence strain among academics in Malaysian public universities?
- b) Do the internal (dispositional) and situational factors moderate the impact of role stressors on strain?
- c) Does job strain produce adverse psychological outcomes?
- d) Does strain mediate the relationships between role stressors and outcomes?
- e) Do the outcomes mediate the relationship between strain and intention to leave?

3.2 Theoretical model

Based on my review of stress theories and previous studies on occupational stress, it appears that relationships among the basic dimensions of stress (i.e. role stressors, moderators, strain, and the outcomes have not been investigated in a single study of academic stress. In the present study, therefore, three role stressors (role overload, role ambiguity, and role conflict) were investigated for their relationships with strain and subsequently between strain and three outcome variables (i.e. cynicism, professional efficacy and

organizational commitment). Because of the high cost of workplace stress and the negative direct effects on the organization, this study focuses on occupational stressors rather than other aspects of life such as family conflict, physical health and social conflict. Figure 3.1 presents the hypothesized model, which summarizes the key hypotheses of this study.

Figure 3.1: *Theoretical model*

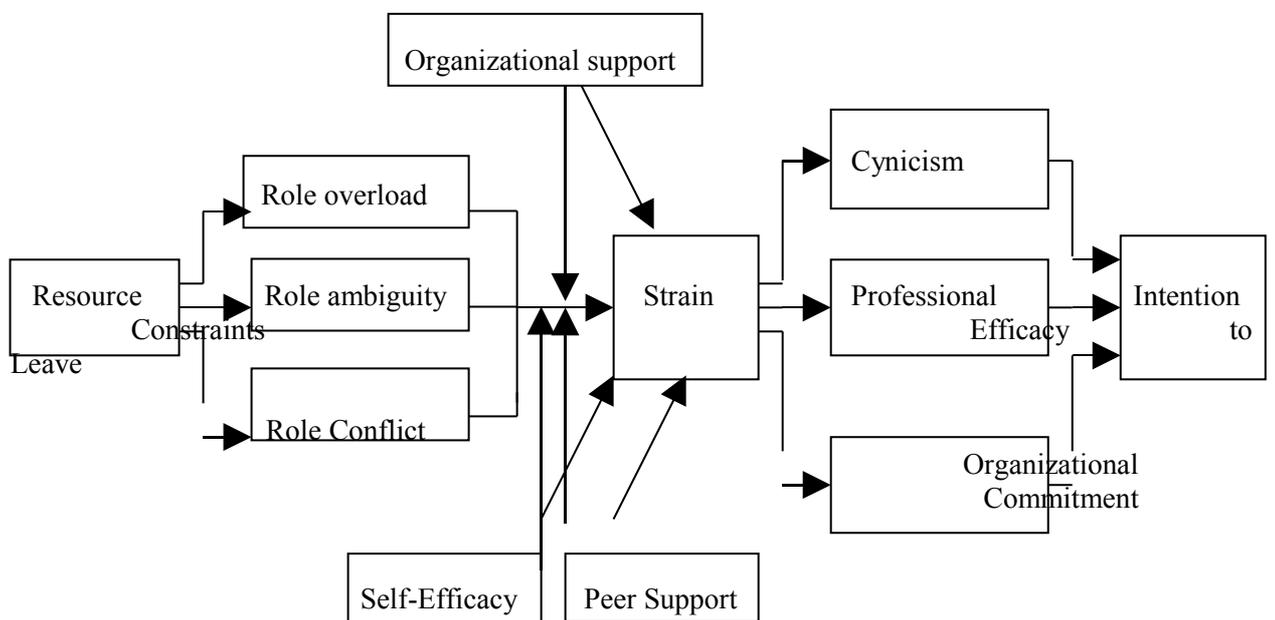


Figure 3.1 shows that role stressors (role overload, role ambiguity, and role conflict) have a direct influence on strain, and in turn, strain has a direct influence on various outcomes (cynicism, professional efficacy, and organizational commitment). These outcomes then have direct influence on intention to leave. I hypothesized that strain will mediate the relationships between role stressors and outcomes, and that the outcomes will mediate the relationship between strain and intention to leave. Figure 3.1 also depicts the

moderating effects of organizational support, peer support and self-efficacy on the relationships between role stressors and strain. The model also predicts that organizational support, peer support, and self-efficacy also directly influence strain. The focal point in this hypothesized model is that strain serves as a key mediating variable linking role stressors and outcomes.

3.3 Strain

Based on the transactional model of stress, strain is defined as pain which is experienced by individuals when environmental factors are perceived as overtaxing and endangering their well-being (Lazarus & Folkman, 1984). In this occupational stress study, environmental factors were confined to role stressors that included role overload, role ambiguity and role conflict. Academics are expected to experience strain when these role stressors are perceived as exceeding their ability to cope with them. In the process, academics will adjust and adapt to the perceived stressors using personal resource (i.e. self-efficacy) and situational resources (i.e. organizational support and peer support) to help them handling the stressors. When the levels of stressors are perceived as exceeding their capability and personal and situational resources are lacking, strain will eventually occur. Academics suffering from prolonged strain potentially leading to adverse psychological outcomes (i.e. increased cynicism, reduced professional efficacy and reduced organizational commitment). Therefore, the hypothesized model depicts strain as a key variable in this study. The following sections will explain stressors, moderators and outcomes that constitute a model for the study.

3.4 Stressors

My proposed model also depicts the role of resource constraints in the stress process. According to Wright and Hobfoll (2004), individuals' interpretations of a stressor depend on their personal and social resources as well as characteristics of the stressors. Since strain is driven by appraisals, different people may face the same stressors differently and thus experience different levels of strain. Therefore, the variation in exposure to stressors will explain variations in individual strain.

Literature indicates that lack of resources contributes to role stress (Freze & Zapf, 1994; Wright & Hobfoll, 2004). The proposed model specifies that resource constraints will be directly related to role overload, role ambiguity, and role conflict. Resource constraints create difficulties for individuals' ability to perform the roles that are expected of them (Peters & O'connor, 1980). For example, in the university setting, difficulty in securing research grant was identified as one of the stressors among academics (Winefield, 2000). If academics see their senior colleagues struggling to obtain research grant, they may not develop the confidence to apply for a grant. Even though they may focus on teaching, the perceived lack of research fund will be regarded as threatening to their future advancement. Moreover, big class sizes may create a sense of heavy workload and serve to limit the ability of academics to cater to the needs of their students such as to provide them with meaningful and timely assessment and feedback on their progress. At the same time, attending to large number of students may leave little time for academics to do research. The perceived existence of these role stressors will lead to strain.

As a result of the liberalization of education policy in Malaysia (Gill, 2004), there was a tremendous increase in student enrolments in Malaysian public universities in the late 1990s, which was beyond the ability of the universities to accommodate them. There were reported shortages of facilities in public universities that were associated with tension among the academics (Morris et al., 2004). A great amount of responsibility without sufficient resources is a burden that makes academic jobs more difficult to perform. Lack of planning and unclear goals create role ambiguities among academics. Academics also may experience role conflict as a result of incompatibility between expectations and demands relating to the role (Rizzo et al., 1970).

The proposed model illustrates that role overload, role ambiguity, and role conflict are directly related to strain. Role overload was defined earlier as having too much to do in a given amount of time (Conley & Woosley, 2000). It is generally accepted that an optimum level of job demands will encourage individuals to use their creativity to accomplish the assigned tasks. As long as the quantitative demands are within their capability, academics will work hard to accomplish the given tasks, leading to increased productivity. However, when job demands are excessive, a sense of overload will develop and subsequently lead to strain. For example, academics with a large number of students per class, coupled with a higher level of scientific research and frequent committee meetings, have to work harder to perform all those tasks. Satisfaction with their own work will reinforce them to work harder. However, a sense of inability to complete the task will challenge his or her self-esteem, which disturbs his or her emotional equilibrium and subsequently creates strain.

The second role stressor in the model is role ambiguity, which occurs when academics experience a lack of clear and specific information regarding work role requirements (Rizzo et al., 1970). Fundamentally, role ambiguity is due to unclear plans and goals, a lack of clarity of one's duties, and uncertainty about the amount of authority granted to perform tasks (Rizzo et al., 1970). I posit that a certain amount of ambiguity creates a creative environment. Cognitively, a certain level of ambiguity fosters creative decision-making as academics look for possible solutions to resolve ambiguities. For an academic, role ambiguity may arise when he or she does not know how to start a research project, how to prioritize the given tasks, what the expected behaviour of an academic is, and what the performance evaluation criteria are. The renewed emphasis on research in Malaysian public universities represents something of a shift from the previous focus on teaching. Staff who normally were evaluated for their contribution to teaching and course development can feel threatened and may see their promotion prospects diminished. The situations above that are lacks of clarity regarding performance evaluation and unclear expectations may put academics in difficult situations that can lead to strain.

The third role stressor in the proposed model is role conflict. Role conflict was defined earlier as the imposition of incompatible expectations. These unreasonable expectations can result in both inter-role conflict and intra-role conflict. Inter-role conflict refers to academic's experience of conflict among multiple roles in his or her academic job. For example, an academic is assigned to an administrative post and at the same time having teaching and research workload. Intra-role conflict occurs within a single role, such as an academic receives conflicting messages from multiple 'role senders' about how to perform

a certain role. For example, an academic charged with the mission of producing many refereed journals to help the university increase its ranking and also with ensuring that teaching processes strictly follow the quality certification exercise (ISO 9000), is likely to suffer intra-role conflict. Malaysian public universities are characterized by a system in which a faculty or school is headed by a dean and assisted by two or three deputy deans. Thus, academics are receiving instructions from multiple 'role senders': head of department, deputy deans, and the dean. Typically, three deputy deans responsible for teaching, research and administration assist the deans of faculties in Malaysian public universities. The academics have to report their teaching, research and administration to the respective deputies. Poor coordination between those activities can contribute to role conflict on academics and subsequently contribute to strain.

The hypotheses for the direct effect of role stressors on strain are as follows:

H1a: Role overload is positively related to strain.

H1b: Role ambiguity is positively related to strain.

H1c: Role conflict is positively related to strain.

3.5 Buffering model of role stressor-strain relationship

The proposed model also illustrates the role that self-efficacy, organizational support, and peer support play in terms of role stressor-strain relationships. These variables are hypothesized to have direct effects on strain as well as to buffer the effects of role stressors on strain. The theoretical and empirical justifications for the incorporation of buffering effect in the stressor-strain relationship are outlined below.

Self-efficacy refers to academics' perception of their ability to perform academic tasks. Theoretically, self-efficacy makes a difference in how people think, feel, and act (Bandura, 1997). In the face of role ambiguity, such as being unclear about how to start a research project, a strong sense of competence facilitates cognitive processes that help academics to redefine the problem, examine the problem from different angles and creatively find an alternative solution to the problem. Emotionally, individuals with low self-efficacy tend to have low self-esteem, leading to pessimistic thinking about the accomplishment of complex tasks (Smith, 1989). Pessimism regarding future success will block creativity and may lead to premature failure, and subsequently to the feeling of strain. Academics with high self-efficacy will be more likely to exert more effort in their activities and persist longer, as they strongly believe that the effort will bring desired outcomes and rewards.

Previous evidence indicates that self-efficacy beliefs have moderating effects on the role-strain relationships in other occupations (Appelbaum & Hare, 1996; Jex et al., 2001). Thus, I also expect that self-efficacy will moderate the effects of role stressors on strain in the present study on academics. It can be expected that academics with high self-efficacy beliefs perceive a difficult assignment as a challenge to be resolved and this helps them reduce the feeling of strain. On the other hand, academics with low self-efficacy beliefs tend to focus on their own limitations and blame the resource constraints, subsequently leading to higher level of strain. So I hypothesize that self-efficacy will moderate the relationship between role stressors and strain. Greater self-efficacy will result in the feeling of greater control over the stressors and subsequently lead to less strain. Therefore, I hypothesized that for those who are high on self-efficacy, the

effects of role stressors on strain would be reduced when compared to those who are low on self-efficacy.

H2a: The negative impact of role stressor (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report having low self-efficacy.

Internal resources (such as self-efficacy) alone might not be enough to help academics to deal with the role stressors. They may need other types of resources when the role stressors are appraised as threatening or too demanding. In this case, academics may turn to situational resources to help them dealing with role stressors such as supports from the organization and their peers. These supports function as a buffer when they are received by academics in the forms of informational, instrumental and emotional support that help to alter their perceptions on role stressors to become more manageable. This will eventually reduce the impact of role stressors on strain.

For this reason, I include organizational support and peer support as situational resources that can buffer the effects of role stressor on strain. These supports are predicted to be moderators because the correlation between stressor and strain should be low for employees who receive high support and high for employees who receive low support (Cohen & Will, 1985). Thus, I posit that support plays a role in the model to buffer the effects of role stressors on strain. At this point, support may prevent strain from occurring when an academic perceives that the organization or peers will provide the resources necessary to deal with the stressors.

Academics may face obstacles in conducting state of the art research. They have to maintain their self-esteem in order to withstand the difficulties in

carrying out research projects. For example, a university that takes pride and recognizes past accomplishment can reinforce academics so that they will persevere in the face of obstacles. Generally, individuals who believe that their organizations value their contributions are more willing to work hard (Meyer & Allen, 1991). Furthermore, when they perceive that the stressful experience of completing a given task is a worthwhile effort, they will strive harder to accomplish the given task and be more prepared to endure an extra amount of strain. Based on the discussion above, I hypothesized that for those who receive high support, the effects of role stressors on strain would be reduced when compared to those who receive low support. The moderation effect hypotheses are as follows:

H2b: The negative impact of role stressors (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report receiving less organizational support.

H2c: The negative impact of role stressor (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report receiving less peer support.

At the same time I also hypothesize that self-efficacy and supports have direct effects on strain. Direct effect model asserts the direct effect of self-efficacy and supports on strain based on the reason that these resources are important for individual adjustment and well-being (Cohen and Wills, 1985). According to Thoits (1982), individual's belief in their own capability itself can reduce strain because strong belief in their competence make them proceed to accomplish the given tasks with a more positive attitude. Therefore they are less likely to be affected by high strain jobs. According to Cohen (1988), perceived

availability or unavailability of support can directly reduce or increase strain because emotional supports for instance may help to maintain emotional state of academics during stressful situation. Therefore, in addition to moderation effect, I hypothesized that self-efficacy, organizational support and peer support will also be directly related to strain.

H2d: Self-efficacy is negatively related to strain.

H2e: Organizational support is negatively related to strain.

H2f: Peer support is negatively related to strain.

3.6 Outcomes

The first part of the theoretical model on page 57 illustrates the relationships between role stressors and strain. The second part of the model deals with the relationship between strain and certain outcomes (cynicism, professional efficacy, and organizational commitment). Strain is hypothesized to be directly related to cynicism, professional efficacy, and organizational commitment. This subsection will provide theoretical justification of the relationship between strain and these outcomes.

Lazarus (1990) asserted that individuals who perceive a threat that endangering their well-being will experience strain. This stressful situation may lead them to develop further consequences such as cynicism and reduced professional efficacy. If these individuals have enough resources and assistance to deal with the stressors, the resources may help them to adapt successfully to this threat. In the case of limited resources, they may perceive that they are not capable of accomplishing the given tasks and subsequently tend to distance themselves psychologically from work, colleagues or their organizations. For

example, an academic career may be initially seen as an intrinsically rewarding and a highly respected occupation. But as the feeling of strain increases, an academic may feel increasingly isolated from his or her work, reduce his or her effort, and become less committed.

Based on the argument above, I hypothesized that, when academics perceive that role stressors exist at the workplace, they will first experience strain. In a constant battle with role stressors, these academics make efforts to maintain their well-being by fighting the stressors using available resources. In the case of excessive role stressors and exhaustive of resources, increased cynicism, reduced professional efficacy and reduced organizational commitment will develop.

The proposed model also illustrates that cynicism is an outcome of strain. Cynicism was defined earlier as a callous attitude toward work and clients (Schaufeli et al., 1996). In the case of academic work, avoiding job responsibility and direct contact with students and colleagues are forms of psychological withdrawals. Those who are suffering from cynicism separate themselves from their work, colleagues and students. Cynical academics are lacking in motivation and enthusiasm to help colleagues and students. This sense of detachment is characteristic of cynicism, which is postulated as a dysfunctional coping process (Lee & Ashforth, 1993). Thus, I hypothesized that high strain will be positively related to cynicism.

The second outcome of strain is reduced professional efficacy. Reduced professional efficacy was defined earlier as a tendency to evaluate oneself negatively with regard to one's accomplishment at work (Schaufeli et al., 1996). This definition seems to suggest that when experiencing a sense of professional efficacy, academics are conscious of their effectiveness at work and continue to

be effective with their academic tasks such as teaching, research and student supervision. In this study particularly, academics are predicted to experience reduced professional efficacy as a result of strain. In this situation, these academics tend to evaluate themselves negatively and become dissatisfied with their accomplishments at work. Based on this explanation, I hypothesized that strain will be negatively related to professional efficacy.

The third outcome of strain is affective organizational commitment. Affective organizational commitment was defined earlier as the employee's positive emotional attachment to their organizations. Academics who consistently feel strain will do something to overcome this feeling. Lack of organizational commitment is usually associated with a low level of effort (Eisenberger, Huntington, Hutchinson, & Sowa, 1986; Mowday et al., 1982). In the long run, they start to reduce their involvement in university activities. These work attitudes make them consistently feel and think that they are not contributing to group performance. This will reduce the sense of belonging to their universities. They also do not have a positive feeling toward their organization. Academics with low levels of organizational commitment tend to appraise their jobs as no longer being a source of enjoyment in life. Based on this understanding, I hypothesized that strain will be negatively related to affective organizational commitment. The hypotheses are as follows:

H3a: Strain is positively related to cynicism.

H3b: Strain is negatively related to professional efficacy.

H3c: Strain is negatively related to organizational commitment.

A low level of organizational commitment is not the end of a relationship between an individual and their employing organization. The final variable in the

hypothesized model is intention to leave. The model illustrates that intention to leave is also an outcome of strain. However as mentioned in the literature review chapter, the relationship between strain and intention to leave is rather indirect. Academics who are experiencing strain will develop increased cynicism, reduced professional efficacy and low organizational commitment before decide on the intention to leave. Therefore, I included intention to leave in the model to measure academics' likelihood that they will leave their academic jobs. This mediation effect and hypotheses will be explained next.

3.7 Mediation hypotheses

My proposed model depicts two mediational hypotheses. The first mediational hypothesis was derived from the paths of role stressors (role overload, role ambiguity, and role conflict) to outcomes (cynicism, professional efficacy, and organizational commitment) through strain as a mediator. The second mediational hypothesis was derived from the paths of strain to intention to leave through outcomes as a set of mediators. It is of particular interest to investigate these mediation effects for the purpose of an intervention strategy. A variable is considered as a mediator when it creates the indirect effect through which the focal independent variable is able to influence the dependent variable of interest (Baron & Kenny, 1986). Kline (1998) explained that the mediator variables transmit some of the causal effects of prior variables onto subsequent variables. In the first part of my mediational model, strain as a mediator transmits the causal effects of role stressors on outcomes and in the second part, cynicism, professional efficacy and organizational commitment as mediators transmit the causal effect of strain on intention to leave. Thus, the inclusion of the mediators

in the relationships between role stressors and outcomes of strain and then between strain and intention to leave was aimed at investigating the nature of the relationships between predictors and criterion variables. It is important to know, for example, not only whether strain explains individual differences in intention to leave for academics, but whether it may exert its effect by causing changes in levels of cynicism, professional efficacy, and organizational commitment which in turn lead to intention to leave. It is also important to understand the process by which an academic decides to leave the occupation and organization. Based on the argument above, I first hypothesized that role stressors lead to cynicism, professional efficacy and organizational commitment through strain. Second, I hypothesized that strain leads to intention to leave through cynicism, professional efficacy, and organizational commitment. The first group of mediation hypotheses are as follows:

H4a: Strain mediates the relationships between role stressors and cynicism.

H4b: Strain mediates the relationships between role stressors and professional efficacy.

H4c: Strain mediates the relationships between role stressors and organizational commitment.

The second group of mediation hypotheses are as follows:

H5a: Cynicism mediates the relationship between strain and intention to leave.

H5b: Professional efficacy mediates the relationship between strain and intention to leave.

H5c: Organizational commitment mediates the relationship between strain and intention to leave.

3.8 Longitudinal relations

It is well known that cross-sectional data are of limited use in addressing the question of causality between two variables. Therefore, I used a longitudinal design to infer causal relationships between the variables in the study. Specifically, I used three analytical approaches to infer causal relationships: (a) relationships between variables at Time 1 and Time 2, (b) the effects of predictors at Time 1 on changes in criterion variables, and (c) effects of changes in predictor variable on changes in criterion variables. These three analytical approaches will be explained further and then presented graphically in Chapter 5 (see page 127). These approaches were used to explain the effect of predictor variable on criterion variable over a specified time period. The proposed longitudinal hypotheses are presented in sequence as per their cross-sectional relations. The hypotheses were as follows:

H6a: Role overload is positively related to strain.

H6a(i): Role overload at Time 1 is positively related to strain at Time 2.

H6a(ii): Role overload at Time 1 is positively related to changes in strain.

H6a(iii): Changes in role overload are positively related to changes in strain.

H6b: Role ambiguity is positively related to strain.

H6b(i): Role ambiguity at Time 1 is positively related to strain at Time 2.

H6b(ii): Role ambiguity at Time 1 is positively related to changes in strain.

H6b(iii): Changes in role ambiguity are positively related to changes in strain.

H6c: Role conflict is positively related to strain.

H6c(i): Role conflict at Time 1 is positively related to strain.

H6c(ii): Role conflict at Time 1 is positively related to changes in strain.

H6c(iii): Changes in role conflict are positively related to changes in strain.

I also proposed longitudinal moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressors and strain as below:

H7a: The negative impact of role stressors (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report receiving less organizational support.

H7a(i): The negative impact of role stressors at Time 1 on strain at Time 2 will be stronger among academics who report receiving less organizational support.

H7a(ii): The negative impact of role stressors at Time 1 on changes in strain will be stronger among academics who report receiving less organizational support.

H7b(iii): The negative impact of changes in role stressors on changes in strain will be stronger among academics who report receiving less organizational support.

H7b: The negative impact of role stressors (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report receiving less peer support.

H7b(i): The negative impact of role stressors at Time 1 on strain at Time 2 will be stronger among academics who report receiving less peer support.

H7b(ii): The negative impact of role stressors at Time 1 on changes in strain will be stronger among academics who report receiving less peer support.

H7b(iii): The negative impact of changes in role stressors on changes in strain will be stronger among academics who report receiving less peer support.

H7c: The negative impact of role stressors (i.e. role overload, role ambiguity, and role conflict) on strain will be stronger among academics who report having low self-efficacy.

H7c(i): The negative impact of role stressors at Time 1 on strain at Time 2 will be stronger among academics who report having low self-efficacy.

H7c(ii): The negative impact of role stressors at Time 1 on changes in strain will be stronger among academics who report having low self-efficacy.

H7c(iii): The negative impact of changes in role stressors on changes in strain will be stronger among academics who report having low self-efficacy.

The proposed longitudinal hypotheses for the direct effect of strain on cynicism, professional efficacy, and organizational commitment were as follows:

H8a: Strain will be positively related to cynicism.

H8a(i): Strain at Time 1 will be positively related to cynicism at Time 2.

H8a(ii): Strain at Time 1 will be positively related to changes in cynicism.

H8a(iii): Changes in strain will be positively related to changes in cynicism.

H8b: Strain will be negatively related to professional efficacy.

H8b(i): Strain at Time 1 will be negatively related to professional efficacy at Time 2.

H8b(ii): Strain at Time 1 will be negatively related to changes in professional efficacy.

H8b(iii): Changes in strain will be negatively related to changes in professional efficacy.

H3c: Strain will be negatively related to organizational commitment.

H8c(i): Strain at Time 1 will be negatively related to organizational commitment at Time 2.

H8c(ii): Strain at Time 1 will be negatively related to changes in organizational commitment.

H8c(iii): Changes in strain will be negatively related to changes in organizational commitment.

The proposed longitudinal mediation hypotheses of strain on the relationships between role stressors and outcomes were as follows;

H9: Strain will mediate the relationships between role stressors and outcomes.

H9(i): Strain at Time 1 will mediate the relationships between role stressors at Time 1 and outcomes at Time 2.

H9(ii): Strain at Time 2 will mediate the relationships between role stressors at Time 1 and outcomes at Time 2.

H9(iii): Strain at Time 1 will mediate the relationships between role stressors at Time 1 and changes in outcomes.

H9(iv): Changes in strain will mediate the relationships between changes in role stressors at Time 1 and changes in outcomes.

The proposed longitudinal mediational hypotheses of outcomes on the relationship between strain and intention to leave were as follows:

H10a: Cynicism will mediate the relationship between strain and intention to leave.

H10a(i): Cynicism at Time 1 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10a(ii): Cynicism at Time 2 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10a(iii): Cynicism at Time 1 will mediate the relationship between strain at Time 1 and changes in intention to leave.

H10a(iv): Changes in cynicism will mediate the relationship between changes in strain and changes in intention to leave.

H10b: Professional efficacy will mediate the relationship between strain and intention to leave.

H10b(i): Professional efficacy at Time 1 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10b(ii): Professional efficacy at Time 2 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10b(iii): Professional efficacy at Time 1 will mediate the relationship between strain at Time 1 and changes in intention to leave.

H10b(iv): Changes in professional efficacy will mediate the relationship between changes in strain and changes in intention to leave.

H10c: Organizational commitment will mediate the relationship between strain and intention to leave.

H10c(i): Organizational commitment at Time 1 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10c(ii): Organizational commitment at Time 2 will mediate the relationship between strain at Time 1 and intention to leave at Time 2.

H10c(iii): Organizational commitment at Time 1 will mediate the relationship between strain at Time 1 and changes in intention to leave.

H10c(iv): Changes in organizational commitment mediates the relationship between changes in strain and changes in intention to leave.

3.9 Chapter conclusion

In line with recent theoretical and empirical studies, strain is conceived to link role stressors and outcomes. The proposed model incorporates the buffering concept to explain the buffering role played by personal and situational resources in the relationships between role stressors and strain. In order to understand better turnover intention, I also incorporated mediation effects of cynicism, professional efficacy and organizational commitment on the relationship between strain and intention to leave. I used three analytical approaches to investigate the effects of predictor variables on criterion variables over time. The results from the longitudinal effects are expected to provide explanations on the causal relations between variables of the study and answer the questions of the study.

CHAPTER 4

RESEARCH METHODOLOGY

This chapter outlines the methodology used in this research. The following issues are described: (a) the research design, (b) sample and procedures, (c) instrumentation that includes the description of questionnaires used in this study, and (d) how data were analyzed for each research question.

4.1 Research design

For this investigation I used the self-report mail survey method, which is one of the most common types of quantitative research approaches (Shaughnessy & Zechmeister, 1997). The present study dealt with people's perceptions and affective reactions including strain. For a study concerning emotional states, the only viable means of measurement is to ask individuals how they feel (French & Kahn, 1962). Despite frequent criticism of the validity of self-reports measures, the vast majority of job stress researchers continue to use subjective self-reports measures for both job stressors and strain (Razavi, 2001). Literature indicates that there are reasonably close relationships between self-report and other measures such as observations and secondary data (McEwan, Harrington, Bhopal, Madhok, & McCallum, 1992; Waring, Neufeld & Schaefer, 2003).

In order to measure the causal effects of the variables in the stress process, I adopted a longitudinal research design. Longitudinal research refers to the analysis of data collected at different points in time (Shaughnessy & Zechmeister, 1997). I collected data on the same variables and on the same respondents with a six-month lag time. The six-month time lapse, which is a full semester, was

considered enough for certain variables (e.g. role stressors) to have an effect on others (e.g. strain). The longitudinal design for the mediation analysis helps in comprehending the ordering of cause and effect. Specifically, the aim was to find significant associations between predictor variables at Time 1 and ‘outcome’ variables at Time 2.

4.2 Sample and respondents

There are seventeen public universities in Malaysia. They are divided into full scale universities and university colleges. A full scale university is categorized as either a teaching only university or a teaching and research university. There are five public teaching and research universities in Malaysia. The institutionalization of these teaching and research universities is important for the advancement of knowledge. While other universities focus on producing graduates, these teaching and research universities place a greater emphasis on research and development. This study chose to examine teaching and research universities because of the presence of three job demand components: teaching, research and professional services. Productivity is generally measured in these components, and their presence is important for the effectiveness of these universities. Research strengthens the teaching programmes. Service involves such things as being an officer in a professional society, serving on a committee, and delivering training, which are outputs to the public. Academics are expected to achieve a balance between efforts in these three areas. I did not research private universities because it was believed that the sources of stress for private universities may be significantly different due to factors such as accountability to different stakeholders, sources of funding, and profit orientation. Other aspects that public universities have to confront are considerable bureaucratic and regulatory costs and obligations to the public as compared to their counterparts in private universities (Triantafillou, 2004). Table 4.1 provides some basic information about the sample universities.

Table 4.1:

Details of the sample universities

Name of the University	Year of Establishment	Number of Academic Staff	Number of Students	Location
University of Malaya	1962	2175	25452	Lembah Pantai Kuala Lumpur www.um.edu.my
National University of Malaysia	1970	1888	19545	Bandar Baru Bangi, Selangor www.ukm.my
University of Science Malaysia	1962	1950	21,200	Penang, Malaysia www.usm.my
University Putra Malaysia	1971	2118	21540	Serdang, Selangor www.upm.edu.my
University of Technology Malaysia	1975	1820	18642	Sekudai, Johor www.utm.my

I used a systematic sampling approach. At the time the data collection commenced, there were about 9951 academics in the sample universities. I excluded from the sampling frame tutors and academics who were on study and sabbatical leave. After the exclusion of these tutors and academics, there were about 6,000 academics (excluding deans and other top management) available during the time of the data collection period. In order to ensure that every academic in the sample frame had an equal chance of being selected for the sample, I selected one in every three names in the telephone directory book of each of the university, which yielded 2000 names.

A questionnaire (Appendix A) with a stamped, addressed envelope was sent out to 2000 academics. The questionnaire contained seventy-five items that

measured the variables based on the model of the study. The survey was administered in English because I believed that all academics were capable of answering the questions in this language. The first stage of data collection started in January 2005. A coded questionnaire helped me to resend the questionnaires to respondents at Time 2. The second wave of data collection was carried out in July 2005 after a six-month lag time. A total of 357 out of 2000 academics returned the questionnaires at Time 1 for a response rate of 17%. At Time 2, 210 respondents returned questionnaires for a 59% response rate. The overall response rate was 10.5%.

The total sample for Time 1 was 339 after deleting eighteen respondents with missing data, and the sample for Time 2 was 205 after deleting five respondents with missing data. Missing data occurs when respondents did not answer certain items on an instrument. An instrument consists of a set of items. I considered samples as having missing data when the respondent did not answer more than a set of items. I also removed nineteen outliers for Time 1 and nine outliers for Time 2, leaving 310 respondents for Time 1 and 194 respondents for Time 2. Since treatment of outliers is important for normality of data set, the report will be presented later (see pages 98-101).

For the longitudinal analyses, I matched respondents at Time 2 with respondents at Time 1. Since the second survey did not have the identification number, I used gender, level of education and field of studies to match the surveys. This yielded exact matching for 202 respondents for Time 2 with respondents at Time 1. I was not able to match eight respondents for Time 2 due to lack of information.

Table 4.2 presents the demographic characteristics of the sample. Following the exclusion of outliers, there were 310 respondents for Time 1 and 194 for Time 2. The table shows that approximately half (54.3% at Time 1 and 50.5% at Time 2) of the respondents were male. The percentage of respondents with length of service from five to fifteen years (41.5% at Time 1 and 47.6% at Time 2) was about equal to the percentage of respondents whose length of service was above fifteen years (45.6% at Time 1 and 41%). The overwhelming majority (61.6% at Time 1 and 61% at Time 2) were from science disciplines rather than social science disciplines (38.4% at Time 1 and 39% at Time 2). Malaysian education system has adopted the traditional of way of dividing the field of knowledge in which the fields such as education and arts are considered social sciences disciplines, whereas the fields such as computer science and architecture are considered science disciplines. This reflects the ratio of 60:40 for science and social science academics advocated by the Malaysian government. Most of them (64.7% at Time 1 and 40.7% at Time 2) had PhDs, with the remaining holding Masters degrees (35.3% at Time 1 and 59.3% at Time 2). Lastly, almost all of the respondents (93% at Time 1 and 91.4% at Time 2) were permanent lecturers. Academics that were under probation and contract services were only 2.2 % at Time 1 and 4.8% at Time 2. Overall, Table 4.2 shows that the sample distribution of the present study may not perfectly represent the overall population of academics in Malaysian public universities.

Table 4.2:
Demographic characteristic of the respondents (Time 1 and Time 2)

	Time 1 (N = 310)	Time 2 (N = 194)
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Characteristic/Profile	Number (persons)	Percentage (%)	Number (persons)	Percentage (%)
Gender				
- Male	168	54.2	98	50.5
- Female	142	45.8	96	49.5
Length of Service				
- Less than 5 years	40	12.9	22	11.4
- 5 – 15 years	129	41.6	92	47.6
- Above 15 years	141	45.5	80	41
Field of Studies				
- Science	191	61.6	118	61.0
- Social Science	119	38.4	76	39.0
Highest Qualification				
- Master Degree	109	35.2	79	40.7
- PhD	201	64.8	115	59.3
Employment Status				
- Permanent	288	92.9	177	91.4
- Probation	7	2.3	4	1.9
- Contract	15	4.8	13	6.7

4.3 Measures

The questionnaire comprised seventy-five questions measuring twelve constructs derived from the theoretical model of the study (see Figure 3.1 on page 57) and five demographic variables. Eleven constructs were assessed using pre-existing measures from the literature and one construct (self-efficacy) was assessed with a measure developed specifically for the study. Each variable in the questionnaire was measured using seven-point response scales, with anchors being (1) strongly disagree or never to (6) strongly agree or all the time. To derive a scale-score for each person on each variable, the mean score of all items in the scale was calculated. I performed confirmatory factor analysis on the measures to

check their factor structure. Table 4.3 presents a summary of the measures that were used in this study.

Table 4.3:

Variables, sources of the scales, and number of items

Variable	Source	No. of items	Reliability	
			Time 1	Time 2
1. Strain	Golberg's (1978) GHQ12	12	0.83	0.82
2. Cynicism	Maslach MBI-GS	4	0.89	0.89
3. Professional efficacy (general)	Maslach MBI-GS	6	0.87	0.87
4. Organizational commitment	Allen & Meyer (1996)	7	0.85	0.80
5. Intention to leave	O'Driscoll & Beehr (1994)	3	0.88	0.88
6. Resource constraints	OCS of Spector & Jex	9	0.85	0.87
7. Role overload	QWI of Spector & Jex	5	0.88	0.87
8. Role ambiguity	Rizzo et al. (1970)	6	0.85	0.84
9. Role conflict	Rizzo et al. (1970)	8	0.88	0.84
10. Organizational support	Eisenberger et al. (2001)	6	0.87	0.91
11. Peer support	O'Driscoll (2000)	4	0.94	0.93
12. Task-specific self-efficacy	Developed for this study	5	0.85	0.83

Resource constraints

Resource constraints were measured with a nine-item scale from the original eleven-item Organizational Constraints Scale (OCS) of Spector and Jex (1998). This scale measured the levels of constraints that limit academic performance at work. I used only nine items because two items “conflicting job demands” and “incorrect instructions” were redundant with the items measured by role conflict and role ambiguity scales (see later). Academics were asked to rate the frequency with which they encountered difficulties in the following areas:

1. Poor equipment or supplies.
2. Organizational rules and procedures.
3. Other employees.
4. Faculty leadership (e.g. dean, deputy deans and head of department).
5. Lack of equipment or supplies.
6. Inadequate training.
7. Interruptions by other people.
8. Lack of necessary information about what to do or how to do it.
9. Inadequate support staff.

The response scale provided ranged from “1 = Never” to “6 = All the time”.

The internal reliabilities for the scale were .85 at Time 1 and .87 at Time 2.

Role overload

I used Spector and Jex’s (1998) Quantitative Workload Inventory (QWI) to measure role overload among academics. The five-item QWI represents the elements of quantity of work, amount of workload and time pressure. The respondents were asked how often they had difficulties in carrying out their duties. The items were:

1. How often does your job require you to work very fast?
2. How often does your job require you to work very hard?
3. How often does your job leave you with little time to get things done?
4. How often is there a great deal to be done?
5. How often do you have to do more work than you can do well?

The rating scale provided ranged from “1 = Never” to “6 = All the time”.

This scale had internal reliabilities of .88 at Time 1 and .87 at Time 2.

Role ambiguity

I used Rizzo, House, and Lirtzman’s (1970) six-item scale to measure role ambiguity. The scale measured the level of academics’ perceived ambiguity about their role’s authority and responsibility, their work objective, necessary information about the job, and the expectation of others of them. Items were as follows:

1. My job has clear, planned goals and objectives.
2. I feel certain about how much authority I have.
3. I know that I have divided my time properly.
4. I know what my responsibilities are.
5. I know exactly what is expected of me.
6. My supervisor’s explanation of what is to be done is clear.

The respondents were asked to indicate their agreement with each item on a six-point scale ranging from “1 = Strongly disagree” to “6 = Strongly agree”. I reverse coded all the items of this measure so that they would reflect ambiguity. This scale had internal reliabilities of .85 at Time 1 and .84 at Time 2.

Role conflict

Role conflict was measured by Rizzo et al.'s (1970) eight-item scale. The scale was intended to measure the perception of resource adequacy, conflicting requests, group interdependence and different working styles experienced by academics. Rizzo et al.'s (1970) eight items were as follows:

1. I receive an assignment without adequate resources.
2. I work with two or more groups who operate quite differently.
3. I work on unnecessary things.
4. I have to bend a rule or policy in order to carry out an assignment.
5. I receive conflicting requests from two or more people.
6. I have to do things that should be done differently.
7. I have to do things that are likely to be accepted by one person and not accepted by others.
8. I receive an assignment without resources to complete it.

The ratings provided ranged from "1 = Strongly disagree" to "6 = Strongly agree". The internal consistencies for the scale were .88 at Time 1 and .84 at Time 2.

Organizational support

I used six items from the Survey of Perceived Organizational Support (SPOS) of Eisenberger, Armeli, Rexwinkel, Lynch, and Rhoades (2001). The scale is intended to measure the extent to which employees perceive that the organization values their contributions and cares about their well-being. Originally SPOS was developed by Eisenberger et al. (1986) with a thirty-six item scale. In a later study, Eisenberger et al. (2001) reduced the questionnaire to

only six items that had been found to load highly on the main factor and that seemed applicable to a wide array of organizations. The unidimensional factor structure of SPOS was established by Eisenberger, Huntington, Hutchison, and Sowa (1986) and Hutchison (1997). The items were as follows:

1. The university takes pride in my accomplishments.
2. The university really cares about my well-being.
3. The university values my contribution to its well-being.
4. The university strongly considers my goals and values.
5. The university shows little concern for me (reversed scored).
6. The university is willing to help me if I need a special favor.

The academics were asked to indicate their agreement with each item on a six-point scale (1 = Strongly disagree, 6 = Strongly agree). The internal consistencies for the scale were .87 at Time 1 and .91 at Time 2.

Peer support

I used O'Driscoll's (2000) four-item scale to measure perceived peer support. Academics were asked how often they get support from their colleagues when they are having problems at work. The questions were:

How often do you get support from your colleagues in terms of:

1. Helpful information or advice?
2. Sympathetic understanding and concern?
3. Clear and helpful feedback?
4. Practical assistance?

A response scale ranging from “1 = Never” to “6 = All the time” was used for each of the above. The internal reliabilities for the scale were excellent, with Cronbach alphas of .94 at Time 1 and .93 at Time 2.

Self-efficacy

Self-efficacy belief was measured with a five-item instrument especially developed for this study. I used task-specific efficacy instead of general self-efficacy based on the following theoretical and empirical considerations. Theoretically, self-efficacy is defined as an individual’s belief in their own capabilities to organize and execute the course of action required to attain a goal (Bandura, 2001). Bandura (1987, cited in Jimmieson, 2000) suggested that the measurement of self-efficacy has to have a combination of magnitude, strength and generality of belief. Magnitude refers to the level of an individual’s belief that they can perform the specific task. Strength involves the degree of confidence an individual has in their ability. Generality describes the extent to which self-efficacy in one task is extended to other tasks. Moreover, self-efficacy belief is domain specific; an individual’s self-efficacy is likely to differ depending on the activity to which it is related (Bandura, 2001). For instance, Salanova, Piero and Schaufeli (2002) separated self-efficacy measurement into general self-efficacy and computer self-efficacy. They found that there was a more consistent moderating effect of computer self-efficacy than generalized self-efficacy on the relationship between job control and burnout. Since the focus here was on task-specific self-efficacy, I developed items that were relevant to the specific group and the tasks which they were performing. Thus, I created task-specific self-

efficacy to measure self-efficacy beliefs among academics. Items were formulated for three domains of self-efficacy beliefs that are closely related to the most important activities of academics of Malaysian public universities: teaching, research and professional services. I separated the three core areas because self-efficacy in relation to one area (e.g. teaching) might not be related to self-efficacy in another area (e.g. research). These categories of activities are salient elements of the annual performance evaluation criteria. The items were:

1. I am confident in my ability to deliver my lectures to students.
2. I am confident in my ability to carry out research projects.
3. I am confident in my ability to provide professional services.
4. I am confident in my ability to supervise my students' projects.
5. I am confident in my ability to publish articles in refereed journals.

Item 1 and 4 measured the perceived ability in teaching and student supervision. Item 3 measured the task of professional service. Item 2 and 5 measured confidence in their ability to carry out research and publish research outputs in journal articles. The ratings provided ranged from "1 = Strongly disagree" to "6 = Strongly agree". The internal reliabilities for the scale were .85 at Time 1 and .83 at Time 2.

Strain

Based on its popularity and wide use (Bowling, 1997), Goldberg's (1978) twelve-item General Health Questionnaire (GHQ12) was selected to measure the feeling of strain. This measure is a screening instrument covering a range of psychiatric symptoms: somatic, anxiety, depression, self-esteem, stress, negative affectivity and social dysfunction (Tait, French & Hulse, 2003). The GHQ12 has been validated as a unidimensional scale that has been extensively used in a variety of occupational and community settings as a screening measure for psychological ill-health (Bank & Jackson, 1982, Winefield et al., 1989). Other researchers found that the GHQ12 may contain either two- or three-factor structures (Kalliath, O'Driscoll & Brough, 2004; Gretch, 1991). Given that there has been considerable debate about the dimensionality of the GHQ, I used confirmatory factor analysis (CFA) to confirm its factor structure. The results of the CFA will be discussed later. Academics were asked to indicate whether or not they have experienced the following situations in the past three months:

1. Been able to concentrate on what you are doing? (R)
2. Lost much sleep over worry?
3. Felt you are playing a useful part in things? (R)
4. Felt capable of making decisions about things? (R)
5. Felt constantly under strain?
6. Felt you couldn't overcome your difficulties?
7. Been able to enjoy your normal day-to-day activities? (R)
8. Been able to face up to your problems? (R)
9. Been feeling unhappy or depressed?
10. Been losing confidence in yourself?
11. Been thinking of yourself as a worthless person?

12. Been feeling reasonably happy, all things considered? (R)

The positively worded items were reverse scored in order to represent strain, the negative emotional feeling of stress. The respondents were asked to rate the frequency with which they had experienced each situation on six-point scale (1 = Never, 6 = All the time). The internal reliabilities of this scale were .83 at Time 1 and .82 at Time 2.

Cynicism

I used a four-item scale of cynicism from the Maslach Burnout Indicator-General Survey (MBI-GS) (Schaufeli et al., 1996) to measure cynical attitudes toward work, colleagues and students. The original cynicism scale of MBI-GS consists of five items. Taris et al. (2001) omitted item 3 (I just want to do my work and not be bothered) which did not perform well in their CFA and those reported by others (Bakker et al. 2003; Demerouti, Bakker, Vardakou, & Kantas, 2003; Schaufeli, Salanova, González-romá & Bakker, 2002; Schutte, Toppinen, Kalimo & Schaufeli, 2000). The items were:

1. I have become less enthusiastic about my work.
2. I have become less interested in my work.
3. I have become more cynical about whether my work contributes anything.
4. I doubt the significance of my work.

Responses were given on a six-point rating scale ranging from “1 = Strongly disagree”, and “6 = Strongly agree”. In the present study the revised (4-item) index was therefore utilized. The Cronbach alphas for these items at Time 1 and Time 2 were both .89.

Professional efficacy

A six-item subscale of the MBI-GS measured academics' expectations of general effectiveness at work (Schaufeli et al., 1996). Essentially, the scale assesses the academics' general confidence in their ability to perform the job. Respondents were asked to rate the level of their current performance at work. The items were:

1. I have effectively solved most of the problems that arise in my work.
2. In my opinion, I am a good academic.
3. I have accomplished many worthwhile things in this job.
4. I have contributed to my university through my work.
5. So far, I have done my job effectively.
6. I am satisfied with my accomplishment at work.

Academics were asked to respond on a six-point rating scale ranging from "1 = Strongly disagree", and "6 = Strongly agree". This scale had an internal reliability of .87 at both times.

Organizational commitment

Allen and Meyer's (1996) affective organizational commitment scale was used to measure academics' emotional attachment to their universities. Meyer and Allen (1991) originally defined three types of psychological bond between individuals and organizations: affective commitment; continuance commitment; and normative commitment. Since the present study was investigating the mediating effect of an individual's commitment on their strain and intention to leave, affective component was considered an important aspect of commitment. The affective commitment scale has shown consistent internal reliabilities over a

number of studies, with a median of 0.85 (Tremble, Payne, Finch, & Bullis, 2003). The measure's construct validity has been established in both exploratory and confirmatory factor analysis (Tremble et al., 2003). The items were as follows:

1. I do not feel a strong sense of belonging to this university. (R)
2. I do not feel "emotionally attached" to this university. (R)
3. This university has a great deal of personal meaning for me.
4. I do not feel "part of the family" in this university. (R)
5. I would be very happy to spend the rest of my career with this university.
6. I enjoy discussing my university with people outside it.
7. I really feel as if this university's problems are my own.

The six response categories ranged from "1 = Strongly disagree" to "6 = Strongly agree". The internal reliabilities of the scale in the present research were .85 at Time 1 and .80 at Time 2.

Intention to leave

I used O'Driscoll and Beehr's (1994) 3-item scale to measure intentions to leave. The respondents were asked whether they thought about leaving their job, planned to look for a new job over the next twelve months or would actively search for a new job outside the university. The items were as follows:

1. Over the past 12 months, I have thought about quitting my present job.
2. I plan to look for a new job within the next twelve months.
3. I will actively look for a new job outside of this university over the next year.

Responses were on six-point Likert scale ranging from “1 = Strongly disagree” to “6 = Strongly agree”. The internal reliabilities of the scale were .88 at both times.

Demographics

The final section of the questionnaire contained five demographic questions: gender, length of service, field of studies, level of qualification and status of service. I provided three categories for length of service: less than five years, five to fifteen years, and above fifteen years. Those with less than five years of service were considered new academics who just started their career and those with more than fifteen years of service were considered senior academics. Field of study was divided into science and social science because these two categories are traditionally used to differentiate the fields of knowledge. I provided two categories for levels of education according to the highest qualification possessed by respondent (Master degree or PhD degree). Employment status was divided into three categories: permanent, probation and contract. Permanent academic staff were academics who have a contract of service for an unspecified period of time. Probationer academic staff were those in the career position but who have not completed the probationary period. In Malaysia, academics usually gain their confirmation of their appointment after completing their Masters degree or PhD degree, which depend on their employment terms. A contract academic is a temporary staff member who has a contract of service for a fixed or limited period of time. These demographic variables were treated as control variables in my analyses.

4.4 Method of analysis

This section explains the methods used to analyse the data. The issues covered are data preparation; checking for outliers; normality check; reliability and validity check; and statistical tools.

4.4.1 Data preparation

I used the Statistical Package for Social Science (SPSS) to enter the data.

The data were cleaned to avoid biases (e.g. detection of outliers and normality test as in pages 98-101). Data transformations were then performed which involved mean substitution for the cases with **missing values (see Table 4.4) and reversing the negatively worded questions.**

Missing data are one of the most pervasive problems in data analysis. Their seriousness depends on the pattern of missing data, how much is missing, and why they are missing (Tabanick & Fidel, 2001). I examined frequencies of all items to detect any data entry errors and missing responses, then performed person mean substitution to replace the missing values. This approach replaces responses to the missing items with the mean response from that person to the other items in that particular variable (Raymond & Roberts, 1987). I excluded respondents who had missing responses on more than one set of items (i.e. variable). Generally the number of missing responses was relatively low except for the scale of role conflict. High missing responses in this scale might be due to the reluctance of the respondents to report their perception on certain items in the scale such as 'I have to bend a rule....'.

Table 4.4:
Number of missing responses for each variable

Latent Variable	Number of respondents with missing responses
1. Strain	10
2. Cynicism	10
3. Professional efficacy	14
4. Organizational commitment	32
5. Intention to leave	16
6. Resource constraints	28
7. Role overload	12
8. Role ambiguity	23
9. Role conflict	48
10. Organizational support	36
11. Peer support	4
12. Self-efficacy	23

4.4.2 Checking for outliers

An outlier is an observation with an extreme value that is distinct from the rest of the data set (Rasmussen, 1988). A large deviation from other cases may have a dramatic effect on parameter estimates such as means and correlations. According to Zimmerman (1998), the presence of outliers can inflate the error rates and substantially distort parameter estimates. Mean and least squares estimation are particularly vulnerable to outliers (Osborne & Overbay, 2004).

I first verified that no errors were made in data entry, and then proceeded to check for potential outliers using statistical procedures. I performed a

Mahalanobis distance test (D^2), which is one of the most common approaches to detect outliers (Rasmussen, 1988; Tabanick & Fidell, 2001). D^2 values that are significant at the 5% level indicate outliers, while those significant at a 1% level indicate extreme outliers (Mullen, Milne, & Doney, 1995). Results of outliers analysis using AMOS 5 showed that there were 29 sets of data outliers from 339 cases for Time 1 data, with Mahalanobis distance values higher than the χ^2 critical value of 21.20 (5% significant level). Data at Time 2 deleted eleven sets of data outliers from 205 cases. I then performed listwise deletion of the outliers with D^2 values that were significant at the 5% level. The remaining sample sizes of 310 for Time 1 and 194 for Time 2 were considered sufficient for further data analysis.

4.4.3 Normality of the data set

As some statistical analysis, such as moderation analysis, is sensitive to non-normality, I also checked for outliers that may affect the normality of data set. I used structural equation modeling (SEM) to examine the causal structure among the study variables. A basic assumption for SEM analysis is that the data have a multivariate normal distribution (Hulland, Chow, & Lam, 1996). Therefore, I used the Kolmogorov-Smirnov skewness and kurtosis statistics to test the normality of the data. If the values of skewness and kurtosis statistics fall inside the range of plus or minus three, the distribution is considered normal (Tabanick & Fidel, 2001). Table 4.5 presents the skewness and kurtosis statistics for the original data set with the original number of respondents of $N = 339$ for Time 1 and $N = 205$ for Time 2.

Table 4.5:
Skewness and kurtosis values of the variables
(N=339 at Time 1 and 205 at Time 2)

Name of Latent Variable	Skewness		Kurtosis	
	Time 1	Time 2	Time 1	Time 2
1. Strain	.080	.665	-.592	1.445
2. Cynicism	1.000	.933	.484	.327
3. Professional Efficacy	1.714	.998	5.016	1.828
4. Organizational Commitment	.821 1.268	.781 1.412	.320 .616	2.865 1.119
5. Intention to Leave	.622	.444	.515	.596
6. Resource Constraints	.468	.434	-.518	-.289
7. Role Overload	1.014	.812	1.266	.597
8. Role Ambiguity	.370	.059	1.245	-.533
9. Role Conflict	.697	-.466	1.257	-.143
10. Organizational Support	-.059	-.092	-.597	-.140

The results show that skewness values for all variables at Time 1 and Time 2 were within acceptable range. With regard to kurtosis, it was found that two scales (professional efficacy and self-efficacy) have slightly peaked distributions. The kurtosis of professional efficacy was 5.01 at Time 1 and the kurtosis values of self-efficacy were 4.61 at Time 1 and 4.86 at Time 2. These indicate non-normality of the data set.

After the removal of 29 outliers at Time 1 and 11 at Time 2, there were no skewness or kurtosis statistics with values of more than 3, confirming the normality of the data set. According to West, Finch, and Curran (1995), the goodness-of-fit statistics are not likely to be inflated if the skew and kurtosis for

the individual scale does not exceed the critical value of 3. Table 4.6 presents the skewness and kurtosis statistics with the outliers removed.

Table 4.6:
Skewness and kurtosis values of the study variables (N=310 at Time 1 and 194 at Time 2)

Name of Latent Variable	Skewness		Kurtosis	
	Time 1	Time 2	Time 1	Time 2
1. Strain	-.076	.479	-.856	.267
2. Cynicism	.971	.760	.447	-.451
3. Professional Efficacy	1.084	.668	1.958	.409
4. Organizational Commitment	.779	-.618	.273	.247
5. Intent to Leave	1.269	1.348	.648	.829
6. Resource Constraints	.373	.324	.012	.366
7. Role Overload	.501	.369	-.481	-.410
8. Role Ambiguity	.814	.512	.502	-.230
9. Role Conflict	-.073	.027	.520	-.509
10. Organizational Support	-.119	-.430	-.647	-.128
11. Peer Support	-.119	.041	-.647	-.298
	1.142	-1.128	1.532	1.301

4.5 Statistical analysis

I performed confirmatory factor analysis to uncover the latent structure of all study variables. Confirmatory factor analysis was performed on all measures of the study except for intention to leave, which consists of only three items. According to Kline (2005), models using less than four indicators per latent variable are likely to be underidentified and/or fail to converge, and error

estimates may be unreliable. I performed confirmatory factor analysis on the newly developed scale, task specific self-efficacy to test the hypothesized unidimensionality of the scale. I also performed confirmatory factor analysis on strain and also on four groups of variables to assess the validity and distinctiveness of the scales. The first group included the role stressors consisting of role overload, role ambiguity, and role conflict. The second group combined cynicism, professional efficacy, organizational commitment, and intention to leave. The third group included professional efficacy and self-efficacy and the fourth included organizational support and peer support. I performed CFA on these groups of variables to investigate the distinctiveness of the variables.

I also performed independent samples t-test and analysis of variance (ANOVA) at Time 1 and Time 2 to examine whether there were any significant differences between all universities on all variables of the study. The results indicate that there were no significant differences between the universities (see Appendix B). Therefore, controlling for organization in the regression analysis and SEM was deemed unnecessary.

I used regression analysis to test Hypotheses 1 and 3, which were the direct effects of role stressors on strain and the direct effects of strain on cynicism, professional efficacy, and organizational commitment. I examined the direct effects through cross sectional analysis and also longitudinal analysis. For longitudinal analyses, I controlled for the Time 1 criterion variable to remove the autocorrelation between criterion variables at Time 1 and Time 2.

Hypothesis 2 involved the moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressor and strain. Cohen and colleagues suggest three possible patterns of interaction - enhancing interaction, buffering interaction and antagonistic interaction (Cohen, Cohen, West, & Aiken, 2003). Enhancing interaction occurs when both predictor and moderator variables have similar effects on criterion variable. For example peer support that has direct effect on strain will strengthen the interaction effect on the relationships between role stressors and strain. Buffering interaction refers to situation in which moderator variable weakens the effect of predictor variable on outcome variable. For example when the peer support is high the effect of role overload on strain is reduced. Antagonistic interaction occurs when moderator variable strengthens the effect of predictor variable on the criterion variable. To test these hypotheses I used moderated multiple regressions (Cohen & Cohen, 1983). Moderated multiple regression involves hierarchical regression that first tests the relationships of role stressors with strain, and secondly tests the contribution of the interaction terms, which are the product of role stressor and moderator variables (organizational support, peer support, and self-efficacy).

Hypotheses 4 and 5 are mediation hypotheses. Hypothesis 4 describes the mediation effect of strain on the relationships between role stressors and the outcomes of strain. Hypothesis 5 involves the mediation effects of cynicism, professional efficacy and organizational commitment on the relationship between strain and intention to leave. Initially, strain is assumed to affect intention to leave (direct effect). In the mediational hypothesis, a mediator variable (e.g cynicism) is

assumed to mediate the effect of strain on intention to leave (indirect effect). Complete mediation occurs when strain no longer affect intention to leave when cynicism is included in the model. Therefore, to test the mediational hypothesis, I compared the fit of the direct effect model with the mediational (indirect effects) model. For example, I compared the fit of the model linking strain to intention to leave with the model linking strain directly with the intention to leave through cynicism, professional efficacy, and organizational commitment as mediator variables.

4.6 Longitudinal analysis

Literature indicates that making a causal claim between two phenomena based on cross-sectional data may lead to erroneous conclusions (Cole & Maxwell, 2003; Sobel, 1990). Specifically, the purpose of the analysis was to explain the effect of predictor variable on criterion variable over a specified time period. The longitudinal mediation model implies that there is temporal precedence in which predictor variables cause mediator variables and then mediator variables cause criterion variables. Hoyle and Smith (1994) outlined three primary criteria for establishing that one variable causes another. The criteria are (1) there is an association between the two variables, (2) the association is not spurious, and (3) the cause precedes the effect in time.

I designed this two-wave panel study to provide more information about causal relations between variables in the model. Since this study involved longitudinal data, I used three different approaches to provide more accurate inferences about causal relationships between predictor and criterion variables. The first approach is the time-effect model that considers the relationship between

predictor at Time 1 with the criterion at Time 2. The second and third approaches are two types of change score model: (a) unconditional change score model and (b) conditional change score model (Finkel, 1995). These models are outlined below in more detail.

4.6.1 Time-effect model

The time-effect model refers to a model to test whether a variable at Time 1 can predict variance in a variable at Time 2. The reason behind the use of this approach is to examine whether there is a significant time effect of a predictor variable on the criterion variables over a specified time period. Using panel data, I regressed the criterion variable at Time 2 on the predictor variable at Time 1, to fulfill the requirement of longitudinal inference in which a predictor precedes a criterion variable in time (Cole & Maxwell, 2003).

4.6.2 Change score model

The change score model is a model for assessing predictors of change in a response between two time points, where change in the variable of interest is regressed on the predictor of interest (Finkel, 1995). In order to apply the change score model, I created new variables that were calculated based on the change score for all variables of interest. For example, I regressed role overload at Time 2 on role overload at Time 1 and then saved the standardized residuals as a new variable to represent changes in role overload between the two periods (Bergh & Fairbank, 2002). The same method applies for the criterion variables. I used two

types of change score models: (a) unconditional change score model and (b) conditional change score model.

The *unconditional* change score model describes the relationship between the predictor variable at Time 1 and changes in the criterion variable over time. In this model, the change in the criterion variable is assumed *to be independent* of the change in the predictor variable (Finkel, 1995). This approach was expected to show that academics who encountered with stressors (e.g. role overload) at a particular point in time will show significant level of changes in consequences (e.g. strain) after a six-month time lag. Therefore, in this particular approach, changes in the criterion variable will be regressed on the predictor variable at Time 1 to examine whether the predictor variable at Time 1 is related to changes in the criterion variable of interest. The reason behind this approach is to examine the effect of a predictor at a particular time to the changes in a criterion over a time period. In this study, the time period was six months.

The *conditional* change score model is an alternative model that looks at how changes in the predictor variables might affect changes in the criterion variable. In this model, change in the criterion variable is assumed *to be dependent* on change in the predictor variable (Finkel, 1995). Therefore, using this model, changes in the criterion variable will be regressed on changes in the predictor variable to examine whether there is a significant relationship between changes in the criterion variable and changes in the predictor variable between two periods. Further explanation of the proposed analytical models will be presented in the results chapter.

CHAPTER 5

RESULTS

Based on the proposed model I hypothesized that 1) role stressors would be positively related to strain; 2) organizational support, peer support, and self-efficacy would moderate the relationships between role stressors and strain; 3) strain would be positively related to cynicism, and negatively related to professional efficacy and organizational commitment; 4) strain would mediate the relationships between role stressors and outcomes of strain; and 5) cynicism, professional efficacy, and organizational commitment would mediate the relationship between strain and intention to leave.

Information in this chapter is presented in three sections: (1) confirmatory factor analysis, (2) descriptive analysis, and (3) hypotheses testing.

5.1 Confirmatory factor analysis

I performed confirmatory factor analyses on the study variables to evaluate the adequacy of the measurement model. There were twelve latent variables in this study. Confirmatory factor analyses (CFA) were performed on ten measures which were taken from existing measures and also on the self-efficacy measure which was developed specifically for this study. I did not perform confirmatory factor analysis on intention to leave, since the scale has only three items, and according to Kline (2005), models using fewer than four indicators per latent variable are more likely to be under-identified and/or fail to converge, and error estimates may be unreliable.

I investigated the discriminant validity of four groups of variables: a) role stressors, consisting of role overload, role ambiguity, and role conflict; b) outcomes of strain including cynicism, professional efficacy, organizational commitment, and intention to leave; c) professional efficacy and self-efficacy; and d) organizational support and peer support. Correlations between theoretically similar measures should be high, while correlations between theoretically dissimilar measures should be low.

All the confirmatory factor analyses were performed using AMOS 5.0. I examined the overall acceptability of the measures using the Chi-square statistic and Chi-square/d.f. and three fit indices: RMSEA (root mean square error of approximation), CFI (comparative fit index) and GFI (goodness of fit index) (Browne & Cudeck, 1993; Hu & Bentler, 1995). A measurement model provides an acceptable fit when RMSEA is below .08 and GFI and CFI are more than .9 (Hair et al., 1998). RMSEA and CFI were used because these fit indices are less sensitive to sample size when compared to other fit indices (Fan, Thomson, & Wang, 1999). Jöreskog and Sörbom (1984) proposed the GFI as an index of fit of models fit for data using maximum likelihood or ordinary least square estimation.

All variables showed a good fit for one-dimensional constructs including the GHQ12 to measure strain, which was considered the key mediating variable in this study. The GHQ12 has been shown to be a valid and reliable instrument to detect a wide array of psychological disorders across occupations and cultures. However, there is an ongoing debate about its factor structure (e.g. Banks & Jackson, 1982; Greetz, 1991; Kalliath, O'Driscoll, & Brough, 2004). A one-factor model of the GHQ12 was suggested by Banks and Jackson (1982) and Winefield, Goldney, Winefield, and Tiggemann (1989). Kalliath et al. (2004) found a better

fit for a two-dimensional factor structure by dropping items 1, 2, 3, and 5 of the GHQ12 because these items performed poorly in measuring strain. Other studies have found a three-factor structure (e.g. Greatz, 1991). Therefore, I tested a one-factor model, a two-factor model, and three-factor model, to determine which factor structure was the most valid and reliable with the present data. I used maximum likelihood as a method of estimation using AMOS 5.0 (Arbuckle, 2003). Table 5.1 presents a list of items for one-, two- and three-factor structure of the GHQ12.

Table 5.1:
One-, two- and three-factor structure of the GHQ12

Item (GHQ) One-factor	Kalliath et al.'s Two-factor	Greatz's Three-factor
1 Been able to concentrate on what you are doing?	-	Social Dysfunction
2 Lost much sleep over worry? (R)	-	Anxiety/ Depression
3 Felt you are playing a useful part in things?	-	Social Dysfunction
4 Felt capable of making decisions about things?	Social Dysfunction	Social Dysfunction
5 Felt constantly under strain? (R)	-	Anxiety/ Depression
6 Felt you couldn't overcome your difficulties? (R)	Anxiety/ Depression	Anxiety/ Depression
7 Been able to enjoy your normal day-to-day activities?	Social Dysfunction	Social Dysfunction
8 Been able to face up to your problems?	Social Dysfunction	Social Dysfunction
9 Been feeling unhappy or depressed? (R)	Anxiety/ Depression	Anxiety/ Depression
10 Been losing confidence in yourself? (R)	Anxiety/ Depression	Loss of confidence
11 Been thinking of yourself as a worthless person? (R)	Anxiety/ Depression	Loss of confidence
12 Been feeling reasonably happy, all things considered?	Social Dysfunction	Social Dysfunction

I first tested a one-factor structure for the GHQ12. This model hypothesized that a single factor would load on all items of the GHQ12. The results revealed that a one-factor structure produced an acceptable fit statistic with Chi-square = 42.287, d.f. = 34, Chi-square/d.f. = 1.24, RMSEA = 0.028, GFI =

0.978 and CFI = 0.993. The notion that GHQ12 is a one-factor structure could not be rejected.

The two-factor model adopted from Kalliath et al. (2004) was then fitted to the data of the present study and a converged solution was obtained. The model also produced an acceptable fit. Table 5.2 presents the summary of the fit statistic for one-, two- and three-factor models of the GHQ12.

Table 5.2:
Fit statistic for one-, two- and three-factor model for GHQ12

Model	Number of Items	Chi-square	d.f.	Chi-square/ d.f.	RMSEA	GFI	CFI
One-factor	12	42.287	34	1.243	0.028	0.978	0.993
Two-factor	8	19.957	17	1.174	0.024	0.984	0.986
Three-factor	12	86.537	44	1.967	0.056	0.956	0.962

A Chi-square difference test comparing the one-factor model with the two-factor model and the three-factor models revealed no significant difference. A single factor seems to adequately represent all items of the GHQ12. According to Kline (2005), if a single factor cannot be rejected, there is little point in evaluating more complex factor structures. Furthermore, the high correlations between factors in the two- and three-factor models indicate convergent validity (Kline, 2005). The correlation between social dysfunction and anxiety in the two factor model was 0.59. The correlations in the three-factor model were anxiety ↔ loss of confidence ($r = .72$); social dysfunction ↔ anxiety ($r = .52$); and loss of confidence ↔ social dysfunction ($r = .54$). This provides evidence that all items in the GHQ12 are related to the same construct. Based on the present data, the GHQ12 appeared to have a unidimensional measure. Hence I used a composite score of the 12-item scale for further analysis. The standardized factor loadings for the one-factor model are shown in Table 5.3.

Table 5.3:
Standardized factor loadings for the GHQ12

GHQ12 items	Factor loadings
1	.459
2	.364
3	.473
4	.567
5	.343
6	.410
7	.698
8	.689
9	.467
10	.543
11	.428
12	.792

Role stressors

I also performed a CFA on role stressors (i.e. role overload, role ambiguity and role conflict) to determine if the number of factors (latent variables) and the loadings of measured variables (indicators) conform to what is expected on the basis of pre-established theory. I tested both one- and three-factor models, with the nineteen items that comprised role overload, role ambiguity, and role conflict. The parameter estimates are presented in Table 5.4.

Table 5.4:
Parameter estimates for one- and three-factor model of role stressors.

Parameter (Role)	Factor Loadings			
	One-factor Model	Three-factor Model		
	Role Stressor	Role Overload	Role Ambiguity	Role Conflict
Overload →RO1	.198	.664		
Overload →RO2	.192	.738		
Overload→ RO3	.325	.854		
Overload→ RO4	.288	.838		
Overload →RO5	.308	.763		
Ambiguity→RA1	.359		.719	
Ambiguity →RA2	.223		.813	
Ambiguity→ RA3	.174		.616	
Ambiguity→ RA4	.233		.608	
Ambiguity →RA5	.334		.717	
Ambiguity →RA6	.354		.655	
Conflict →RC1	.629			.489
Conflict →RC2	.489			.604
Conflict→ RC3	.622			.658
Conflict→ RC4	.653			.801
Conflict →RC5	.789			.808
Conflict→ RC6	.782			.768
Conflict →RC7	.748			.784
Conflict →RC8	.791			.661
	Factor Correlations			
Overload ↔Ambiguity			.15	
Overload ↔ Conflict			.31	
Ambiguity ↔ Conflict			.36	

Note : → indicates path coefficient
↔ indicates correlation between two factors

The one-factor model produced a poor fit to the data with Chi-square = 345.773, $p = .001$, d.f. = 122, Chi-square/d.f. = 2.834, RMSEA = .077, GFI = .896, CFI = .922. The three-factor structure revealed a better fit with Chi-square = 193.301, $p = .001$, d.f. = 126, Chi-square/d.f. = 1.534, RMSEA = .042, GFI = .938, CFI = .977. The results showed a clear multidimensional structure of the role stressor construct, consisting of role overload, role ambiguity and role conflict. The relatively low correlations between the factors indicate good discriminant validity (Arbuckle, 2003): Overload ↔ Ambiguity = .15; Overload ↔ Conflict = .31; and Ambiguity ↔ Conflict = .36.

Organizational support and peer support

I carried out a CFA on organizational support and peer support to provide evidence that they are distinct constructs. I compared one- and two-factor structures, using the ten items that comprised organizational support and peer support. Results are presented in Table 5.5.

A one-factor model produced a poor fit to the data, with Chi-square = 78.737, d.f. = 28, Chi-square/d.f. = 2.812, RMSEA = .085, GFI = .932, CFI = .951. A two-factor model produced a better fit, with Chi-square = 57.038, d.f. = 27, Chi-square/d.f. = 2.112, RMSEA = .046, GFI = .966, CFI = .986. The correlation between organizational support and peer support was modest ($r = .32$). The results in Table 5.5 showed that the organizational support and peer support were relatively distinct constructs.

Table 5.5:
Parameter estimates for organizational support and peer support

Parameter	Factor Loadings		
	Two-factor Model		One-factor Model
	Organizational Support	Peer Support	
Org. Support → OS1	.818		.833
Org. Support → OS2	.808		.804
Org. Support → OS3	.922		.932
Org. Support → OS4	.867		.863
Org. Support → OS5	.396		.383
Org. Support → OS6	.575		.542
Peer Support → PS1		.878	.224
Peer Support → PS2		.873	.274
Peer Support → PS3		.937	.296
Peer Support → PS4		.876	.328
	Correlation		
Org. Support ↔ Peer Support	.32		

Note : → indicates coefficient path

↔ indicates correlation between two factors

Self-Efficacy

CFA was performed on the newly developed instrument, self-efficacy, consisting of five items. The results revealed that a one-factor model produced a relatively good fit, with Chi-square = 6.800, d.f. = 3, Chi-square/d.f. = 2.267, RMSEA = 0.064, GFI = 0.992 and CFI = 0.998. The analysis showed that the self-efficacy scale was valid to measure task-specific efficacy among Malaysian university academics. The standardized factor loadings for the scale are presented in Table 5.6.

Table 5.6:
Standardized factor loadings for self-efficacy

Self-Efficacy items	Factor Loadings
1	.635
2	.673
3	.861
4	.672
5	.839

Outcomes of strain

I also carried out CFA on the outcomes of strain (i.e. the combination of cynicism, professional efficacy, organizational commitment, and intention to leave). I compared one- and four-factor structures of these four outcomes of strain, using the twenty items that comprised cynicism, professional efficacy, organizational commitment, and intention to leave.

The one-factor model produced a poor fit to the data, with Chi-square = 369.145, d.f. = 145, Chi-square/d.f. = 2.547, RMSEA = .082, GFI = .895, CFI = .939. The four-factor model produced a better fit, with Chi-square = 291.092, d.f. = 156, Chi-square/d.f. = 1.866, RMSEA = .06, GFI = .946, and CFI = .963. Factor loadings that pertain to the four-factor structure were higher than factor loadings for the one-factor structure (see Table 5.7). While the correlations between factors were moderate (ranging between -.25 and -.54), they were not sufficiently high to suggest construct overlap (Morrow, 1983). Results are presented in Table 5.7.

Table 5.7:
Parameter estimates for cynicism, professional efficacy, organizational commitment and intention to leave

Parameter	Factor Loadings				
	One-Factor Model	Four-Factor Model			
		CY	PA	OC	ITL
Cynicism → Cy1	.693	.900			
Cynicism → Cy2	.713	.939			
Cynicism → Cy3	.670	.715			
Cynicism → Cy4	.575	.595			
Professional Efficacy → PA2	.464		.557		
Professional Efficacy → PA2	.377		.747		
Professional Efficacy → PA3	.297		.848		
Professional Efficacy → PA4	.185		.739		
Professional Efficacy → PA5	.431		.784		
Professional Efficacy → PA6	.522		.734		
Org. Commitment → OC1	.593		.673		
Org. Commitment → OC2	.584		.669		
Org. Commitment → OC3	.484		.501		
Org. Commitment → OC4	.591		.686		
Org. Commitment → OC5	.676		.706		
Org. Commitment → OC6	.655		.675		
Org. Commitment → OC7	.559		.576		
Intention to Leave → ITL1	.632			.764	
Intention to Leave → ITL2	.620			.948	
Intention to Leave → ITL3	.586			.870	
	Factor Correlations				
Cynicism ↔ P. Efficacy			-.42		
Cynicism ↔ Org. Commitment			-.54		
Cynicism ↔ Int. to leave			.48		
P. Efficacy ↔ Org. Commitment			.36		
P. Efficacy ↔ Int. to leave			-.25		
Org. Commitment ↔ Int. to leave			-.54		

Note: → indicates path coefficient
↔ indicates correlation between two factors

Professional efficacy and self-efficacy

Since the literature indicates that professional efficacy and self-efficacy are related to each other, I carried out CFA on these two scales to confirm their discriminant validity. I compared one- and two-factor structures using the eleven items that combined professional efficacy and self-efficacy. Results are presented in Table 5.8.

Table 5.8:
Parameter estimates for professional efficacy and self-efficacy

Parameter	Factor Loadings		
	Two-factor model		One-factor Model
	Professional Efficacy	Self-Efficacy	
Professional Efficacy → PE1	.506		.506
Professional Efficacy → PE2	.785		.735
Professional Efficacy → PE3	.856		.812
Professional Efficacy → PE4	.770		.737
Professional Efficacy → PE5	.758		.791
Professional Efficacy → PE6	.669		.675
Self-Efficacy → SE1		.645	.524
Self-Efficacy → SE2		.856	.531
Self-Efficacy → SE3		.706	.603
Self-Efficacy → SE4		.810	.511
Self-Efficacy → SE5		.646	.416
Factor Correlation			
P. Efficacy ↔ Self-Efficacy	.52		

Note: → indicates path coefficient
↔ indicates correlation between two factors

The one-factor model produced a relatively poor fit to the data, with Chi-square = 108.033, d.f. = 32, Chi-square/d.f. = 3.376, RMSEA = .088, GFI = .940, CFI = .956. The two-factor model produced a better fit, with Chi-square = 72.760, d.f. = 34, Chi-square/d.f. = 2.14, RMSEA = .062, GFI = .965, CFI = .981. The correlation between factors was moderate ($r = .52$), indicating that they were not

overlapping with each other to an excessive degree. Therefore, I retained self-efficacy and professional efficacy as a two-factor structure because these two variables served different functions. Self-efficacy served as a moderator in the relationships between role stressors and strain. Professional efficacy served as a mediator in the relationship between strain and intention to leave.

5.2 Descriptive analysis

Table 5.9 presents mean values of all variables at Time 1 and Time 2. Generally, the level of strain among these academics in Malaysian public universities appeared to be moderate. Overall, the mean differences between Time 1 and Time 2 were not significant except for strain ($t = 2.116$, $p < .05$) and role overload ($t = 2.977$, $p < .05$). Respondents reported lower levels of strain and role overload at Time 2.

Respondents reported a moderately low level of role ambiguity, with mean values of 2.15 at Time 1 and 2.24 at Time 2, out of a maximum score of six. Role conflict was moderate, with mean values of 3.29 at Time 1 and 3.09 at Time 2. Respondents also reported a moderate level of role overload, with mean values of 3.85 at Time 1 and 3.61 at Time 2.

Respondents reported very high self-efficacy beliefs of 5.40 at Time 1 and 5.32 at Time 2. Respondents also reported very high levels of professional efficacy, with mean values of 5.25 at Time 1 and 5.18 at Time 2. Perceived organizational support was moderate, with mean values of 3.80 at Time 1 and 3.83 at Time 2. Respondents also reported receiving a moderate level of support from peers, with mean values of 3.78 at Time 1 and 3.83 at Time 2. Skewness and kurtosis statistics did not exceed 3 for any variable, indicating that the data did

not deviate substantially from a normal distribution (West, Finch, & Curran, 1995).

Table 5.9:
*Mean, standard deviation, skewness and kurtosis for study variables
 (Time 1, N = 310 and Time 2, N = 194)*

Variable	Time	Mean	Standard Deviation	Skewness	Kurtosis
Resource Constraints	1	3.11	.710	.373	.012
	2	3.06	.703	.324	.366
Role Overload	1	3.85	.799	.501	-.481
	2	3.61	.706	.369	-.410
Role Ambiguity	1	2.15	.788	.814	.502
	2	2.24	.725	.512	-.230
Role Conflict	1	3.21	.974	-.073	.520
	2	3.09	.805	.027	-.509
Organizational Support	1	3.79	.986	-.119	-.647
	2	3.83	.950	-.430	-.128
Peer Support	1	3.78	.983	-.119	-.647
	2	3.83	.951	.041	-.298
Self-Efficacy	1	5.39	.573	-1.142	1.532
	2	5.32	.579	-1.128	1.301
Strain	1	2.74	.605	-.076	-.856
	2	2.61	.527	.479	.267
Cynicism	1	2.16	1.111	.971	.447
	2	2.19	1.007	.760	-.451
Professional Efficacy	1	5.25	.573	-1.101	1.483
	2	5.18	.672	-1.010	1.841
Organizational Commitment	1	3.56	1.007	.779	.273
	2	3.48	1.011	-.618	.247
Intention to Leave	1	1.89	1.207	1.269	.648
	2	1.89	1.183	1.348	.829

Note: Response scale for all items ranged from 1 to 6.

Tables 5.10 and 5.11 present the intercorrelations among all variables at Time 1 and Time 2 respectively. Table 5.12 presents the intercorrelations between variables at Time 1 and Time 2.

All correlations between role stressors and strain were positive, significant, and low to moderate, ranging from 0.21 to 0.46. The correlation between role ambiguity and strain was the strongest ($r = .46$ at Time 1; $.33$ at Time 2) and role overload was the weakest ($r = .21$ at Time 1; $.23$ at Time 2). Strain was positively and strongly correlated with cynicism ($r = .54$ at Time 1; $.58$ at Time 2), and negatively related to professional efficacy ($r = -.50$ at Time 1; $-.43$ at Time 2), while the negative correlation of strain with organizational commitment was modest ($r = -.36$ at Time 1; $-.22$ at Time 2).

The correlations between proposed moderators (i.e. organizational support, peer support and self-efficacy) and role stressors were generally weak. Correlations between moderators and role overload were non-significant, except the correlation between self-efficacy and role overload at Time 1 ($r = -.11$, $p < .05$). Correlations between moderators and role ambiguity and role conflict were low to moderately negatively correlated, with coefficients ranging from $-.13$ to $-.46$. The only exception was for the correlation between self-efficacy and role conflict at Time 2, which was not significant ($r = .03$).

Correlations between moderators and strain were moderate at Time 1, with values ranging from $-.29$ to $-.34$, but somewhat lower at Time 2, with values ranging from $-.11$ to $-.38$. Correlations between strain and organizational support ($r = -.11$) and peer support ($r = -.11$) were non-significant at Time 2. Intention to leave was positive and moderately correlated with cynicism ($r = .48$ at Time 1, and $r = .38$ at Time 2) and organizational commitment ($r = -.61$ at Time 1 and $r = -.49$ at Time 2). The correlation between professional efficacy and intention to leave was low at Time 1 ($r = -.26$) and was not significant at Time 2 ($r = -.14$).

Correlations between demographic variables and study variables were rather low or non-significant. The exception were for correlations between (1) gender and role overload at Time 1, role ambiguity at Time 2, (2) length of service and professional efficacy and self-efficacy both at Time 1, and (3) levels of qualification and self-efficacy at both Time 1 and Time 2 that were moderate. Gender, length of service and levels of qualification were used as control variables in hypotheses testing.

In conclusion, there were no very high correlation values among pairs of variables, which suggests that multicollinearity was not a concern. The highest correlations were between self-efficacy and professional efficacy, with correlation values of .54 at Time 1 and .67 at Time 2. Overall, the scales were reasonably independent of each other.

Table 5.10: Intercorrelations among study variables at Time 1 (N = 310)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Strain																
2. Cynicism	.54**															
3. Professional Efficacy	-.50**	-.48**														
4. Org. Commitment	-.36**	-.55**	.33**													
5. Intention to Leave	.33**	.48**	-.26**	-.59**												
6. Resource Constraints	.38**	.40**	-.24**	-.46**	.38**											
7. Role Overload	.21**	.11	-.07	-.06	.06	.32**										
8. Role Ambiguity	.46**	.45**	-.51**	-.46**	.34**	.41**	.11									
9. Role Conflict	.33**	.34**	-.24**	-.36**	.29**	.58**	.28**	.31**								
10. Org. Support	-.34**	-.44**	.27**	.54**	-.37**	-.36**	-.02	-.46**	-.26**							
11. Peer Support	-.29**	-.22**	.19**	.24**	-.20**	-.30**	.05	-.29**	-.23**	.32**						
12. Self-Efficacy	-.30**	-.32**	.54**	.27**	-.12*	-.11	-.12*	-.31**	-.13*	.22**	.12*					
13. Gender	.15*	.10	.00	.05	.01	.09	.22*	.04	.04	.12*	.02	.02				
14. Length of Service	-.19*	-.06	-.25*	-.15*	-.05	-.11	-.12*	-.18*	-.06	-.10	-.02	.28*	-.13*			
15. Field of Studies	.00	.06	.05	.12*	-.02	-.08	.01	-.02	.01	.11*	.05	.07	.17*	-.04		
16. Highest Qualification	-.13*	-.12*	-.19*	-.12*	-.08	.01	.08	-.07	-.04	-.19*	-.05	.35*	-.15*	.35*	-.15*	
17. Status of Service	.00	-.04	-.02	-.08	.03	-.12*	-.07	-.06	-.07	-.07	.01	-.03	-.11	.13	-.03	.06

Note: Gender: 1 = Male, 2 = Female; Length of Service: 1 = less than 5 years, 2 = 5 to 15 years, 3 = more than 15 years; Field of Studies: 1 = Science, 2 = Social Science; Highest Qualification: 1 = Master Degree, 2 = PhD Degree; Status of Service: 1 = Permanent, 2 = Probation, 3 = Contract.
 * significant at $p < .05$
 ** significant at $p < .01$

Table 5.11:

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Strain																
2. Cynicism	.58**															
3. Professional Efficacy	-.43**	-.35**														
4. Org. Commitment	-.29**	-.45**	.28**													
5. Intention to Leave	.27**	.38**	-.14	-.49**												
6. Resource Constraints	.28**	.28**	-.11	-.28**	.39**											
7. Role Overload	.23**	.15	-.04	-.05	.16*	.27**										
8. Role Ambiguity	.33**	.31**	-.43**	-.36**	.29**	.43**	.22**									
9. Role Conflict	.30**	.47**	-.10	-.32**	.39**	.47**	.28**	.36**								
10. Org. Support	-.11	-.32**	.22**	.53**	-.39**	-.39**	-.07	-.34**	-.31**							
11. Peer Support	-.11	-.20**	.11	.26**	-.13	-.23**	.10	-.30**	-.25**	.32**						
12. Self-Efficacy	-.38**	-.41**	.67**	.17*	-.12	-.11	.12	-.35**	.03	.25**	.05					
13. Gender	.13	.09	.08	-.03	-.02	.09	.10	.21*	-.07	.12	.04	-.14*				
14. Length of Service	-.07	-.02	-.14*	.15*	.02	-.08	-.09	.01	.01	-.06	.01	.18*	-.14*			
15. Field of Studies	-.06	-.01	-.02	-.08	-.05	-.06	-.07	.02	-.11	.10	.07	.12	.17*	-.05		
16. Highest Qualification	-.13	-.10	-.22*	-.01	-.03	.06	-.06	.03	-.02	-.29*	-.03	.32*	-.16*	.23*	-.12	
17. Status of Service	-.03	-.01	.04	.01	.07	-.15*	-.04	-.17*	-.11	-.08	-.18*	.00	-.19*	.08	-.06	.05

Intercorrelations among study variables at Time 2 (N = 194)

Note: Gender: 1 = Male, 2 = Female; Length of Service: 1 = less than 5 years, 2 = 5 to 15 years, 3 = more than 15 years; Field of Studies: 1 = Science, 2 = Social Science; Highest Qualification: 1 = Master Degree, 2 = PhD Degree; Status of Service: 1 = Permanent, 2 = Probation, 3 = Contract.

* significant at $p < .05$, ** significant at $p < .01$

Table 5.12:
Intercorrelations between variables at Time 1 and variables at Time 2 (N = 194)

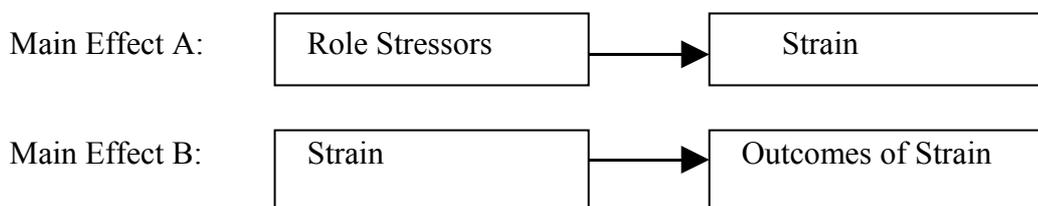
VARIABLE	Variable at Time 1	Variables at Time 2											
		1	2	3	4	5	6	7	8	9	10	11	12
	1. Strain	.54**	.46**	-.28**	-.31**	.26**	.31**	.04	.32**	.29**	-.28**	-.09	-.27**
	2. Cynicism	.39**	.57**	-.29**	-.38**	.24**	.27**	.01	.30**	.26**	-.38**	-.15	-.23**
	3. Professional Efficacy	-.37**	-.36**	.49**	.22**	.18*	.27**	-.08	-.30**	-.21**	.26**	.02	-.42**
	4. Organizational Commitment	-.20**	-.35**	.26**	.54**	.32**	.38**	-.01	-.29**	-.19*	.51**	-.25**	-.20*
	5. Intention to Leave	.19*	.27**	-.13	-.38**	.51**	.31**	.03	.21**	.24**	-.33**	-.14	-.14
	6. Resource Constraint	.22**	.22**	-.08	-.18*	.31**	.55**	.16	.32**	.37**	-.25**	-.18*	-.07
	7. Role Overload	.14	.02	-.11	-.03	.08	.22**	.48**	.07	.19*	-.01	-.02	.07
	8. Role Ambiguity	.24**	.31**	-.28**	-.32**	.22**	.29**	.09	.51**	.26**	-.30**	-.04	-.22**
	9. Role Conflict	.29**	.26**	.04	-.19*	.21**	.44**	.14	.14	.52**	-.15	-.09	-.02
	10. Organizational Support	-.19*	-.34**	.10	.34**	-.27**	-.24**	.09	-.19*	-.19*	.56**	.20**	.16*
	11. Peer Support	-.11	-.12	.03	.15*	-.07	-.15	-.03	-.10	.07	.15	.44**	.05
	12. Self-Efficacy	-.15*	-.18*	.36**	.10	-.08	.03	-.17*	-.28**	.03	.10	.12	.51**

5.3 Testing the hypotheses

The results of hypothesis testing are presented in three sections - main effects, moderation effects, and mediation effects. The main effects section consists of two parts. The first part involves the prediction of the direct effects of role stressors on strain. The second part involves the direct effect of strain on the outcomes of strain. Section two describes the moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressors and strain.

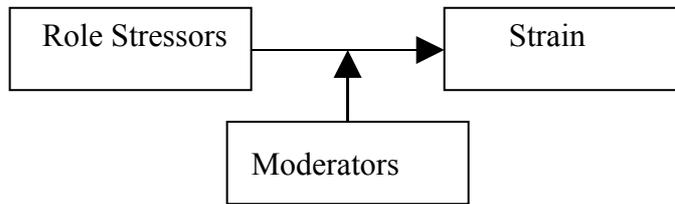
Section three also consists of two parts. The first part describes the mediation effects of strain on the relationships between role stressors (i.e. role overload, role ambiguity, and role conflict) and three proposed outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment). The second part describes the mediation effects of outcomes of strain on the relationship between strain and intention to leave. Figures 5.1, 5.2 and 5.3 below represent the models for each analysis.

Figure 5.1:
Models for direct effect relationships



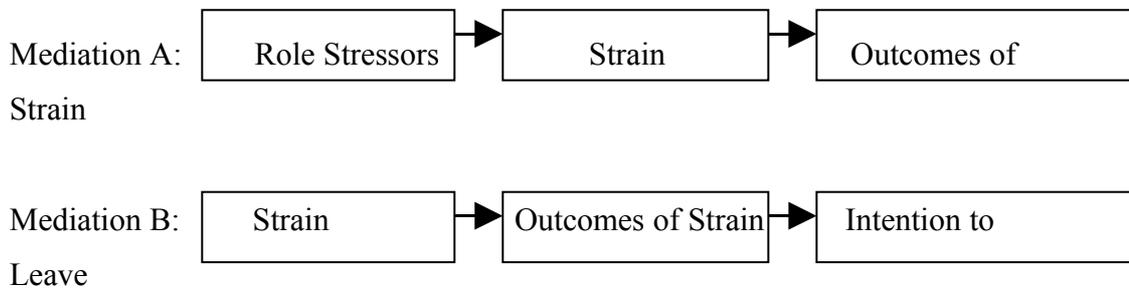
Note: Role stressors consist of role overload, role ambiguity, and role conflict.
Outcomes of strain consist of cynicism, professional efficacy, and organizational commitment.

Figure 5.2:
Model for moderation effect relationship



Note: Role stressors consist of role overload, role ambiguity, and role conflict.
 Moderators consist of organizational support, peer support and self-efficacy.

Figure 5.3:
Models for mediation effect relationships

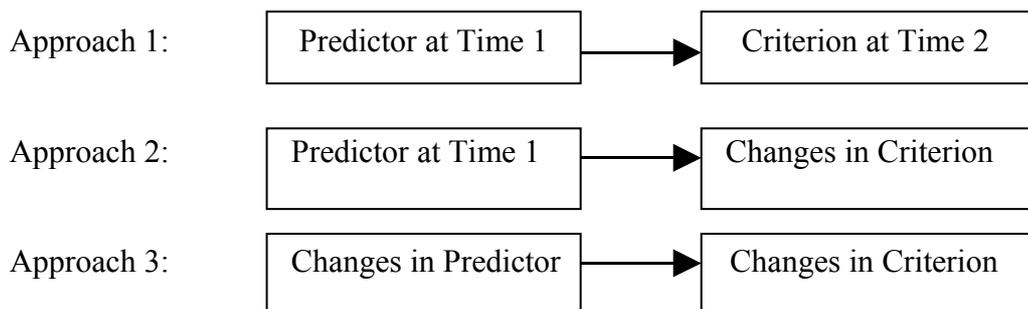


Note: Role stressors consist of role overload, role ambiguity, and role conflict.
 Outcomes of strain consist of cynicism, professional efficacy, and organizational commitment.

I tested cross-sectional as well as longitudinal effects. In the cross-sectional analyses, I examined the hypothesized relationships using the cross-sectional data at both time periods. For longitudinal direct effects and moderation effect analyses, I used three analytical approaches to investigate the effects of predictor variables on criterion variables over time (see Figure 5.4). As explained earlier (Chapter 4), analytical approach 1 refers to the Time Effect model, analytical approaches 2 and 3 refer to the Unconditional Change Score model and the Conditional Change Score models (respectively).

Analytical approach 1 analysed the contribution of predictor variables at Time 1 to the criterion variables at Time 2. Using approach 1, I hypothesized that the predictor variable at Time 1 is related to the criterion variable at Time 2. Approach 2 analysed the contribution of predictor variables at Time 1 to changes in the criterion variables over time. Based on analytical approach 2, I hypothesized that the predictor variable at Time 1 is related to changes in the criterion variable over a six-month time lag. Approach 3 analysed the contribution of changes in predictor variables to changes in the criterion variables over time. Using analytical approach 3, I hypothesized that changes in the predictor variable are related to changes in the criterion variable over a six-month time lag. The rationale for these approaches was presented in Chapter 4 (see pages 104-106). Figure 5.4 graphically presents the analytical approaches for the longitudinal direct effects analyses.

Figure 5.4
Analytical approaches for longitudinal effects



5.3.1 Main effect A: Direct effects of role stressors on strain

Hypothesis 1 predicted that role stressors (role overload, role ambiguity, and role conflict) would be directly related to strain. I used hierarchical multiple

regression analysis to examine the contribution of the three role stressors to strain while controlling for some demographic variables (gender, length of service and level of education) and also the moderator variables. The moderator variables were used as control variables because in addition to the hypothesized moderation effects, the moderators were also expected to have direct effects on strain. T-tests and analyses of variance (ANOVA) performed on demographic variables showed that only gender, length of service and level of qualification were significantly related to strain. Field of study and employment status (permanent/contract/probation) were not related to strain. Hence gender, length of service and level of education were controlled for in the hierarchical regressions on strain.

In the first step, I entered gender, length of service, and level of qualification as control variables to examine their effects on the criterion variable. In the second step, the proposed moderators (i.e. organizational support, peer support, and self-efficacy) were entered. In the third step, role stressors (i.e. role overload, role ambiguity and role conflict) were entered simultaneously to test whether these variables accounted for significant changes of variance in strain. The results for the direct effects of role stressors on strain at Time 1 and Time 2 are presented in Table 5.13. Longitudinal direct effects of role stressors on strain will be described on page 131.

Table 5.13:
Hierarchical regression of strain on role overload, role ambiguity and role conflict at Time 1 and Time 2

Variables	Time 1 (N = 310)			Time 2 (N = 194)		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Gender	.128*	.120*	.081	.102	.069	.065
Length of Service	-.145*	-.081	-.054	-.040	-.006	.001
Qualification	-.056	.046	-.002	-.107	-.002	-.058
Organizational Support		-.208*	-.084		-.035	-.080
Peer Support		-.195*	-.148*		-.054	.005
Self-Efficacy		-.221*	-.173*		-.332*	-.226*
Role Overload			.168*			.053
Role Ambiguity			.252*			.262*
Role Conflict			.116*			.145*
R ²	.053	.219	.333	.030	.137	.215
Change in R ²		.166	.114		.107	.185
F-statistic Change	5.691*	21.494	17.153	2.212	8.318*	7.785*
Degree of freedom	3, 307	3, 303	3, 300	3, 190	3, 187	6, 184

Note: * significant at $p < .05$

The Time 1 regression results show that role overload, role ambiguity and role conflict were positively related to strain. In step 1, two out of the three demographic variables had significant relationships with strain. The R² for the three control variables was 0.053, explaining 5.3% of the variance in strain. After controlling for these demographic variables, the moderator variables in combination were significantly and positively related to strain ($F(3, 303) = 21.49$, $p < .05$). The R² change for the three hypothesized moderators was .116 meaning that an additional 11.4% of variance explained and all betas were significant. In the third step, role stressors in combination were significantly and positively related to strain ($F(3, 300) = 17.15$, $p < .05$). The R² change for the three role stressors was .114 and all betas were also significant. Academics who reported higher levels of role overload, role ambiguity, and role conflict had higher levels

of strain. In terms of the contribution of individual role stressors, data at Time 1 show that role ambiguity had the largest standardized effect ($\beta = .25, p < .05$), followed by role overload ($\beta = .17, p < .05$) and the least was role conflict ($\beta = .12, p < .05$).

The same analysis was then performed on Time 2 data. The results for Time 2 show that role overload, role ambiguity and role conflict, in combination, had a significant relationship with strain ($F(3, 184) = 7.785, p < .05$). The R^2 change was .185. Role ambiguity ($\beta = .26, p < .05$) and role conflict ($\beta = .15, p < .05$) were significantly related to strain, but role overload was not ($\beta = .05, p > .05$). Consistent with the data at Time 1, the results for Time 2 show that role ambiguity made the largest contribution to strain. Therefore, based on cross-sectional analyses, Hypothesis 1 is supported.

In addition to the cross-sectional analyses, I performed longitudinal analyses to investigate the effects of role stressors on strain over time. Similar to the cross-sectional analyses, I controlled for the effects of demographic variables and moderator variables. First, analytical approach 1 suggests that role stressors at Time 1 would predict strain at Time 2. To examine this proposition I tested the effect of role stressors at Time 1 on strain at Time 2 using hierarchical regression. Results of these analyses are presented in Table 5.14.

Table 5.14:
Hierarchical regression of strain at Time 2 on role overload, role ambiguity and role conflict at Time 1 (Approach 1)

	Standardized Estimate (N = 170)		
	Step 1	Step 2	Step 3
Control Variable:			
Gender	.169*	.156*	.133
Length of service	-.181*	-.156*	-.120
Qualification	-.039	-.003	-.050
Moderator:			
Org. Support (OS)		.117	.043
Peer Support (PS)		.048	.009
Self-Efficacy (SE)		.090	.059
Role Stressor:			
Role Overload (RO)			.072
Role Ambiguity (RA)			.107
Role Conflict (RC)			.203*
R ²	.077	.106	.172
Change in R ²		.028	.066
F-statistic Change	4.611	1.711	4.254*
d.f.	3, 165	3, 162	3, 159

Note: * significant at $p < .05$

Results in Table 5.14 show that only role conflict at Time 1 was significantly related to strain at Time 2. Overall, controlling for moderators and demographic variables, the combined role stressors at Time 1 were significantly related to strain a Time 2 ($F(3, 159) = .425, p < .05$). The R^2 change for the three

role stressors was .066, hence an additional 6.6% of the variance was accounted for.

Analytical approach 2 examined whether role stressors at Time 1 predict changes in strain over time. I tested the effects of role stressors at Time 1 on changes in strain over a six-month time period. Results are presented in Table 5.15.

Table 5.15:
Hierarchical regression of changes in strain on role overload, role ambiguity and role conflict at Time 1 (Approach 2).

	Standardized Estimate (N = 170)		
	Step 1	Step 2	Step 3
Control Variable:			
Gender	.077	.083	.071
Length of service	-.116	-.122	-.111
Qualification	-.034	-.046	-.060
Moderator:			
Org. Support (OS)		-.001	.026
Peer Support (PS)		-.053	-.023
Self-Efficacy (SE)		-.041	.106
Role Stressor:			
Role Overload (RO)			-.012
Role Ambiguity (RA)			-.063
Role Conflict (RC)			-.035
R ²	.026	.031	.011
Change in R ²		.004	.016
F-statistic Change	1.481	.241	.630
d.f.	3, 165	3, 162	3, 159

Note: * significant at $p < .05$

Results in Table 5.15 show that no individual role stressor significantly related to changes in strain. Also, the combined effects of role stressors at Time 1 were not related to changes in strain over time, with a non-significant R^2 change of .016 ($F(3, 159) = .63, p > .05$).

Analytical approach 3 examined whether changes in role stressors are related to changes in strain over time. Using the same steps as those in the analyses above, I tested the longitudinal direct effects of changes in role stressors on changes in strain. Results are presented in Table 5.16.

Table 5.16:

Hierarchical regression of changes in strain on changes in role overload, role ambiguity, and role conflict (Approach 3)

	Standardized Estimate (N = 170)		
	Step 1	Step 2	Step 3
Control Variable:			
Gender	.077	.035	.002
Length of service	-.116	-.120	-.116
Qualification	-.034	-.009	-.029
Moderator:			
Org. Support (OS)		.060	.103
Peer Support (PS)		-.083	-.076
Self-Efficacy (SE)		-.237*	-.172*
Role Stressor:			
Role Overload (RO)			.165*
Role Ambiguity (RA)			.169*
Role Conflict (RC)			.038
R ²	.028	.083	.133
Change in R ²		.057	.107
F-statistic Change	1.481	3.350	3.255*
d.f.	3, 165	3, 162	3, 159

Note: * significant at $p < .05$

Table 5.16 shows that changes in role overload ($\beta = .17$) and role ambiguity ($\beta = .17$) were positively related to changes in strain over time, but role

conflict was not ($\beta = .04$). In combination, changes in role stressors significantly related to changes in strain, with the R^2 change being .107 ($F(3, 159) = 3.255, p < .05$).

In summary, the results of longitudinal analyses that were based on analytical approaches 1 and 3 indicate that over time role stressors would covary with strain. Overall, Hypothesis 1 is somewhat supported, although there were mixed findings in terms of the significance of the individual effects of role stressor variables on strain. I will discuss these differences and their possible reasons in Chapter 6.

5.3.2 Main effect B: Direct effects of strain on the outcomes of strain

Hypothesis 3 stated that strain would be positively related to cynicism, and negatively related to professional efficacy and organizational commitment. Similar to the previous analyses, I also investigated the cross-sectional and longitudinal effects of strain on the outcomes of strain. For cross-sectional analyses I regressed cynicism, professional efficacy and organizational commitment on strain separately at each time period. As in the previous analyses, I controlled for the effects of demographic variables (i.e. gender, length of service and levels of education). Regression results for Time 1 and Time 2 are presented in Table 5.17.

The results in Table 5.17 show that strain was positively related to cynicism ($\beta = .53, p < .05$ for Time 1 and $\beta = .55, p < .05$ for Time 2); and negatively related to professional efficacy ($\beta = -.48, p < .05$ for Time 1 and $\beta = -.47, p < .05$ for Time 2); and organizational commitment ($\beta = -.33, p < .05$ for Time 1 and $\beta = -.29, p < .05$ for Time 2). The standardized estimates ranged in

magnitude from .29 to .55, indicating that the feeling of strain perceived by the academics was related to cynicism, professional efficacy and organizational commitment. Hence, based on cross-sectional analyses, Hypothesis 3 is strongly supported.

I proceeded to test for the longitudinal direct effects of strain on cynicism, professional efficacy and organizational commitment. I used the three analytical approaches that were explained earlier (see pages 104-106). Results of analyses based on the three approaches are presented in Tables 5.18, 5.19, and 5.20.

Table 5.17:

Standardized estimates of strain on cynicism, professional efficacy and organizational commitment at Time 1 and Time 2.

Variables	Standardized Estimates			
	Time 1 (N = 310)		Time 2 (N = 194)	
	Step 1	Step 2	Step 1	Step 2
Criterion Variable: Cynicism				
Gender	.081	.012	.037	.021
Length of Service	-.063	.014	.067	.077
Qualification	-.087	-.057	-.132	-.044
Strain		.534*		.551*
R ²	.025	.295	.020	.315
Change in R ²		.270		.294
F Change	2.650*	116.92*	1.307	80.703*
d.f.	3, 307	1, 306	3, 189	1, 188
Criterion Variable: Professional Efficacy				
Gender	-.045	.107*	.032	.018
Length of Service	-.206*	.136*	-.089	-.081
Qualification	-.127*	.100*	-.199	-.124
Strain		-.484*		-.466*
R ²	.075	.296	.059	.270
Change in R ²		.221		.211
F Change	8.269*	96.013*	3.936*	54.339*
d.f.	3, 307	1, 306	3, 189	1, 188
Criterion Variable: Organizational Commitment				
Gender	.021	.022	-.017	-.020
Length of Service	-.178*	.130*	.179*	.181*
Qualification	-.058	.040	-.011	.002
Strain		-.330*		-.295*
R ²	.044	.147	.032	.053
Change in R ²		.103		.021
F Change	4.676*	36.759*	2.114	9.565*
d.f.	3, 307	1, 306	3, 189	1, 188

Note: * significant at $p < .05$

Table 5.18:
Standardized estimates of strain at Time 1 on cynicism, professional efficacy, and organizational commitment at Time 2 (Approach 1).

	Standardized Estimate (N = 170)	
	Step 1	Step 2
<i>Criterion Variable: Cynicism</i>		
Gender	.081	.044
Length of Service	-.063	.090
Qualification	-.087	-.141
Strain		.451*
R ²	.045	.233
Change in R ²		.189
F Change	2.562	40.351*
d.f.	3, 165	1, 164
<i>Criterion Variable: Professional Efficacy</i>		
Gender	-.085	-.037
Length of Service	.050	.011
Qualification	.196*	.191*
Strain		-.251*
R ²	.062	.120
Change in R ²		.058
F Change	3.630*	10.900*
d.f.	3, 165	1, 164
<i>Criterion Variable: Organizational Commitment</i>		
Gender	-.043	.007
Length of Service	.222*	.182*
Qualification	.132	.127
Strain		-.260*
R ²	.092	.155
Change in R ²		.063
F Change	5.601*	12.166*
d.f.	3, 165	1, 164

Note: * significant at $p < .05$

Table 5.19:
Standardized estimates of strain at Time 1 on changes in cynicism, professional efficacy and organizational commitment (Approach 2).

	Standardized Estimate (N = 170)	
	Step 1	Step 2
Criterion Variable: Cynicism		
Gender	.060	.032
Length of Service	.012	.034
Qualification	-.110	-.107
Strain		.144
R ²	.017	.037
Change in R ²		.019
F Change	.964	3.289
d.f.	3, 165	1, 164
<i>Criterion Variable: Professional Efficacy</i>		
Gender	.078	.077
Length of Service	.039	.040
Qualification	-.156	-.156
Strain		.004
R ²	.032	.032
Change in R ²		.000
F Change	1.802	.003
d.f.	3, 165	1, 164
Criterion Variable: Organizational Commitment		
Gender	-.041	-.049
Length of Service	.165*	.171*
Qualification	-.068	-.068
Strain		.041
R ²	.027	.028
Change in R ²		.002
F Change	1.500	.262
d.f.	3, 165	1, 164

Note: * significant at $p < .05$

Table 5.20:

Standardized estimates of changes in strain on changes in cynicism, professional efficacy and organizational commitment (Approach 3).

	Standardized Estimate (N = 170)	
	Step 1	Step 2
Criterion Variable: Cynicism		
Gender	.060	.028
Length of Service	.012	.059
Qualification	-.110	-.096
Strain		.409*
R ²	.017	.180
Change in R ²		.163
F Change	.964	32.609*
d.f.	3, 165	1, 164
Criterion Variable: Professional Efficacy		
Gender	.078	.062
Length of Service	.039	.063
Qualification	-.156	-.149
Strain		-.208*
R ²		.074
Change in R ²		.042
F Change	1.802	7.490*
d.f.	3, 165	1, 164
Criterion Variable: Organizational Commitment		
Gender	-.041	-.051
Length of Service	.165	.179
Qualification	-.068	-.064
Strain		-.147
R ²	.027	.042
Change in R ²		.016
F Change	1.500	2.676
d.f.	3, 165	1, 164

Note: * significant at $p < .05$

The results that were based on analytical approach 1 (Table 5.18) show that, controlling for demographic variables, strain at Time 1 was positively related to cynicism ($\beta = .45, p < .05$) and negatively related to professional efficacy ($\beta = -.25, p < .05$) and organizational commitment ($\beta = -.26, p < .05$) at Time 2. The R^2 change for cynicism (.189) was higher than those of professional efficacy (.058) and organizational commitment (.063). Under approach 2, there were no significant relationships (Table 5.19). Strain at Time 1 made no significant

contribution to changes in cynicism, professional efficacy and organizational commitment. The results based on approach 3 (Table 5.20) show that changes in strain were positively related to changes in cynicism ($\beta = .41$, $p < .05$) and negatively related to changes in professional efficacy ($\beta = -.21$, $p < .05$). However, the relationship with changes in organizational commitment was not significant ($\beta = -.15$, $p > .05$). Again, the R^2 change for cynicism (.163) was higher than for professional efficacy (.042).

In summary, based on analytical approach 1, I found that over a six-month lag time, strain at Time 1 was related to cynicism, professional efficacy, and organizational commitment at Time 2. Approach 2 revealed no direct effect of strain at Time 1 on changes in outcomes of strain over a six-month lag time. Based on approach 3, I found that changes in strain related significantly to changes in cynicism and professional efficacy, but not organizational commitment. Hence, based on results from analytical approaches 1 and 3, Hypothesis 3 is partially supported.

5.3.3 Moderation effects

Hypothesis 2 predicted that organizational support, peer support and self-efficacy would moderate the relationships between role stressors and strain. That is, as organizational support, peer support, and self-efficacy increase, the relationships between role stressors and strain would decrease.

I used a moderated regression approach (Cohen & Cohen, 1983; Cohen et al., 2003) to estimate the influence of (1) role stressor variables (role overload, role ambiguity, and role conflict), (2) moderator variables (organizational support, peer support, and self-efficacy), and (3) their interaction terms on strain

as a criterion variable. A set of interaction terms was computed for each set of role stressor and moderator variables. Prior to the calculation of the interaction term, I centered the predictor and moderator variables because the multiplication of the two variables might result in uninterpretable regression coefficients (Aiken & West, 1991). Centering the term means subtracting the variable's mean from each case's values on that variable, leaving the deviation score. Centering could reduce the high correlation between predictors and interaction terms (the multiplication of predictor and moderator variables). I analyzed the moderation effects of three moderators on the relationships between three role stressors and strain.

Operationally, at step 1 I included only the control variables of gender, length of service and level of qualification because these variables were found to be significantly related to strain. At step 2, I included the three role stressors and three hypothesized moderators. At step 3, I added all interaction terms into the equation terms simultaneously. I inspected the omnibus F test, representing the multiple product term, to determine the significance of the moderation effects (Frazier, Tix, & Barron, 2004). If this is not significant, the interaction effects of moderators and role stressors on the relationships between role stressor and strain are not significant. The results for cross-sectional moderation analyses are presented in Table 5.21 for both Time 1 and Time 2. Longitudinal moderation analyses will be presented later.

As shown in Table 5.21, the control variables at Time 1 explained 5.3% of the variance in strain and the effects of gender and length of service on strain were significant ($F(3, 306) = 5.93, p < .05$). In step 2, the role stressors (i.e. role overload, role ambiguity, and role conflict) and moderators (i.e. organizational

support, peer support and self-efficacy) were entered simultaneously. Results of regression analyses showed that the combination of six variables had a significant influence on strain, even though the contribution of organizational support did not ($F(6, 300) = 20.77, p < .05$). The change in R^2 was 0.281, suggesting that 28.1% variation of the feeling of strain was accounted for by the six variables. Role overload ($\beta = .09, p < 0.05$), role ambiguity ($\beta = .23, p < 0.05$), and role conflict ($\beta = .11, p < 0.05$) each had a significant influence on strain. Peer support ($\beta = -.15, p < 0.05$) and self-efficacy ($\beta = -.17, p < 0.05$) also had a significant direct influence on the feeling of strain, but organizational support was not directly related to strain ($\beta = .08, p > 0.05$). I then proceeded to test the interaction effects.

At step 3, the interaction terms of organizational support (OS), peer support (PS) and self-efficacy (SE) with role overload (RO), role ambiguity (RA), and role conflict (RC) were entered into the equation to test the moderation effects of the supports and self-efficacy variables on the relationships between role stressors and strain. The regression analyses shown in Table 5.21 indicate that there was no significant overall interaction effect ($R^2 = .026$ ($F(6, 300) = 20.77, p > .05$)).

Table 5.21:

Regression estimates of role overload, role ambiguity, role conflict and their interaction with organizational support, peer support, and self-efficacy in predicting strain at Time 1 and Time 2.

Variables	Time 1 (N=310)			Time 2 (N=194)		
	Step			Step		
	1	2	3	1	2	3
Control Variable:						
Gender	.128*	.081	.078	.092	.092	.032
Length of Service	-.145*	-.054	-.039	-.056	-.056	.007
Qualification	-.056	-.002	-.008	-.121	-.121	-.066
Predictor:						
Role Overload (RO)		.168*	.158*	.041	.045	
Role Ambiguity (RA)		.252*	.257*	.261*	.219*	
Role Conflict (RC)		.116*	.122*	.146*	.141	
Moderator:						
Org. Support (OS)		.084	.078	-.069	-.073	
Peer Support (PS)		.148*	.142*	.024	.070	
Self-Efficacy (SE)		.173*	.185*	.241*	.289*	
Moderation Effect:						
RO x OS			.136*			.017
RA x OS			-.096			.110
RC x OS			-.002			.011
RO x PS			-.024			.031
RA x PS			.048			.043
RC x PS			-.021			-.138
RO x SE			-.035			-.089
RA x SE			-.074			-.091
RC x SE			.081			.141
R ²	.053	.333	.359	.034	.233	.277
Change in R ²		.281	.026		.199	.043
F Change	5.928*	20.771*	1.304	2.412	8.628*	1.262
d.f.	3, 306	6, 300	9, 291	3, 190	6, 184	9, 175

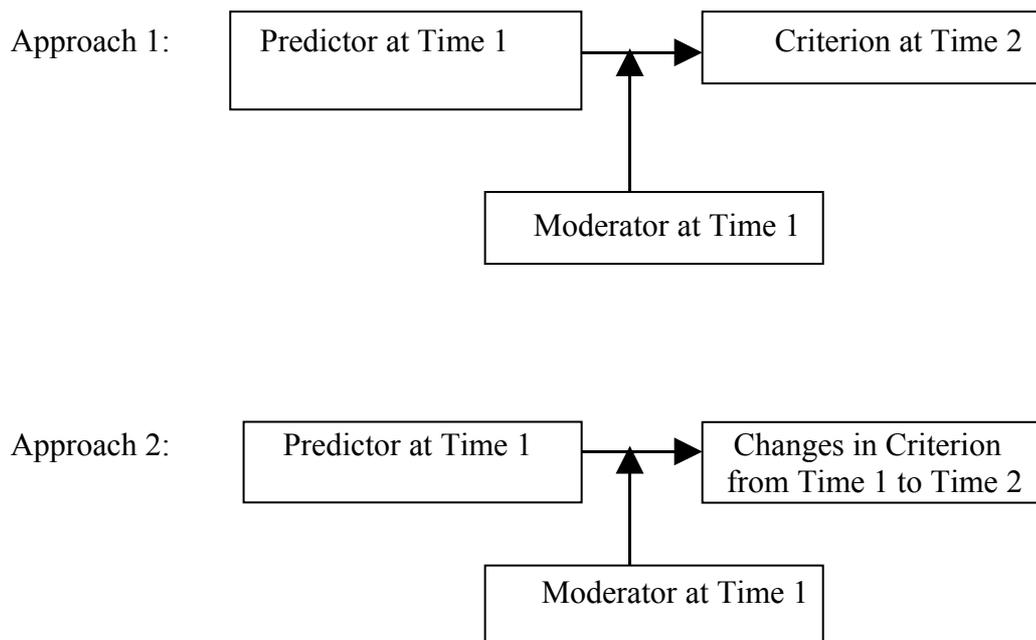
Note: * significant at $p < .05$

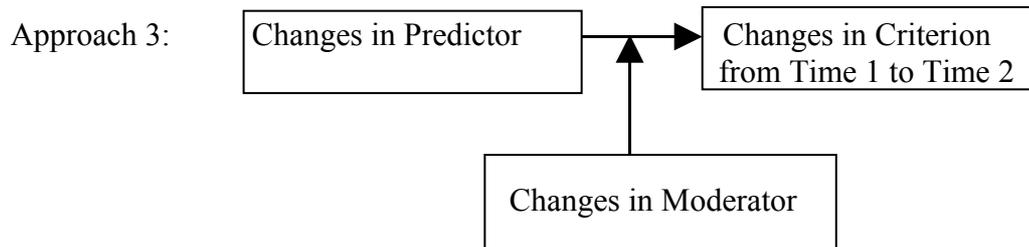
At Time 2, control variables explained only 3% variance and none of their effects on strain were significant ($F(3,190) = 2.41, p > .05$). In step 2, the combination of six variables (role stressors and moderators) had a significant influence on strain ($F(6, 184) = 8.63, p < .05$). The change in R^2 was 0.199. Individually, role ambiguity ($\beta = .26, p < 0.05$) and role conflict ($\beta = .15, p <$

0.05) but not role overload ($\beta = .04, p > 0.05$) each had a significant influence on strain. In terms of the hypothesized moderators, only self-efficacy ($\beta = -.17, p < 0.05$) had a significant direct influence on the feeling of strain, as neither organizational support ($\beta = -.07, p > 0.05$) nor peer support ($\beta = .02, p > 0.05$) were directly related to strain. In step 3, regression results in Table 5.21 indicate that there were no significant interaction effects ($R^2 = .043$ ($F(6, 175) = 1.26, p > .05$)). Hence, based on cross-sectional analyses, Hypothesis 2 is not supported, as only one out of 18 interaction terms in Table 5.21 was significant.

Consistent with the previous analyses, I performed longitudinal moderation analyses using the three analytical approaches which were outlined previously (see page 128). The approaches are graphically presented in Figure 5.5 below.

Figure 5.5:
Analytical approaches for longitudinal moderation effect of moderators on role stressors and strain relationship





Note: Predictor represents role stressors consist of role overload, role ambiguity, and role conflict.
 Moderators consist of organizational support, peer support and self-efficacy.
 Criterion represents strain

I followed the same procedure as in the cross-sectional analyses above. The results of moderation analyses based on analytical approaches 1, 2 and 3 are presented in sequence, in Tables 5.22, 5.23 and 5.24. For approach 3, I constructed the interaction terms by multiplying changes in both role stressors and moderators.

Table 5.22:
Longitudinal regression estimates of role overload, role ambiguity, role conflict at Time 1 and their interaction with organizational support, peer support, and self-efficacy at Time 1 in predicting strain at Time 2 (Approach 1).

Variables	Standardized Estimate (N = 170)		
	Step		
	1	2	3
Control Variable:			
Gender	.169*	.133	.102
Length of service	-.181*	-.120	-.125
Qualification	-.039	-.050	-.060
Predictor:			
Role Overload (RO)		.072	.068
Role Ambiguity (RA)		.107	.107
Role Conflict (RC)		.203*	.217*
Moderator:			
Organizational Support (OS)		.043	.064
Peer Support (PS)		.009	-.001
Self-Efficacy (SE)		.059	.018
Moderation Effect:			
RO x OS			.165
RA x OS			-.012
RC x OS			.030
RO x PS			-.018
RA x PS			.022
RC x PS			.031
RO x SE			.076
RA x SE			-.111
RC x SE			-.126
R ²	.077	.172	.226
Change in R ²		.095	.054
F Change	4.611*	3.034*	1.155
d.f.	3, 165	6, 159	9, 150

Note: * significant at $p < .05$

Results in Table 5.22 (see step 3) show that there were no significant longitudinal moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressors at Time 1 and strain at Time 2 ($F(9, 150) = 1.16$) and none of the individual moderation effects was significant.

Table 5.23:

Longitudinal regression estimates of role overload, role ambiguity, role conflict at Time 1 and their interaction with organizational support, peer support, and self-efficacy at Time 1 in predicting changes in strain (Approach 2).

Variables	Standardized Estimate (N = 170)		
	Step		
	1	2	3
Control Variable:			
Gender	.077	.071	.054
Length of service	-.116	-.111	-.097
Qualification	-.034	-.060	-.072
Predictor:			
Role Overload (RO)		.026	.019
Role Ambiguity (RA)		-.023	-.012
Role Conflict (RC)		.106	.112
Moderator:			
Organizational Support (OS)		-.012	.013
Peer Support (PS)		-.063	-.076
Self-Efficacy (SE)		-.035	-.067
Moderation Effect:			
RO x OS			.199
RA x OS			-.047
RC x OS			.036
RO x PS			-.039
RA x PS			.070
RC x PS			.059
RO x SE			-.019
RA x SE			-.095
RC x SE			-.107
R ²	.026	.042	.127
Change in R ²		0.016	.085
F Change	1.481	.435	1.625
d.f.	3, 165	6, 159	9, 150

Note: * significant at $p < .05$

Results in Table 5.23 (see step 3) show that there were no longitudinal moderation effects of organizational support, peer support, and self-efficacy on the relationships between role stressors at Time 1 and changes in strain over time ($F(9, 150) = 1.63$) and none of the individual moderation effects was significant.

Table 5.24:

Longitudinal regression estimates of changes in role overload, role ambiguity, role conflict and their interactions with organizational support, peer support, and self-efficacy in predicting changes in strain (Approach 3).

Variables	Standardized Estimate (N = 170)		
	Step		
	1	2	3
Control Variable:			
Gender	.077	.002	-.009
Length of service	-.116	-.116	-.086
Qualification	-.034	-.029	-.033
Predictor:			
Role Overload (RO)		.165*	.171*
Role Ambiguity (RA)		.169	.159
Role Conflict (RC)		.038	.040
Moderator:			
Organizational Support (OS)		.103	.124
Peer Support (PS)		-.076	-.078
Self-Efficacy (SE)		-.172	-.255*
Moderation Effect:			
RO x OS			.168
RA x OS			-.092
RC x OS			.025
RO x PS			.019
RA x PS			.080
RC x PS			.102
RO x SE			-.030
RA x SE			.076
RC x SE			-.166
R ²	.026	.133	.187
Change in R ²		0.107	.054
F Change		3.255*	1.116
df	3, 165	6, 159	9, 150

Note: * significant at $p < .05$

Results in Table 5.24 also show that there were no moderation effects of organizational support, peer support, and self-efficacy on the relationships between changes in role stressors and changes in strain over time ($F(9, 150) = 1.12$) and none of the individual moderation effects was significant.

Overall, the findings suggest that there is no evidence to support the existence of moderation effects of organizational support, peer support, and self-efficacy on the relationship between role stressors and strain (at the 5% significant level), either through cross-sectional or longitudinal design. These results suggest that supports and self-efficacy did not function as moderators of the relationships between role stressors and strain. Hence, Hypothesis 2 was not supported. However, the variables hypothesized to be moderators did have significant main effects.

5.3.4 Mediation effects

The next set of analyses concerned the possible causality between role stressors and outcomes of strain and also between strain and intention to leave among academics in Malaysian public universities. I used mediation analysis to test the above hypothesized relationships. Mediation exists when a predictor

affects a criterion variable through an intervening variable or mediator (Baron & Kenny, 1986). I used both cross-sectional and longitudinal analyses to test for mediation effects. While cross-sectional analyses provided information on the effect of the predictor variable on the criterion variable through the mediators at a single point in time, longitudinal analyses were expected to provide further evidence of the possible causal relation between the predictor variable and the criterion variable. This will strengthen the validity of any inferences about possible causality in this study.

Structural equation modeling was used to test the proposed mediation relationships. In general, SEM is considered a preferred method because of its ability to control for measurement error, the information it provides on the fit statistics for the overall model, and its flexibility of use (Krull & MacKinnon, 2001). An example of the flexibility of use is that SEM can model multiple predictor variables, multiple outcome variables, and multiple mediators. In order to assess the model fit, I looked at the overall Chi-square value, RMSEA, GFI and CFI (Boomsma, 2000).

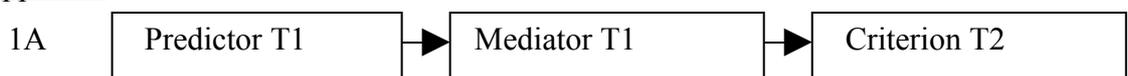
I used AMOS program version 5.0 (Arbuckle, 2004) to estimate path coefficients of the relationships between the variables in the model. AMOS then produced standardized regression coefficients on all paths specified in the model. Specifically in this mediation analysis, the paths linking predictor to mediator variables (path *a*), the paths linking mediator variables to criterion (path *b*), and the path directly linking predictor to criterion variable (path *c*) were the path coefficients of interest. I then used the product coefficient approach in testing the specific mediation effects (Baron & Kenny, 1986). A product coefficient is a product of multiplication between the standardized effects of strain to the

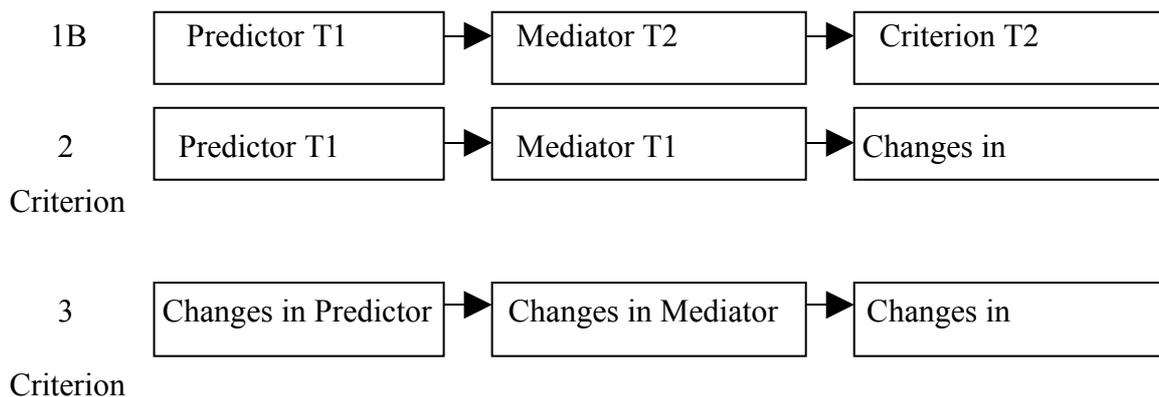
mediator (path a) and mediator to intention to leave (path b). In other words, the specific mediation effect of a single mediator is the product of the two standardized paths linking the predictor variable to the criterion variable via that particular mediator, $a \times b$. The total effect of a predictor on criterion variable is the sum of $(a \times b) + c$. I used path c to infer whether the mediator fully or partially mediated the relationship between predictor and criterion. A mediator is said to fully mediate the relationship if path c is initially significant but becomes insignificant (close to zero) when a mediator (path b) is included into the model. Partial mediation is observed when path c is still significant when a mediator is included. When either path a or b is insignificant, the mediation effect is considered not significant (Baron & Kenny, 1986).

Recall that analytical approach 1 for longitudinal effect deals with the effect of predictor at Time 1 on criterion variable at Time 2. Since mediational analysis involves a third variable (that is, the mediator variable), I considered that the longitudinal effect of predictor variable at Time 1 on criterion variable at Time 2 may occur through the mediator at Time 1 (contemporaneous relation) or through mediator at Time 2 (longitudinal relation). Therefore, longitudinal mediational analysis for analytical approach 1 (page 128) was split further to become approaches 1A and 1B to consider the contemporaneous and longitudinal relations between the variables (see Figure 5.6). I continued using approach 2 and 3 from the previous longitudinal analysis to make all together four types of analytical approaches to test longitudinal mediation effects.

Figure 5.6:
Analytical approaches for longitudinal mediation analysis

Approach:

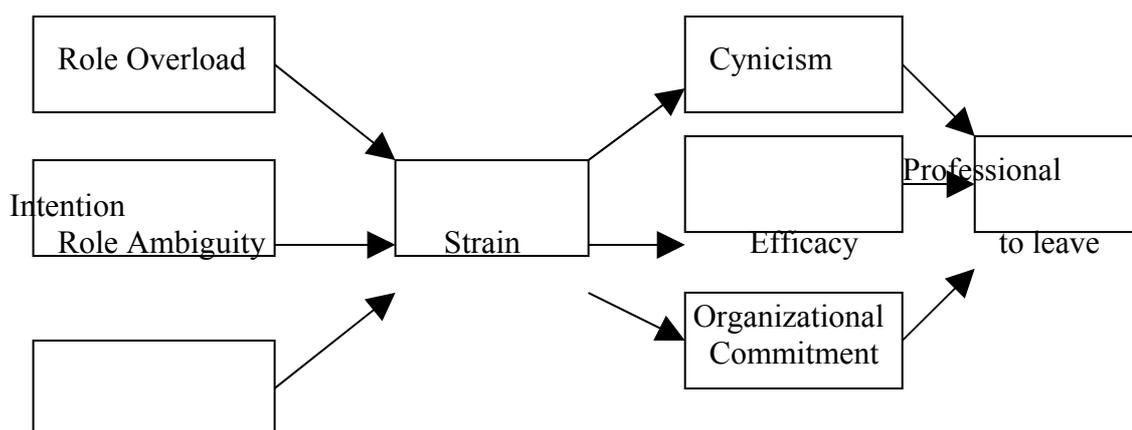


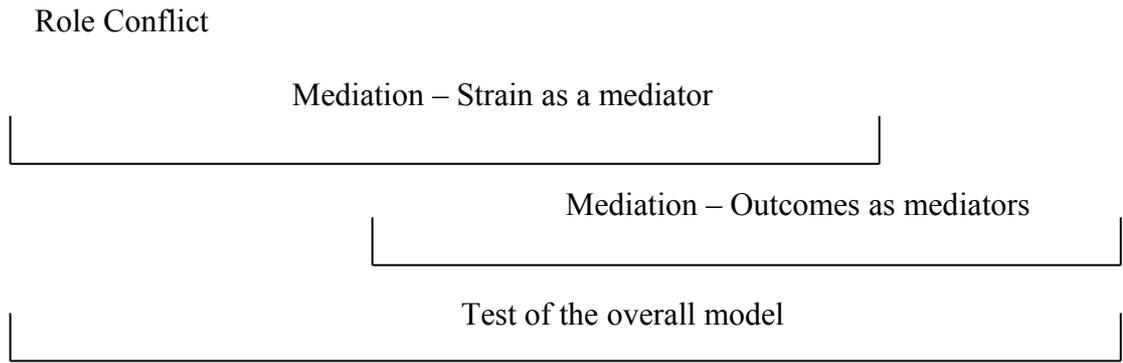


Note: Predictor T1 represents predictor variable at Time 1
 Mediator T1 represents mediator variable at Time 1
 Mediator T2 represents mediator variable at Time 2
 Criterion T2 represents criterion variable at Time 2

As explained earlier, there are two sets of mediation analyses. The first deals with strain as a mediator of the relationships between role stressors and outcomes of strain. The second involves the mediation effects of outcomes of strain on the relationship between strain and intention to leave. In addition to the two mediation mentioned above, I also tested the overall model in a single analysis using SEM. Figure 5.7 illustrates the three types of analyses. The presentation of mediational analyses will follow in sequence.

Figure 5.7:
 Mediation model part 1, part 2 and overall model

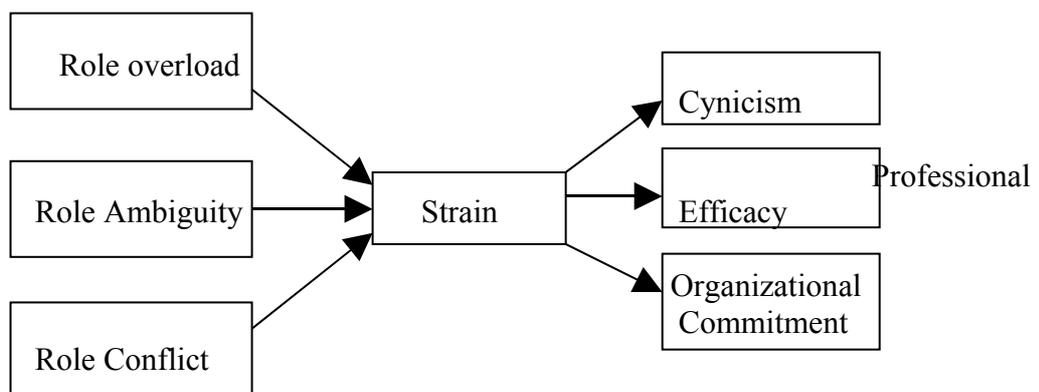




5.3.4.1 Strain as a mediator

Hypothesis 4 predicted that strain would mediate the relationships between role stressors (i.e. role overload, role ambiguity and role conflict) and outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment). There are three predictors and three criterion variables in this particular mediation model, which is shown in Figure 5.8.

Figure 5.8:
Mediation model: Strain as a mediator



In this model, role stressors (i.e. role overload, role ambiguity, and role conflict) are seen as predictors of strain. Strain, in turn, predicts outcomes of strain (cynicism, professional efficacy and organizational commitment). All together there were nine mediational routes, based on three role stressors that lead to three outcomes of strain through a single mediator, strain. I used SEM approach to estimate path coefficients between variables in the model and calculate the mediation effect using Baron and Kenny's (1986) approach. The mediational analyses in this section start with cross-sectional analyses, followed by longitudinal analyses.

Cross-sectional mediation analyses of strain as a mediator

Prior to the detection of the mediational routes described above, I performed a series of tests to establish the relationships between predictor and criterion variables for both time periods. This is a basic assumption of mediation in which a predictor initially has to be related to criterion variables (Baron & Kenny, 1986). I regressed each of outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment) onto each of role stressors (role overload, role ambiguity, and role conflict) to examine the basic relationship between predictor variable and criterion variable. The results are presented in Tables 5.25 (Time 1) and 5.26 (Time 2) below.

Table 5.25 :
Standardized estimate of direct relations between role stressor and outcomes of strain (Time 1).

Predictor	Cynicism		Professional Efficacy		Organizational Commitment	
	β	t	β	t	β	t
Role Overload	-.027	-.361	-.147*	-2.049	-.087	1.150
Role Ambiguity	.141	1.634	-.201*	2.308	-.212*	2.436

Role Conflict	.164*	2.165	-.001	.014	-.094	1.205
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Note: Significant path coefficients are indicated in bold.

Table 5.26 :

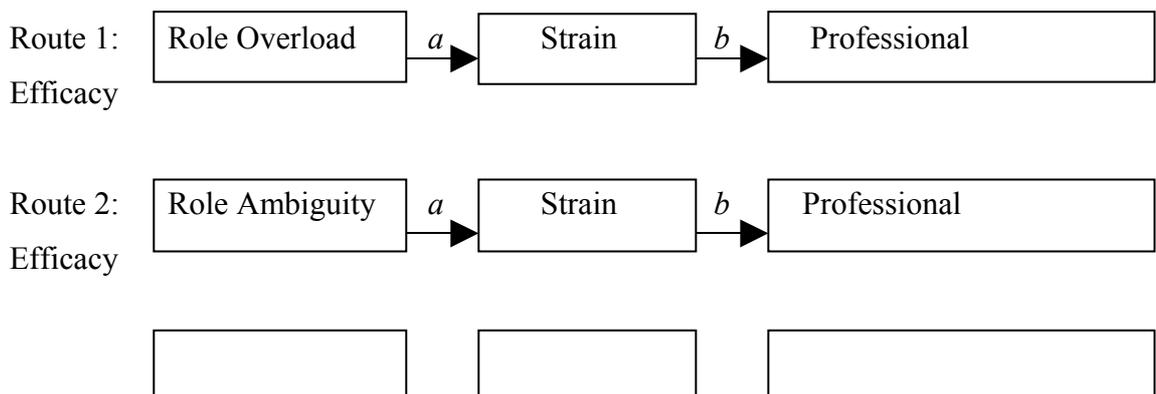
Standardized estimate of direct relations between role stressor and outcomes of strain (Time 2).

Predictor	Cynicism		Professional Efficacy		Organizational Commitment	
	β	t	β	t	β	t
Role Overload	-.070	-.999	-.176*	-2.525	-.124	-1.826
Role Ambiguity	.132	1.632	-.239*	2.942	-.134*	1.977
Role Conflict	.337*	4.825	.082	1.169	.128	1.870

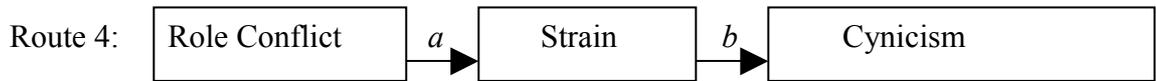
Table 5.25 and 5.26 show that the pattern of significant predictor-criterion relationships was identical at Time 1 and Time 2. Role overload was related to professional efficacy ($\beta = -.15$, $t = 2.049$ at Time 1, and $\beta = -.18$, $t = 2.049$ at Time 2). Role ambiguity was related to both professional efficacy ($\beta = -.20$, $t = 2.308$ at Time 1, and $\beta = -.24$, $t = 2.942$ at Time 2) and organizational commitment ($\beta = -.21$, $t = 2.43$ at Time 1 and $\beta = -.13$, $t = 1.977$ at Time 2). Role conflict was related to cynicism ($\beta = .16$, $t = 2.165$ at Time 1, and $\beta = .34$, $t = 4.825$ at Time 2). I only tested for the mediation routes when the relationships between predictor and criterion variables were significant (Baron & Kenny, 1986). Those mediation routes are presented graphically in Figure 5.9.

Figure 5.9:

Mediation routes investigated for Time 1 and Time 2



Route 3: Role Ambiguity \xrightarrow{a} Strain \xrightarrow{b} Organizational Commitment



Note: *a* indicates path coefficients between predictor and mediator variable
b indicates path coefficients between mediator and criterion variable

Following Baron and Kenny’s (1986) approach, mediation would be established by the significance of paths *a* and *b*. The strength of mediational route would be based on the value of the multiplication of *a* and *b*. I took the absolute values of all indirect (paths *a* and *b*) and direct effects (path *c*) to calculate the mediation effects (MacKinnon, Fairchild & Fritz, 2007). The mediation results are presented in Table 5.27.

Table 5.27

Standardized estimates of cross-sectional mediation effect of strain on role stressors and outcomes of strain relationships (Time 1 and Time 2)

Mediation Path	Time	Path			Mediation Effect <i>a x b</i>	Type of Mediation
		<i>a</i>	<i>b</i>	<i>c</i>		
RO-Strain-PE	1	.168*	-.359*	-.026	.060	Full
	2	.139*	-.243*	-.223*	.032	Partial
RA-Strain-PE	1	.231*	-.359*	-.321*	.083	Partial
	2	.171*	-.243*	-.402*	.042	Partial
RA-Strain-OC	1	.231*	-.243*	-.342*	.056	Partial
	2	.171*	-.081	-.292*	ns	None
RC-Strain-Cy	1	.241*	.422*	.125	.102	Full
	2	.195*	.449*	.270*	.097	Partial

Note: RO = Role overload, RA = Role ambiguity, RC = Role conflict,
 PE = Professional efficacy, OC = Organizational commitment, Cy = Cynicism.
 Full mediation is observed when path *c* is insignificant.
 Partial mediation is observed when path *c* is significant.
 No mediation is observed when either path *a* or path *b* is insignificant.

In summary, the results in Table 5.27 show that the multiplications of path *a* (the path linking role stressor to strain) and path *b* (the path linking strain to outcomes of strain) were significant in all but one case, indicating that strain mediated all investigated routes except the hypothesized mediation route of Role Ambiguity → Strain → Organizational Commitment at Time 2. At Time 1, strain fully mediated the relationships between role overload and professional efficacy and between role conflict and cynicism.

Longitudinal mediation analyses of strain as a mediator

Similar to the cross-sectional mediation analyses, I performed a series of test to establish the longitudinal relationships between predictor and criterion variables to fulfill the basic assumption of mediational analysis (Baron & Kenny, 1986). I used three analytical approaches that were designed to test longitudinal direct effects (see page 128). The results for the direct effects linking predictor to criterion variables that were based on analytical approaches 1, 2 and 3 are presented in sequence in Table 5.28. Significant paths linking role stressors to outcomes of strain are bolded.

Table 5.28:

Standardized estimate of direct relations between role stressors and outcomes of strain

Predictor	Criterion Variable (Outcome of Strain)					
	Cynicism		Professional. Efficacy		Organizational Commitment	
	β	t	β	t	β	t
Role Stressors Time 1 → Outcomes of Strain Time 2 (Approach 1)						
Role Overload	-.053	-.694	-.143	-1.863	-.078	-1.052
Role Ambiguity	.177*	2.028	-.271*	3.488	-.269*	3.553
Role Conflict	.181*	2.337	-.005	-.066	.104	1.362
Role Stressors Time 1 → Changes in Outcomes of Strain (Approach 2)						
Role Overload	-.083	-.984	-.049	-.606	.032	.394
Role Ambiguity	.054	.562	.074	.904	.075	.914
Role Conflict	.078	.911	-.118	-1.426	-.046	-.548
Changes in Role Stressors → Changes in Outcomes of Strain (Approach 3)						
Role Overload	.006	.072	-.138	-1.830	.083	.988
Role Ambiguity	.282*	3.896	-.399*	5.590	.037	.470
Role Conflict	.284*	3.656	.028	.370	.036	.426

Note: * significant at $p < .05$

Based on the three analytical approaches, I found that only four routes were significant. They were the routes of Role Ambiguity → Strain → Cynicism, Role Ambiguity → Strain → Professional Efficacy, Role Ambiguity → Strain → Organizational Commitment, and Role Conflict → Strain → Cynicism. Similar to the previous analysis, I only tested mediation when the relationship between the predictor (role stressors) and criterion (outcomes of strain) were significant (Baron & Kenny, 1986). The four mediation routes were analyzed with four analytical approaches (see page 151), yielding sixteen replications. Results for the mediation analysis are presented in Table 5.29.

Results from analytical approach 1A revealed that strain mediated the effects of role ambiguity on cynicism, professional efficacy, and organizational

commitment and also the effect of role conflict on cynicism. Approach 1B revealed that strain fully mediated the effect of role conflict on cynicism. Approach 2 revealed no mediation route that was significant. Approach 3 revealed that strain partially mediated the effects of role ambiguity on cynicism, professional efficacy, and organizational commitment.

Table 5.29:
Standardized estimates of the path coefficient for longitudinal mediation effect of strain on role stressors and outcomes of strain relationships.

Note: Full mediation is observed when path *c* is insignificant.
 Partial mediation is observed when path *c* is significant.
 No mediation is observed when either path *a* or path *b* is insignificant.
 * significant at $p < .05$

Approach	Standardized Estimates			Mediation Effect	Type of Mediation
	Path	Direct Effect			
	Role Ambiguity (RA) → Strain → Cynicism (Cy)				
	RA → Strain <i>a</i>	Strain → Cy <i>b</i>	RA → Cy <i>c</i>	<i>a x b</i>	
1A	.213*	.382*	.124	.081	Full
1B	.090	.524*	.174*	ns	None
2	.213*	.164	.013	ns	None
3	.250*	.342*	.209*	.086	Partial
Role Ambiguity (RA) → Strain → Professional Efficacy (PE)					
	RA → Strain <i>a</i>	Strain → P E <i>b</i>	RA → PE <i>c</i>	<i>a x b</i>	
1A	.213*	.236*	-.212*	.050	Partial
1B	.090	.345*	-.239*	ns	None
2	.213*	.059	-.068	ns	None
3	.250*	.147*	-.370*	.037	Partial
Role Ambiguity (RA) → Strain → Organizational Commitment (OC)					
	RA → Strain <i>a</i>	Strain → OC <i>b</i>	RA → OC <i>c</i>	<i>a x b</i>	
1A	.213*	-.199*	-.224*	.042	Partial
1B	.090	-.138	-.273*	ns	None
2	.213*	-.073	-.056	ns	None
3	.250*	-.048	-.203*	ns	None
Role Conflict (RC) → Strain → Cynicism (Cy)					
	RC → Strain <i>a</i>	Strain → Cy <i>b</i>	RC → Cy <i>c</i>	<i>a x b</i>	
1A	.222*	.382*	.091	.085	Full
1B	.111*	.524*	.069	.058	Full
2	.222*	.164	.028	ns	None
3	.012	.342*	.263*	ns	None

In summary, I found partial support for the hypothesized longitudinal mediation effects of strain on the relationships between role stressors and outcomes of strain. Initially, there were nine mediational routes. However, after fulfilling the basic requirement of significant relationship between predictor and criterion variables (Baron & Kenny, 1986) (Table 5.28), only four mediational routes were investigated. These four mediational routes were then tested with four

analytical approaches which yielded sixteen feasible mediations. Out of these sixteen analyses, seven were significant.

In combination, regardless of the analytical approaches that were used, only four mediational routes were significant. Strain mediated the relationship between role ambiguity and cynicism, professional efficacy, and organizational commitment. Strain also mediated the relationship between role conflict and cynicism. Hence, the longitudinal mediational effects of strain are only partially supported.

5.3.4.2 Outcomes of strain as mediators

I hypothesized that outcomes of strain (i.e. cynicism, professional efficacy, and organizational commitment) would mediate the relationship between strain and intention to leave. I tested the mediation effects of outcomes of strain on the relationship between strain and intention to leave. Specifically the hypothesis was:

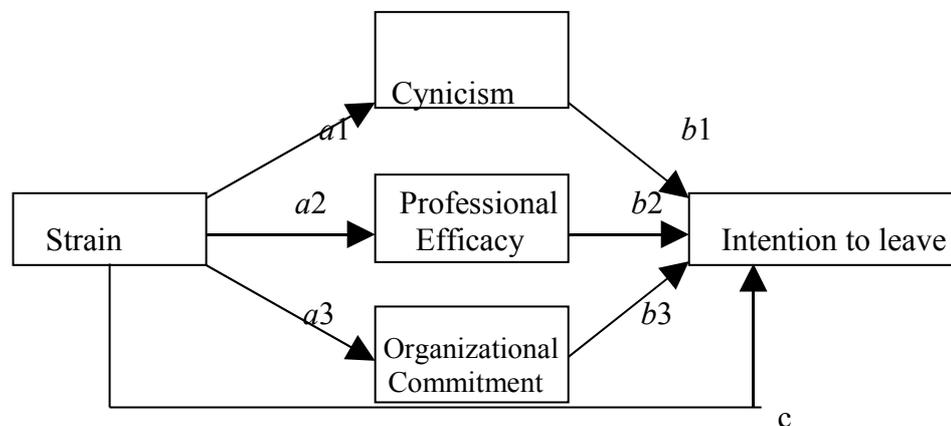
H5: Cynicism, professional efficacy and organizational commitment will mediate the relationship between strain and intention to leave.

Prior to the calculation of the mediation effects, I established the relationship between strain and intention to leave to fulfill the basic requirement of a significant relationship between predictor and criterion variables (Baron & Kenny, 1986). Results from simple regression analysis showed that strain was positively related to intention to leave ($\beta = .24$, $t = 3.201$, $p < .05$ for Time 1, and $\beta = .43$, $t = 6.09$, $p < .05$ for Time 2). Similar to the previous analyses, the present mediation analyses started with the cross-sectional model, followed by the longitudinal model.

Cross-sectional model of outcomes of strain as mediators

Hypothesis 5 predicted that strain would lead to intention to leave via cynicism, professional efficacy and organizational commitment. Hence, there were three mediators in this particular model. Following James, Mulaik and Brett (2006), I conducted simultaneous multiple mediation analysis in order to examine both the overall effect for all mediators (total mediation effect) and the mediation effect of each mediator (specific mediation effect) using a structural equation approach (SEM). Figure 5.10 depicts the cross-sectional multiple mediation model with the three mediators.

Figure 5.10:
Cross-sectional multiple mediation model of outcomes of strain



Note: Arrows represent the causal path
 a represents the path from strain to mediator.
 b represents the path from mediator to intention to leave
 c represent the path from strain to intention to leave

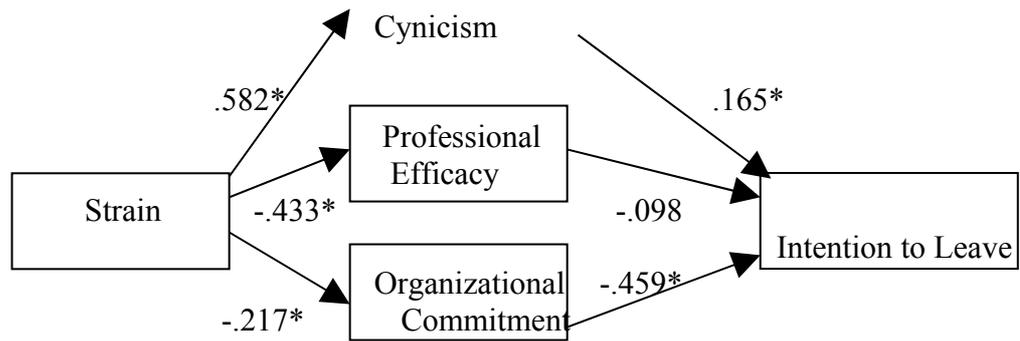
The model in Figure 5.10 asserts that strain causes intention to leave through these three mediators. To test the significance of the mediated effects, the fit of the predictor-mediator-criterion model was compared with and without the

direct path between the predictor and criterion variables. A mediational model would be supported if the model including the mediation path provided a better fit than the model without the mediation path (i.e. the direct effects model) (Frazier et al., 2004). If the predictor-criterion path is close to zero with the mediator in the model, there is evidence of full mediation.

I investigated the effect of the three mediators in combination, followed by the investigation of each individual mediator. As mentioned earlier (see page 150), I used a product coefficient approach in testing the mediation hypothesis for the specific mediation effect. The total mediation effect is the sum of all specific mediation effects $\sum_i(a_i b_i)$. The total effect of X on Y is the sum of the direct effect and all three of specific mediation effects, $c + \sum_i(a_i b_i)$. I used the proportion of specific mediation effect from the total effect to compare the magnitude of contribution of each mediator in the model. The proportion of specific mediation effect is the ratio of specific mediation effect to the total effect, $a_i b_i / [c + \sum_i(a_i b_i)]$. These proportions serve to compare the strength of mediation effect among the three mediators. Figure 5.11 depicts the path coefficients for Time 1.

Figure 5.11:
Test of hypothesized multiple mediation model of outcomes of strain without direct effect of strain to intention to leave (Time 1).

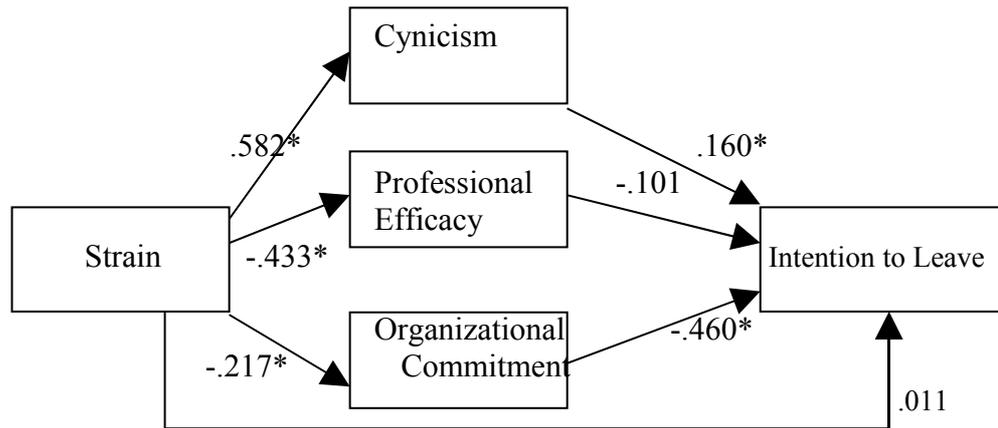




All error terms for the mediators were allowed to correlate with each other to reflect their expected relationships. The model provided an acceptable fit to the data with Chi-square value of 1.622, d.f. = 1, $p = 0.203$, RMSEA = 0.045, GFI = .998, and CFI = .998. The mediator variables, in combination, accounted for 40% variance in intention to leave. Strain was positively related to cynicism, ($\beta = .58$) and negatively related to professional efficacy ($\beta = -.43$) and organizational commitment ($\beta = -.22$). Intention to leave was significantly related to cynicism ($\beta = .17$) and organizational commitment $\beta = -.46$, $p = .00$, but not to professional efficacy ($\beta = .10$). This suggests that there is no mediated pathway from strain to intention to leave via professional efficacy.

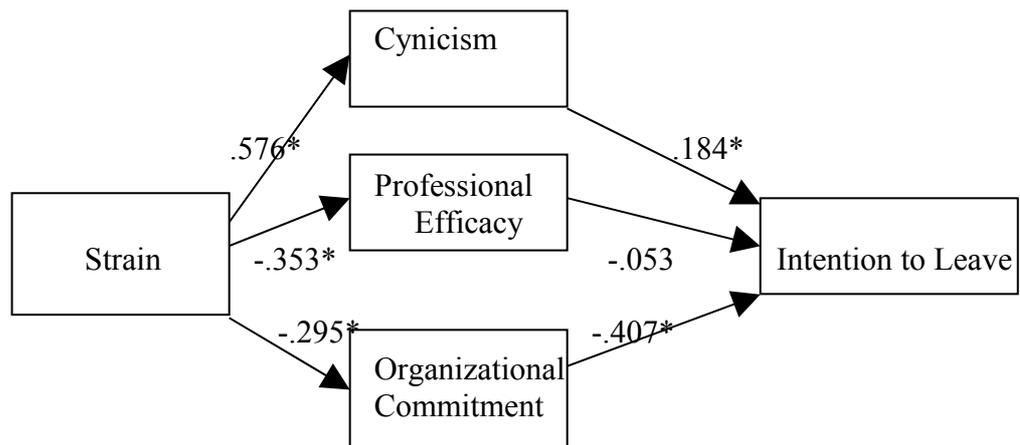
To examine whether mediation has in fact occurred, I compared the previous model with a model that included a direct path (path c) between predictor and criterion variables. If the predictor-criterion path is close to zero with the mediator in the model, there is evidence of full mediation (Frazier et al., 2004). The results are presented in Figure 5.12.

Figure 5.12:
Test of hypothesized multiple mediation model of outcomes of strain with the direct path linking strain to intention to leave (Time 1).



The direct path from strain to intention to leave was low and not significant, $\beta = .01$, $p > .05$ indicating that cynicism and organizational commitment fully mediated the effect of strain on intention to leave. Professional efficacy did not mediate the relationship because the path linking professional efficacy to intention to leave was not significant. The results of Time 2 data analysis are presented in Figure 5.13.

Figure 5.13:
Test of the hypothesized multiple mediation model of outcomes of strain without the direct path linking strain to intention to leave (Time 2).

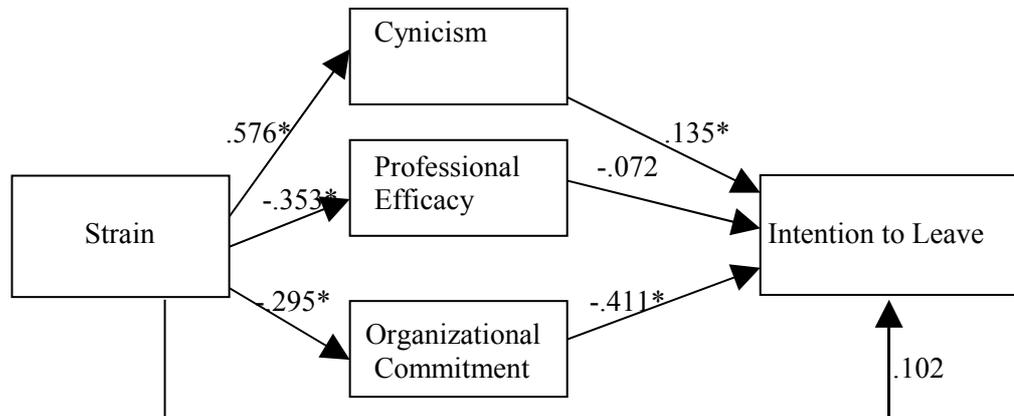


The model provided an acceptable fit to the data with a Chi-square value of 1.799, d.f. = 1, $p = 0.180$, RMSEA = 0.062, GFI = 0.996, and CFI = 0.997. The mediator variables, in combination, accounted for 42% variance in intention to

leave. Strain was positively related to cynicism ($\beta = .58$), and negatively related to professional efficacy ($\beta = -.35$) and organizational commitment ($\beta = -.30$). Intention to leave was significantly predicted by cynicism ($\beta = .18$) and organizational commitment ($\beta = -.41$), but not by professional efficacy ($\beta = -.05$).

Similar to the model at Time 1, I then included the direct path linking strain to intention to leave. The results are presented in Figure 5.14.

Figure 5.14:
Test of hypothesized multiple mediation model of outcomes of strain with the direct path linking strain to intention to leave (Time 2)



Consistent with the results at Time 1, the direct path from strain to intention to leave was not significant ($\beta = .10, p > .05$) indicating that, cynicism and organizational commitment fully mediated the relationship between strain and intention to leave. Again, professional efficacy was not a mediator because it was not related to intention to leave in the Time 2 data ($\beta = -.07, p > .05$).

For the purpose of intervention strategies, it is important to determine which mediator has the strongest effect. Therefore, I calculated the specific mediation effect, the total effect, and proportion of mediated effect. Specific

mediation effect is the product of ab . The total effect is the sum of specific mediation effect. The proportion of mediated effect is the specific product of ab divided by the total effect (Shrout & Bolger, 2002). The summary of the specific mediation effect, the total effect and the proportion of mediation effect is presented in Table 5.30.

Table 5.30:
Path coefficients, specific mediation effects, and proportion of mediation effects for cross-sectional multiple mediator model.

Mediator	Time	Path			Mediated effect	
		a	b	c	Specific ($a \times b$)	Proportion (%)
Cynicism	1	.582**	.160**	.011	.093	37.65
	2	.576**	.135**	.102	.078	23.93
Professional Efficacy	1	-.433**	-.101	.011	.043	17.41
	2	-.353**	-.072	.102	.025	7.67
Organizational Commitment	1	-.217**	-.460**	.011	.100	40.49
	2	-.295**	-.411**	.102	.121	37.12
Total effect (c + all specific effect) Time 1					.247	
Total effect (c + all specific effect) Time 2					.326	

Note: a indicates the direct effect of strain to mediator
 b indicates the direct effect of mediator to intention to leave
 c indicates the direct effect of strain to intention to leave
Total effect is the sum of all specific effects and c
Proportion indicates the percentage of specific effect from the total effect
Proportions contributed by direct effect c was 4.45% at Time 1 and 31.28 at Time 2

The results in Table 5.30 show that cynicism and organizational commitment mediated the relationship between strain and intention to leave. Paths a and b for both mediators at both times were significant. The proportions of specific mediation effects for cynicism were 38% at Time 1 and 24% at Time

2, and for organizational commitment were 41% at Time 1 and 37% at Time 2. However, there was no mediation effect for professional efficacy as a mediator at both time periods. In terms of Table 5.30, path *a* for professional efficacy was significant ($\beta = -.43$), meaning that strain was related to professional efficacy. However, since path *b* was not significantly different from zero ($\beta = -.10$, $p > .05$), professional efficacy was not related to intention to leave. Given the multiplication of path *a* (the path linking predictor to mediator) and path *b* (the path linking mediator to criterion) was not significantly different from zero, professional efficacy was not a mediator in this model.

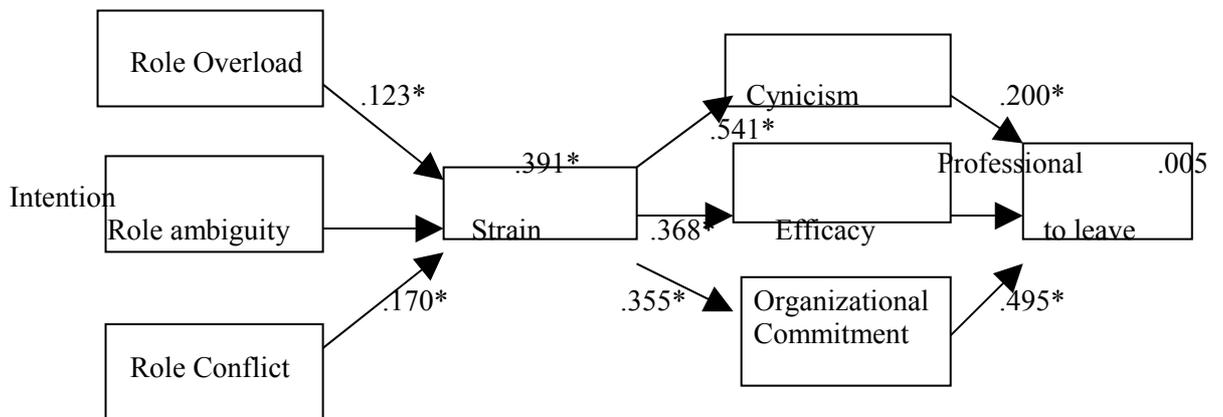
In conclusion, based on mediation analysis for both Time 1 and Time 2, I found support for the mediation effects of cynicism and organizational commitment on the relationship between strain and intention to leave. However, professional efficacy was not a mediator in the present data. Hence, Hypothesis 5 is partially supported.

Test of the overall model

In addition to the two separate models that are presented above, I also tested the overall model in a single analysis using SEM. The model was tested using data at Time 1 ($N = 310$) and after reaching the optimal solution model, I replicated or cross-validated the model with data at Time 2 ($N = 194$) to examine whether the relationships between variables in the optimized model were consistent across the time. Figure 5.15 presents the Time 1 results for the overall model.

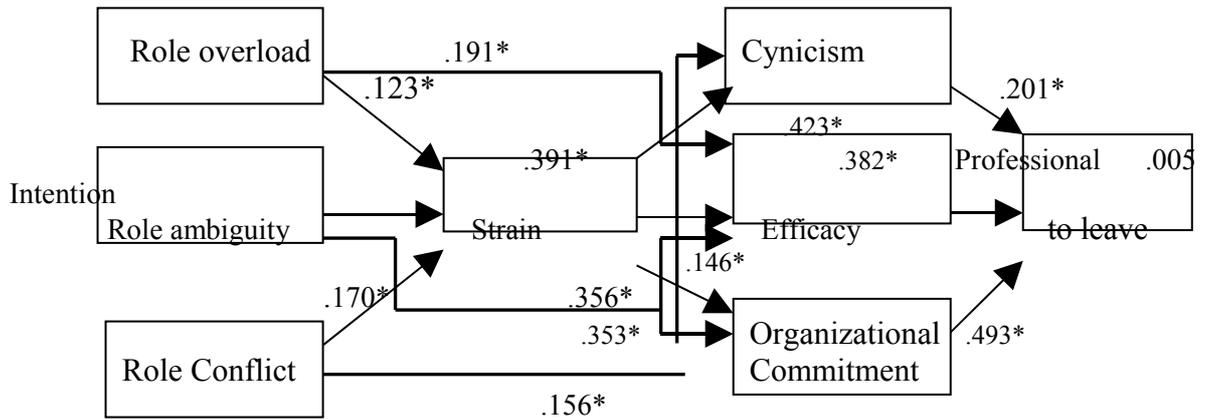
Figure 5.15:

Results of the hypothesized model with data at Time 1



The model produced a statistically significant chi-square value of 120.555 ($d.f = 13, p < 0.001$), $CMIN/d.f = 9.267$, $GFI = .922$, $CFI = .855$ and $RMSEA = 0.164$, which indicated a poor fit to the data. It is therefore apparent that some modification was needed in order to determine a model that better represented the data. Based on theoretical grounds and suggestions from the modification indices, I respecified the model until I obtained a good-fitting model. Four different paths were added sequentially to the originally hypothesized model. The paths were role overload to professional efficacy (Golambiewski et al., 1986; Leiter, 1993), role ambiguity to professional efficacy (Peiro et al., 2001; Schwab & Iwanicki, 1982), role ambiguity to organizational commitment (Agarwal & Ramaswami, 1993; Jackson & Schuler, 1985; Mathieu & Zajac, 1990), and role conflict to cynicism (Peiro et al., 2001; Schwab & Iwanicki, 1982). The final results are presented in Figure 5.16. A good-fitting model was achieved after four iterations. The respecified model produced a chi-square value of 25.264, $d.f = 8$, $CMIN/d.f = 3.158$, GFI was 0.981, $CFI = 0.977$, and $RMSEA = 0.084$, which indicate an acceptable fit to the data.

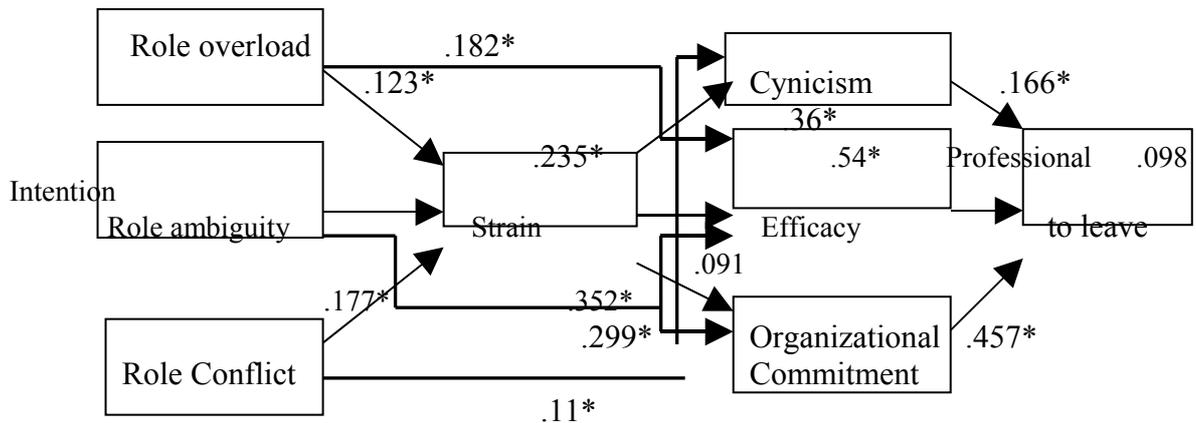
Figure 5.16:
Respecified model with data at Time 1



Note: Added paths are in bold

Replication or cross validation is needed (Cudeck & Browne, 1983) to examine whether the relationships between variables in the respecified model were consistent across time. Therefore I replicated the model obtained at Time 1 with the data at Time 2. The results are presented in Figure 5.17.

Figure 5.17:
Respecified model replicated with data at Time 2



Note: Added paths are in bold

The replicated model produced a chi-square value of 17.801, $df = 8$, $CMIN/df = 2.225$, $GFI = 0.978$, $CFI = 0.967$ and $RMSEA = 0.08$, which also revealed a good fit for the data at Time 2. This indicates that the relationships between variables in the model were consistent across time. As noted above, the new paths added to the original model were role overload → professional efficacy, role ambiguity → professional efficacy, role ambiguity → organizational commitment, and role conflict → cynicism. Table 5.31 presents standardized estimates for the hypothesized and respecified models with the data at Time 1 and at Time 2. The new paths and the coefficients are in bold.

Table 5.31:
Standardized estimates for original and respecified models

Paths	Model/Standardized Estimate
-------	-----------------------------

	Original	Respecified (Time 1)	Respecified (Time 2)
Role Overload → Strain	.123*	.123*	.123*
Role Ambiguity → Strain	.391*	.391*	.235*
Role Conflict → Strain	.170*	.170*	.177*
Strain → Professional Efficacy	.368*	.382*	.540*
Strain → Organizational commitment	.355*	.146*	.091*
Strain → Cynicism	.541*	.423*	.360*
Cynicism → Intention to leave	.200*	.201*	.166*
Professional Efficacy → Intention to leave	.005	.005	.098
Organizational Commitment → Intention to leave	.495*	.493*	.457*
Role Overload → Professional efficacy		.191*	.182*
Role Ambiguity → Professional Efficacy		.356*	.352*
Role Ambiguity → Organizational Commitment		.353*	.299*
Role Conflict → Cynicism		.156*	.110*

Note: Added paths are in bold

The results in Table 5.31 show that it is quite plausible that the academic stress model accounts for the stress experienced by academics in Malaysian public universities and that there were no significant variations in the regression weights. The direct effects of role ambiguity on professional efficacy, role ambiguity on organizational commitment, role overload on professional efficacy, and role conflict on cynicism were consistent with the first part of mediation analyses using Baron and Kenny's (1986) approach. Moreover, the lack of direct relationship between strain and intention to leave obtained by the respecified models indicated that the results were consistent with the second part of the mediation analyses, that is cynicism and organizational commitment fully mediated the relationship between strain and intention to leave.

Longitudinal model of outcomes of strain as mediators

As mentioned earlier, I investigated the longitudinal mediation effect of the three mediators in combination, followed by the investigation of individual mediation effects. Prior to the calculation of longitudinal mediation effects, I performed a simple regression analysis to establish the longitudinal relationship between strain and intention to leave, to fulfill the basic assumption of mediational analysis (Baron & Kenny, 1986). Since these analyses involved the relationship between two variables, I used the three analytical approaches that were explained earlier (see page 128). The results are presented in Table 5.31.

Table 5.32:
Standardized estimate of direct relations between strain and intention to leave using analytical approaches 1, 2 and 3.

Analytical Approach	Standardized Estimate (β)	t	p
1	.262*	3.353	.001
2	.053	.652	.585
3	.174*	2.241	.021

Note: Significant path coefficients are indicated in bold.

Results from analytical approaches 1 and 3 revealed that there was a longitudinal relationship between strain and intention to leave. Using approach 1, intention to leave at Time 2 was regressed on strain at Time 1. Using approach 3, changes in intention to leave was regressed on changes in strain. This condition permitted further longitudinal mediation analysis (Baron & Kenny, 1986). Table

5.33 presents the four sets of mediation results based on the four analytical approaches (see page 151).

Table 5.33:

Longitudinal mediation effect of outcomes of strain on the relationship between strain and intention to leave

Mediator	Path			Mediation Effect ($a \times b$)	Type of Mediation
	<i>a</i>	<i>b</i>	<i>c</i>		
Approach 1A: Strain T1 → Outcomes of Strain T1 → Intention to Leave T 2					
Cynicism	.577*	.078	.073	.045	none
Professional Efficacy	.511*	.023	.073	.012	none
Organizational Commitment	.448*	.004	.073	.002	none
Approach 1B: Strain T1 → Outcomes of Strain T2 → Intention to Leave T 2					
Cynicism	.264*	.132*	.024	.035	Full
Professional Efficacy	-.017	-.053	.024	.001	none
Organizational Commitment	.130*	.399*	.024	.052	Full
Approach 2: Strain T1 → Outcomes of Strain T1 → Changes in Intention to Leave					
Cynicism	.581*	.090	.085	.052	none
Professional Efficacy	-.511*	-.027	.085	.014	none
Organizational Commitment	-.448*	-.004	.085	.002	none
Approach 3: Changes in Strain → Changes in Outcomes of Strain → Changes in Intention to Leave					
Cynicism	.412*	.163*	.072	.067	Full
Professional Efficacy	-.217*	-.027	.072	.006	none
Organizational Commitment	-.104	.366*	.072	.035	none

Note: Full mediation is observed when path *c* is insignificant.

Partial mediation is observed when path *c* is significant.

No mediation is observed when either path *a* or path *b* is insignificant

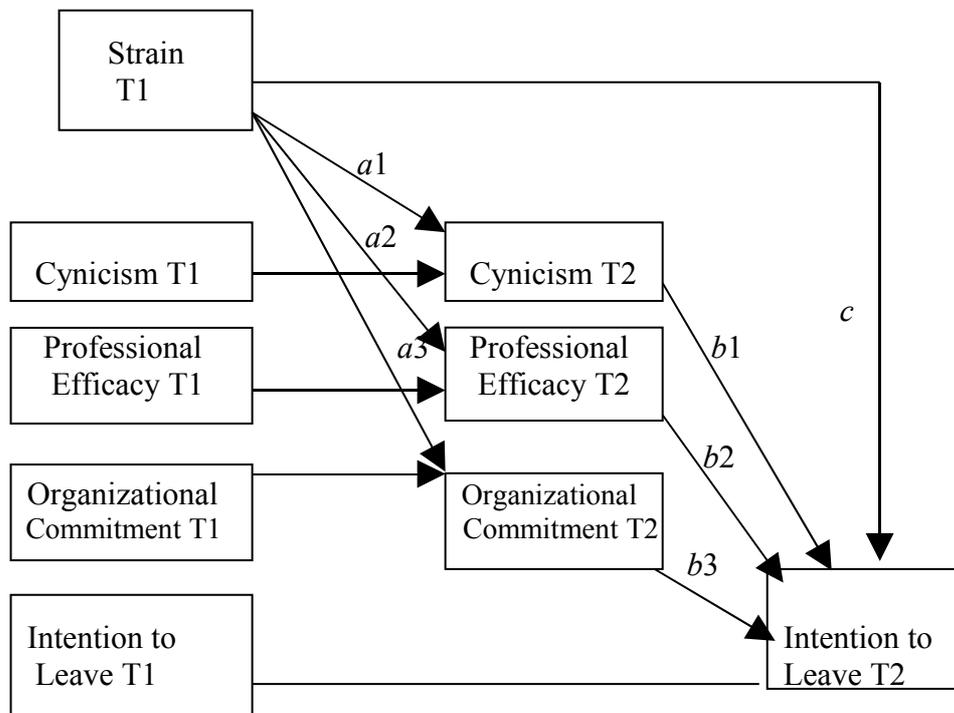
In summary, analytical approach 1A produced no longitudinal mediation effect, since the multiplication of path *a* and path *b* was not significant. Approach 1B revealed that cynicism (T2) ($axb = .035$) and organizational commitment (T2) ($axb = .052$) significantly mediated the relationship between strain (T1) and

intention to leave (T2), but professional efficacy (T2) did not. Analytical approach 2 revealed no mediation effect. Finally, analytical approach 3 revealed that changes in strain led to changes in cynicism and subsequently to changes in intention to leave ($axb = .067$). Overall, I found mixed results for the mediational effects of cynicism, professional efficacy, and organizational commitment on the relationship between strain and intention to leave. Only three out of nine mediation routes were significant. Hence, Hypothesis 5 is only partially (and weakly) supported.

Similar to the cross-sectional mediation analysis, I investigated the contribution of each individual mediator in relation to intention to leave. As an alternative I used approach 1B to detect longitudinal mediations in this study. It is important to note that the earlier longitudinal analyses (approach 1B) did not consider the effects of initial levels of mediators at Time 1 onto mediators at Time 2 and nor the effect of criterion variable at Time 1 onto criterion variable at Time 2. I controlled for the effect of mediators at Time 1 to avoid spurious relation between predictor (strain) and mediator variables at Time 2 (Cole & Maxwell, 2003). Following Cole and Maxwell (2003) and Krull and McKinnon (2001), I entered mediators and criterion both at Time 1 as control variables into the model and extended further analytical approach 1B to test the longitudinal mediation effects of cynicism, professional efficacy, and organizational commitment on the relationship between strain and intention to leave. Figure 5.18 depicts the longitudinal multiple mediation model for the study. The model represents both the direct effect of strain on intention to leave (path c) and the indirect effect of strain on intention to leave via three mediators (cynicism, professional efficacy and organizational commitment). Strain T1 represents

predictor variable at Time 1. Cynicism T2, professional efficacy T2, and organizational commitment T2 represent mediators at Time 2 and intention to leave T2 represents the criterion variable at Time 2. This recursive multiple mediator model predicts that strain is either directly related to intention to leave or indirectly related through cynicism, professional efficacy and organizational commitment.

Figure 5.18:
Longitudinal multiple mediation model of outcomes of strain

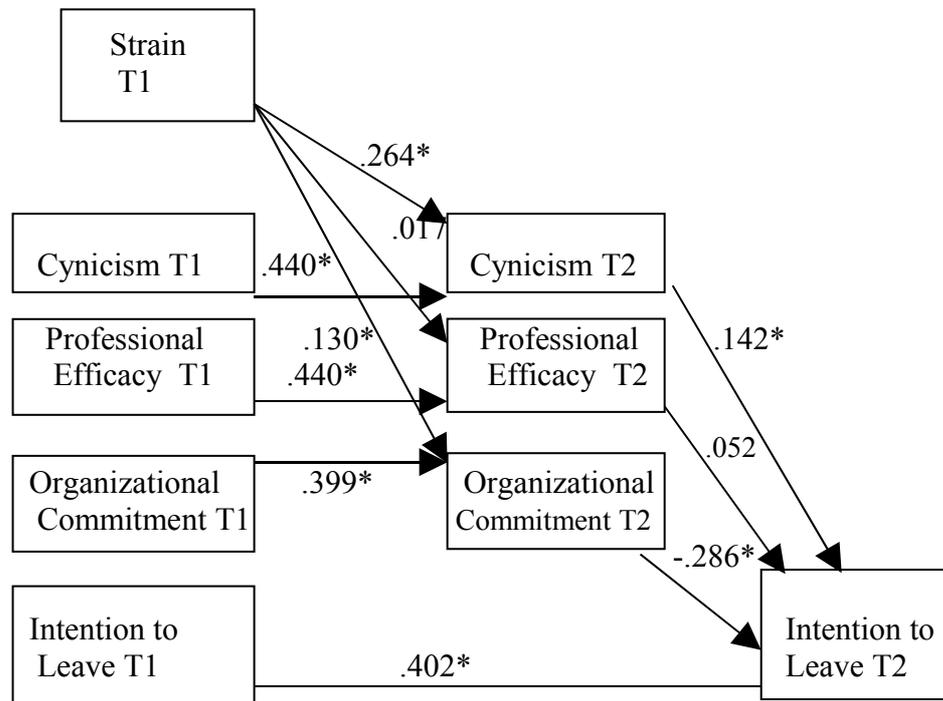


Note: T1 and T2 indicate Time 1 and Time 2
 Boxes represent latent variables
 → indicate the causal paths
 Numbers above the → indicate path coefficient

This two-wave panel study tested the prospective relation (longitudinal effect) between predictor at Time 1 (Strain T1) and mediator at Time 2 (e.g. Cynicism T2), but examined only the contemporaneous relation between mediator (e.g. Cynicism T2) and criterion (Intention to leave T2). In order to provide more evidence for temporal sequence of mediator and criterion variables, I controlled for the mediator at Time 1 and the criterion at Time 1. Controlling for the mediators and criterion variable is important to avoid the potential confounding effect of mediator Time 1 on mediator Time 2 and also criterion Time 1 on criterion Time 2. Without controlling for the effects, the estimates of the causal paths may be spuriously inflated (Cole & Maxwell, 2003). For example, including cynicism Time 1 into the regression equation will control for its effect in the prediction of strain Time 1 on cynicism Time 2.

Consistent with the previous analyses, I investigated further to examine the contribution of each individual mediator at Time 2 by controlling for the effects of that mediator at Time 1. Similarly to the analyses above, the significance of the omnibus effect was examined with and without the direct path between strain and intention to leave (path *c*). The mediation is said to be full when the direct effect is close to zero. When a total mediation effect was detected, I proceeded to examine the specific mediation effect. The model estimation results are presented in Figure 5.19.

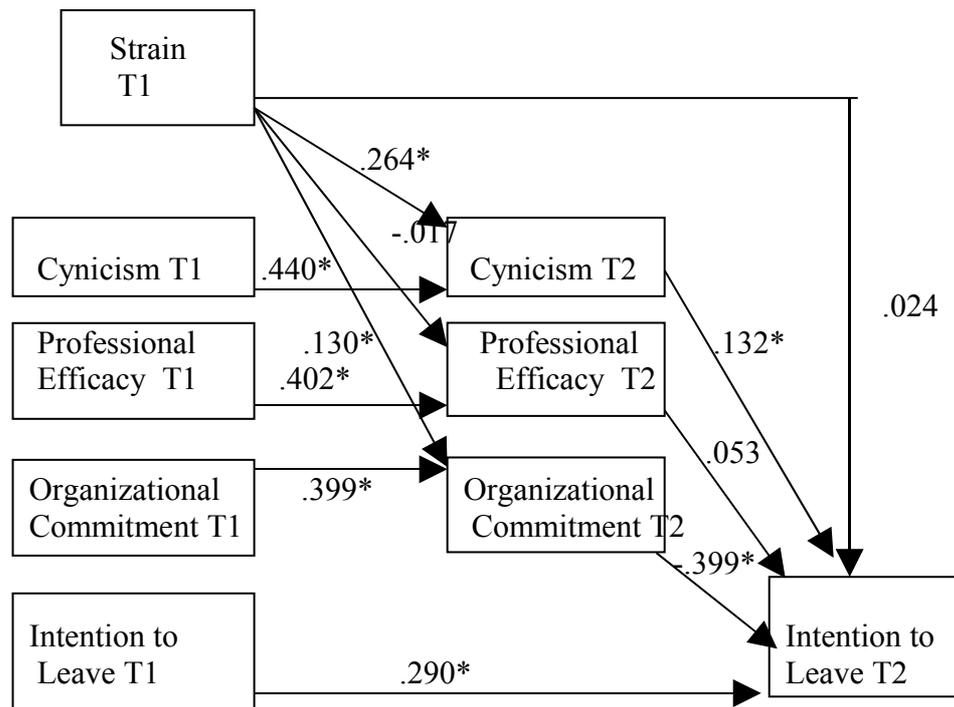
Figure 5.19:
Test of the hypothesized multiple mediation model without the direct path linking strain to intention to leave.



Note: T1 and T2 indicate Time 1 and Time 2
 Boxes represent latent variables
 → indicate the causal paths
 Numbers above the → indicate path coefficient

Figure 5.19 shows the results for the longitudinal multiple mediation model. The model provided a poor fit to the data (CMIN = 267.527, CMIN/d.f. = 13.376, RMSEA = .243, GFI = .804, CFI = .545). I hypothesized that the effect of strain on intention to leave would be totally mediated by the three mediators that were included in the model. However, to infer total mediation, it must be demonstrated that when the direct path from strain to intention to leave is included, the direct path is not significantly different from zero (Baron & Kenny, 1986; Hoyle & Kenny, 1999). Based on that requirement, I included the direct path from strain to intention to leave and re-estimated the model. Figure 5.20 showed the result of the estimation of the multiple mediation model with the direct effect of strain to intention to leave.

Figure 5.20:
Test of the hypothesized multiple mediation model with the direct path linking strain to intention to leave.



The model also provided a poor fit to the data (Chi-square = 267.41, Chi-square/d.f. = 14.074, RMSEA = .250, GFI = .745, CFI = .481), and was not significantly different from the previous model. The direct path linking predictor (strain at Time 1) to criterion (intention to leave at Time 2) was not significant ($\beta = .02, p > .05$), indicating that cynicism, professional efficacy, and organizational commitment mediated the relationship between strain at Time 1 and intention to leave at Time 2. Even though the model showed a poor fit to the data, the focus of the modeling was to obtain the path coefficients linking predictor variables to mediator variables and also the path coefficients linking mediator variables to criterion variables (Kaplan & Elliot, 1997). Hence, I conclude that the three mediators, in combination, mediated the strain and intention to leave relationship even though the mediation effect of professional efficacy was not significant. I

proceeded with a follow-up examination of specific indirect effects and the calculation of the proportion of mediated effects. Table 5.34 presents the mediation effects, direct effect and total indirect effects of the three mediators.

Table 5.34:
Mediation effects, direct effect and total mediation effects of outcomes of strain

Mediator	Path			Mediated effect	
	a	b	c	Specific (a x b)	Proportion
Cynicism	.264*	.132*	.024	.035	31.25
Professional efficacy	-.017	-.053	.024	.001	0.89
Organizational commitment	-.130*	-.399*	.024	.052	46.43
Total effect (c + all specific effects)				.112	

Note: *a* indicates the direct effect of strain at Time 1 to mediator at Time 2
b indicates the direct effect of mediator at Time 2 to intention to leave at Time 2
c indicates the direct effect of strain at Time 1 to intention to leave at Time 2
 Total effect is the sum of all specific effects and *c*
 Proportion indicates the percentage of specific effect from the total effect
 Proportions contributed by direct effect *c* was 21.43%

The results in Table 5.34 show that cynicism and organizational commitment mediated the relationship between strain and intention to leave over time, with the proportions of the total mediated effect being 31% and 46% respectively. Even though the coefficient paths *a* and *b* in this longitudinal analysis were relatively lower than in the cross-sectional analysis, the same pattern of mediation effects for cynicism, professional efficacy and organizational commitment was observed. As with the cross-sectional analyses, professional efficacy was not a mediator of the relationship between strain and intention to leave in the longitudinal analysis. Given the insignificant path *b* from professional efficacy to intention to leave, the multiplication of *a* and *b* was not significantly different from zero. Similar to the cross sectional analysis, organizational

commitment (46%) appeared to be a stronger mediator than cynicism (31%). Thus, Hypothesis 5, which was previously supported by cross-sectional data, was supported further by the findings from the longitudinal analysis. Cynicism and organizational commitment, but not professional efficacy, longitudinally mediated the relationship between strain and intention to leave.

5.4 Chapter conclusion

This chapter has presented the results of the study, consisting of factor analyses, descriptive analyses, and hypotheses testing. I tested five hypotheses including direct effects, moderation effects, and mediation effects. I used cross-sectional as well as longitudinal analyses to test the hypotheses. For the longitudinal analysis I used three analytical approaches to provide more detailed evidence of causal relations between the variables. Analytical approaches 1 and 3 provided some evidence of a longitudinal relationship between variables, but approach 2 did not produce significant result. While testing for multiple mediation effects, I investigated the contribution of individual mediators in the mediation process. Organizational commitment appeared as a strongest mediator in the relationship between strain and intention to leave. The interpretations and implications of the results are presented in Chapter 6.

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1 Introduction

As outlined in the introduction chapter, the present study was conducted to test an integrated model of antecedents and outcomes of strain among Malaysian academics. This chapter discusses the following issues: 1) the direct effects of role stressors on strain; 2) the direct effects of strain on cynicism, professional efficacy and organizational commitment; 3) the effects of the hypothesised moderators on the relationships between role stressors and strain; 4) the mediating effect of strain on the relationships between role stressors and the outcomes of strain; and 5) the mediating effects of the outcomes of strain on the relationship between strain and intention to leave.

The high reliability of the scales indicated that all scales used in this study provide a reliable measure of the study variables. Confirmatory factor analyses also confirmed the factorial structure of latent variables. All latent variables were retained and used to investigate the relationships among the study variables. Despite the moderate levels of strain that was reported, academics also reported low levels of intentions to leave their jobs in their universities. In terms of role stressors, academics reported slightly low levels of role ambiguity and moderate levels of role overload and role conflict. Academic also reported slightly low levels of cynicism, high levels of professional efficacy and moderate levels of organizational commitment.

In brief, the results of the study showed that role overload, role ambiguity and role conflict were related to strain. The contributions of role overload and

role conflict were weaker than role ambiguity. Subsequently, strain was positively related to cynicism and negatively related to professional efficacy and organizational commitment. In terms of the moderation effects, the results showed that there was no moderation effect of the hypothesized moderators on the relationship between role stressors and strain. In terms of the mediation effects, analysis of the first part of the mediation process showed that strain partially mediated the relationships between role stressors and strain. In the second part of the mediational process, cynicism and organizational commitment, but not professional efficacy, fully mediated the relationship between strain and intention to leave. Taken together, the findings of this study provided answers to the major questions outlined in the introductory chapter.

6.2 The effect of role stressors on strain

Overall, respondents reported feeling low to moderate levels of role overload, role ambiguity and role conflict, with mean values ranging from 2.15 (role ambiguity) to 3.85 (role overload) on a scale of 1 to 6. There were no significant differences among levels of role stressors between Time 1 and Time 2. Respondents also reported moderate levels of strain at both time periods, which is consistent with the results of other studies on academic stress (Winefield, 2000). However, the contributions of each role stressor to strain differed. Role ambiguity had a greater influence on strain than did role overload or role conflict at both Time 1 and Time 2 (refer Table 5.13). Discussion of the direct effects of role stressors on strain begins with results from the cross-sectional analyses followed by results from the longitudinal analyses.

The results from cross-sectional analyses demonstrate that role overload, role ambiguity, and role conflict were antecedents of strain. This is consistent with the findings of previous studies (Fogarty et al., 2000; Lee & Ashforth, 1996; Peiro et al., 2001; Posig & Kickul, 2003), which found that role stressors were related to strain. Findings in other occupational settings (e.g. Bedeian & Armenakis, 1981; Jackson & Schuler, 1985; Kemery et al., 1985; Lieter & Maslach, 1988; Parasuraman & Alutto, 1984; Scaubroeck et al., 1989) are extended to academics in Malaysian public universities. Therefore, academic managers who seek to understand the important behavioural dimensions of stress in university settings should not ignore the impact of these role stressors.

With regard to the explained variance of the study, the changes in R square for role stressors in combination (23% for Time 1 and 16% for Time 2) should be viewed as moderate. The moderate relationships between role stressors and strain indicate that role stressors were important determinants of strain but not the only determinants. The present findings suggest that strain has multiple causes, and hence the effect of specific stressors on strain might not be very high (Zapf, Dorman, & Frese, 1996).

It is interesting to reflect on why role ambiguity appeared to be more critical than role overload and role conflict in the prediction of strain. The different effects of role stressors on strain might be influenced by the type of occupation. Previous studies have shown that role stressors have different effects across occupations. For example, using burnout as outcome variable, Fogarty et al. (2000) found that role ambiguity was an important determinant of strain among accountants. In a study among health care professionals, Peiro et al. (2001) found that role overload was a better predictor of strain. Peiro et al.'s

(2001) finding is consistent with the meta-analysis of role stress studies carried out by Lee and Ashforth (1996), who reported that role overload was a stronger determinant of strain across occupations than role ambiguity and role conflict.

In the present study, the results show that academics were affected more by role ambiguity, which is not consistent with Lee and Ashforth (1996). One possible reason for this difference is that academics are less tolerant of role ambiguity than of role overload and role conflict. Tolerance for ambiguity is defined as the tendency for an individual to see an ambiguous situation as manageable (Ivancevich & Donnelly, 1974; Wright & Thomas, 1982). Lower level of tolerance for role ambiguity might have made these academics more susceptible to this stressor. I speculate the role of tolerance for ambiguity as a possible explanation in this study because Western researchers have found this to be the case in numerous studies (Ivancevich & Donnelly, 1974; Keenan & McBain, 1979; Wright & Thomas, 1982). I expect that people with a high tolerance for role ambiguity would be less affected by role ambiguity than those with a low ambiguity tolerance level. Therefore, further research is needed to investigate the role of tolerance for ambiguity in the relationship between role ambiguity and strain.

Another possible reason why role ambiguity had a more dominant effect on strain pertains to contextual factors. The Malaysian tertiary education system has undergone great changes as a result of three decades of economic growth (1970-2000). Frequent changes in government policies and regulations relating to things such as research grants, curriculum design and key performance indicators may have contributed to a sense of ambiguity among academics. Similarly, the frequent changes in promotional criteria may have also contributed to role

ambiguity. Historically, the system of higher education in Malaysia was adopted from the British and the American systems. Early universities in Malaysia were largely an innovation of the British colonial government. In order to match the current needs and national interests, these universities have undergone a series of changes in their systems and procedures that may have contributed to greater ambiguity for academics. For example, the changes in curriculum design have created a need for new fields of expertise. This involves new expectations on academics in which they typically have to acquire new skills and knowledge.

The question may arise as to why academics were less affected by role overload and role conflict compared to role ambiguity. The findings seem to suggest that role overload and role conflict were less important stressors in the Malaysian context. One reason may be that these academics have accepted the fact that role overload is part of the academic job and also accepted the fact that incompatibility between expectations and demands (role conflict) is a common problem in developing countries like Malaysia (Papin-Ramcharan & Dawe, 2006). Another possible explanation might be centred on rewards and recognition. Academics with heavy workloads might have rationalized that they would be compensated with salary increments or promotions. Heavy workload might be perceived as challenge and opportunity to use the available skills and talents. Eisenberger and colleagues indicate that perceived high levels of challenge and the possibility to use skills predict employee engagement in extra-role performance partially through creating a positive mood (Eisenberger, Jones, Stinglhamber, Shanock & Randal, 2005). On the other hand, academics with a sense of conflicting demands have the opportunity to display their ability to handle this situation and receive recognition from their organization. For

example, individuals who work under more than one superior may have a more divergent thinking style to adjust to different leadership styles. There is evidence in the literature that the divergent thinking style could help individuals to be more creative (Baer, 1993; Batey & Furnham, 2006). Thus, role overload and role conflict may not have been perceived as serious threats to their well-being.

The longitudinal analyses, on the other hand, provide a different picture of the effects of role stressors on strain. This two-wave panel study was designed to investigate the effects of role stressors on strain over time to complement the cross-sectional design that provided information on the instantaneous effects of role stressors on strain. As mentioned earlier, I used three analytical approaches to investigate the longitudinal relationships between role stressors and strain. Approach 1 (time effect model) was intended to examine the association between role stressors at Time 1 on strain at Time 2. Approach 2, the unconditional change score model (which tested the relationship between changes in strain and role stressors at Time 1) tested the relationship between role stressors at Time 1 and the changes in strain over a six-month time lag. Approach 3, the conditional change score model (which show the relationship between changes in role stressors and changes in strain), was used to examine the effect of changes in role stressors on changes in strain over a six-month time lag. Longitudinal analyses based on these three analytical approaches produced different results. Based on Approach 1, role overload and role ambiguity at Time 1 were not related to strain six months later. However, based on Approach 3, changes in role overload and role ambiguity were related to changes in strain over a six-month time lag. On the other hand, role conflict at Time 1 was related to strain at Time 2, but, based on Approach 3, changes in role conflict were not related to changes in strain over a

six-month time lag. The salient findings from this analytical approach are that the six-month time lag was sufficient to show that the changes in role overload and role ambiguity (but not role conflict) would be associated with the changes in levels of strain among academics (i.e. based on approach 3). This seems to suggest that role overload and role ambiguity affect long-term goal accomplishment, whereas role conflict may only affect short-term goal accomplishment. Moreover, these findings also highlight the contribution of sustained role overload and role ambiguity to strain among academics. Academics who experience role overload and role ambiguity over a certain period of time are likely to experience strain.

The different longitudinal effects of the three role stressors on strain deserve an explanation. A possible reason is that different time lags were needed for these role stressors to have effects on strain. Role overload and role ambiguity may take some time to exert a major effect on strain, while the effect of role conflict may be more immediate. Peiro and colleagues used a time lag of a year to find the effects of role overload, role ambiguity, and role conflict on emotional exhaustion (Peiro et al., 2001). My initial assumption that six-month lag time would be sufficient to determine the effects of role overload and role ambiguity to strain was based on its correspondence with a semester of teaching. However, the results suggest that it might take more than six months for role overload and role ambiguity to exert a substantial effect. Zaheer and colleagues pointed to the concept of the “existence interval”, which refers to ‘the length of time needed for one instance of the process, pattern, phenomenon, or event to occur’ (Zaheer, Albert, & Zaheer, 1999, p730). Different time intervals could alter the theoretical relationships between phenomena under study. In this study, the existence

interval could be an academic year that can be linked to events and activities in universities such as performance appraisals, salary increments, and research evaluations. This existence interval could alter the relationships between these role stressors and strain (Ancona & Chong, 1996). For example, uncertainty about their ability to carry out research and produce publications may take a year to have an effect on strain when academics are evaluated on their yearly research performance. Moreover, academics might have realized that teaching loads for the past year have left little time for them to do research. They might also have delayed in starting their research project due to unclear research direction. Since research normally takes more than six months to be published, the six-month lag time that was used in this study might not be enough to detect the effects of role overload and role ambiguity at Time 1 on strain six months later. These role stressors may become threats to their well-being at the point of the performance appraisal exercise a year later.

In contrast to role overload and role ambiguity, I found that role conflict was related to strain within a six-month lag time. One possible reason might be that the perception of conflicting requests, or different working styles, might have been perceived by academics as threatening their well-being in a shorter period. The perception of conflicting demands threatens the smooth implementation of work assignments when an academic has to attend to the requests of two superiors at the same time and the demands of two or more tasks. He or she may become less productive and this can limit short-term goal accomplishments. Thus, role conflict at Time 1 was related to strain six months later. In other words, the effects of role conflict appear to be more immediate than role overload and role ambiguity.

6.3 The outcomes of strain

The third hypothesis of the study deals with the direct effect of strain on cynicism, professional efficacy and organizational commitment. I hypothesized that strain would be positively related to cynicism and negatively related to professional efficacy and organizational commitment. Results from the cross-sectional and longitudinal analyses support the hypothesized relationships. The discussion in this section begins with the cross-sectional results, followed by the longitudinal results.

In the cross-sectional analysis, strain was found to be related to all outcomes of strain (cynicism, professional efficacy, and organizational commitment). Specifically, academics who experienced higher levels of strain were more likely to develop higher levels of cynicism, reduced professional efficacy and low levels of organizational commitment. Prior research has also found these relationships (Cordes & Doherty, 1993; Schaufeli et al., 1996). The findings of the present study support the view that strain will result in various psychological outcomes. The findings also indicate that when academics perceived that role stressors were threatening their well-being and they have experienced strain, not long after that cynicism, reduced professional efficacy and lack of organizational commitment occurred. The stronger associations between strain and its outcomes than the association between role stressors and strain seem to suggest that the effect of strain is more immediate than the effects of role stressors. It is logical for individuals to respond immediately to strain to maintain their well-being. For a certain period of time, strained individuals will make efforts to overcome role stressors, but not long after that cynicism, reduced professional efficacy and lack of organizational commitment will occur. From a

practical standpoint, stress intervention strategies should focus as much on reducing the role stressors as on reducing the outcomes of strain.

Overall, the longitudinal analyses provided more information on the possible causal effects of strain on the outcomes than did the cross-sectional analyses. I used three analytical approaches to infer a longitudinal relationship between the predictor and criterion variables: the time-effect model, the unconditional change score model (which shows the relationship between changes in the criterion variable and the predictor variable at Time 1) and the conditional change score model (which shows the relationship between changes in the criterion variable and changes in the predictor variable) (see page 128). Based on the time-effect model, strain at Time 1 was related to cynicism, professional efficacy and organizational commitment at Time 2. The unconditional change score model did not produce significant results. Based on the conditional change score model, changes in strain were related to changes in cynicism and professional efficacy but not to changes in organizational commitment.

As might be expected, strain was significantly related to cynicism, professional efficacy and organizational commitment across time. Similarly, academics with a high level of strain at Time 1 indicated a high level of cynicism, low levels of professional efficacy and low levels of organizational commitment at Time 2. Moreover, changes in strain were related to changes to cynicism and professional efficacy, but not organizational commitment. Therefore, it can be concluded that strain among academics in Malaysian public universities could be considered as having adverse effects. These findings were consistent with

previous findings in Western countries (Lee & Ashforth, 1996; Leiter, 1993; Taris et al., 2001).

The longitudinal relationships between strain and cynicism, professional efficacy, and organizational commitment warrant some discussion. Theoretically, the longitudinal effects of strain on cynicism, professional efficacy and organizational commitment demonstrate the stress process as proposed by Lazarus' transactional model (Lazarus, 1966; Lazarus & Folkman, 1984). This transactional stress model points to the actions that are taken by individuals as a result of experiencing a stressful situation. Academics might have perceived that the role stressors were beyond their capability to deal with. They also might have perceived that perceived organizational support, peer support, and self-efficacy were not enough to help them to deal with role stressors and therefore strain occurred. Over time, these perceptions induced cynicism and reduced professional efficacy, but were not substantial enough to affect organizational commitment. In this case, the academics developed cynicism and reduced professional efficacy more immediately than organizational commitment. Cynicism was defined earlier as a distance attitude toward work in general. Cordes and Doherty (1993) asserted that people develop cynicism in order to avoid subsequent stress and resultant strain. When emotional callousness and cynical attitudes develop, academics tend to have a distant attitude towards work and also to be indifferent to the suffering of students and colleagues. This reaction would produce a sense of low levels of professional efficacy. This notion was supported by Wimmer and colleagues, who found that cynical individuals were more likely to refuse all responsibilities and downplay their condition compared with others (Wimmer, Janda, Penker, Jakse, Polansky & Pertl, 2002).

Recall also that the changes in strain were not substantial enough to be associated with the changes in organizational commitment. The important finding here is that, even though strain led to organizational commitment six months later (in the time effect model), the magnitude of the change in strain (conditional change score model) was not substantial enough to cause changes in organizational commitment over a six-month lag time. This supports the proposition that organizational commitment is a result of long-term involvement of employees in an organization (Mowday et al., 1982). Affectively committed employees can be characterized as those with a sense of belonging and identification that increase their involvement in the organization's activities (Meyer & Allen, 1991). Role stressors that have caused strain seem to have overarching effects on organizational commitment. Several researchers have reported these relationships (Agarwal & Ramaswami, 1993; Babakus et al., 1996; Jackson & Schuler, 1985; Mathieu & Zajac, 1990). When faced with excessive role demands, academic jobs that appear interesting to many might be perceived by academics themselves as overtaxing and threatening their well-being. If the activities of a role are perceived as threatening one's well-being then it can be predicted that individual involvement in organizational activities will be decreased (Marks, 1977).

It is clear that longitudinal effects of strain on each of outcome variables differ. A more dynamic and shorter lag is identified for the influence of strain on cynicism and professional efficacy, and a more deferred and longer one for organizational commitment. More research, however, is needed to consolidate these conclusions. In fact, the results also suggest the importance of investigating the distinct patterns of influence of strain on each of outcome dimensions. The

time lag considered, the research design, and the methodology of analysis may all contribute to the results obtained.

Given the strong relationship between strain and outcomes, I suggest further research on the process of evaluating the stressor (appraisal process) that leads to the feeling of strain or depletion of emotional energy. This is consistent with Lazarus' transactional model (Lazarus & Folkman, 1984) which indicates that the appraisal process is a crossroad to wellness or adverse psychological consequences. Therefore, there is a need to really distinguish strain and outcomes in order to examine transitions that occur from strain to outcomes. Moderate levels of correlations between strain and outcomes (from .29 to .58) warrant a further look into the process. Longitudinal findings seem to suggest that strain and outcomes were products of two separate process. If the perception of a role stressor involves a transaction between individual and environment (Lazarus & Folkman, 1984), transitions from strain and outcomes are processes in which individuals make psychological adjustment to respond to the feeling of strain. At this stage personal resources may play important role to mitigate the process. COR theory that explains how an individual makes efforts to conserve resources may be able to explain the effect of strain on outcomes (Hobfoll & Lilly, 1993). COR theory predicts that stress and well-being depend on the availability and management of resources (Hobfoll, 1989).

6.4 Moderation effects

In addition to providing evidence on the direct relationship of role stressors with strain, I also examined possible moderators of role stressors-strain relationships. The objective was to demonstrate that the moderators would change

the direction or reduce the direct effects of role overload, role ambiguity and role conflict on strain.

The moderation analyses revealed no buffering effects of the hypothesized moderators on the relationships between role stressors and strain, either in the cross-sectional or longitudinal designs. These results were inconsistent with previous studies (Delstra et al., 2003; Jex et al., 2001). Delstra et al. (2003) found that peer support moderated the effect of role conflict and Jex et al. (2001) found that self-efficacy moderated the effect of role ambiguity on strain. Harvey et al. (2003) found that organizational support moderated the effect of role overload on strain among employees in an accounting firm.

Failure to support the moderation effect hypotheses seems to suggest that the proposed moderators were not functioning to help academics to deal with role stressors and then to reduce strain. Instead of buffering the effect of role stressors, some the variables hypothesized as moderators were found to be directly related to strain. The following paragraphs discuss the possible reasons for the non-significant moderation effects of the three variables on the relationships between role stressors and strain.

Organizational support

I found that organizational did not buffer the effect of role overload on strain. This is contradictory to the buffering hypothesis, which states that organizational support would interact with role stressors to alleviate the effects of role stressors rather than to make them more severe. In this study particularly, the interaction between organizational support and role overload failed to yield a significant effect on the positive association between role overload and strain.

A possible explanation for why organizational support failed to buffer the effect of role overload on strain might be on the basis that these two variables might have been interconnected. For an interaction to occur, predictor and moderator variables must be independent of each other (Aiken & West, 1991). For instance, appointment to a working committee tends to be based on the willingness of academics to accept extra duties. These academics might have believed that their sense of overload will be rewarded intrinsically and extrinsically. The availability of reward and recognition has been found to be beneficial for employees' motivation to work (Rhoades & Eisenberger, 2002). Support from the organization might be in the form of appointments and extra jobs. This is important particularly for academics in Malaysian public universities because administrative duties will be considered in the evaluation for promotion. At the same time they might have perceived that top management would provide support for them in order to perform the tasks. Based on that perception, they might have accepted the appointments. Approach by academic managers to offer support might have been perceived as a source of extra workload. Therefore this support could not interact with role overload to reduce strain.

Surprisingly, despite the strong empirical evidence in prior studies showing that organizational support could reduce strain (Delstra et al., 2003; Jex et al., 2001), in this study the organizational support construct, which taps into the readiness of organization to reward the efforts made by academics, failed to buffer the effect of role ambiguity on strain. Organizational support measures such as recognition, care, and concern did not interact with role ambiguity to reduce strain. One reason may be that the ambiguities faced by academics are domain specific, which is pertaining to their specific academic tasks of teaching,

research and publication. Ambiguities about research activities, for instance, might have caused strain because the support provided by the university might not be the right kind of supports that were needed. Academics might have failed to commence a research project when the pertinent information such as research fund and direction were not clear. Other kinds of support such as recognition and appreciation may be relevant after successful completion of a research project. Perhaps they might not have received rewards and recognition from their universities. This notion is supported by the low to moderate levels of perceived organizational support for Time 1 and Time 2 reported by academics (refer to Table 5.9). Prior research has shown that academics were not receiving recognition from their universities. For example, Comm and Mathaisel (2003) found that 72% of academics indicated that they had not received any kind of institutional recognition for their contribution.

This study also found that organizational support also failed to interact with role conflict to reduce strain. According to Blau (1980), for an interaction to occur, the source of support must be independent of sources of the stressors. In this study, organizational support may have been interconnected with role conflict. For example, if the perception of role conflict originated from the work setting, offers of support from the organization may have little meaning. Therefore organizational support failed to reduce the relationship between role conflict and strain. This notion was supported by Spector and Jex (1998) who indicated that perceptions of role conflict originated from things such as limited resources and interruptions of work. Perceived organizational support could not reduce strain because academics might have perceived that the resources that were offered by organization were not the kind of resources they needed

(Rhoades & Eisenberger, 2002). Role conflict also occurs when individuals experience work demand without resources to complete the job (Rizzo et al., 1970).

Peer support

I hypothesized that peer support would interact with role stressors to buffer their effects on strain. I found no support for the hypothesized moderation effects, and these results are also inconsistent with previous studies (Cohen & Wills, 1985; van Vegchel et al., 2004; van Yperen & Hagedoorn, 2003). This finding can be interpreted to mean that support from colleagues was not functioning to assist academics in dealing with role stressors in relation to strain. This is not entirely surprising, since theory as well as empirical evidence has indicated that social support may not have the beneficial effect that is often expected of it (Bravo, Peiro, Rodriguez & Whitely, 2003; Frese, 1999; Howard, Cunningham, & Rechnitzer, 1986). Frese (1999) argued that social support could threaten self-esteem because it might show up personal weaknesses. This notion was supported empirically by Howard et al. (1986), who found that social contacts reinforced the stress reaction instead of weakening it. Bravo and colleagues argued that peers could communicate incompatible role information to fellow workers that could increase their role conflict (Bravo et al., 2003).

The results of the study illustrated that peers did not help their fellow colleagues to deal with role overload and role ambiguity. A possible explanation may lie in the nature of academic work. For example, in conducting a research project, a junior academic needs support from their more experienced peers. In this situation, peer support may serve as a moderator on the basis that it provides

the informational, instrumental and emotional support to help the individual to deal with role overload and role ambiguity. However, in this study assistance from peers in terms of information, physical and emotional help might not be enough or of the right type to overcome the sense of overload and ambiguity that have been experienced by the academics. For example, a little assistance from colleagues might not be enough to reduce the sense of role overload because of the nature of academic tasks, especially classroom teaching, that have to be performed individually.

In this study, peer support also did not interact with role conflict to reduce strain, suggesting that academics were not receiving the kind of support that they needed. LaRocco et al. (1980) proposed that the source of support must correspond with the stressor in order to be effective. Specifically, when instrumental support is required, this source of support must match the source of the conflict. In this study, it was believed that limited resources might be an important source of role conflict. This notion is confirmed by the moderately high correlation between resource constraints and role conflict ($r = .58$ at Time 1 and $r = .47$ at Time 2). Therefore, peers might not be the right source to solve the problem of limited resources. Thus, peer support failed to reduce the effects of role stressors on strain.

Self-efficacy

Results from the analysis examining the moderating effect of self-efficacy showed that self-efficacy did not buffer the effect of role stressors on strain. This finding seems to suggest that self-efficacy did not help academics to deal with role stressors. This finding is contrary to the hypothesized moderation effect and the findings of previous studies (Bandura, 1991; Evers & Tomic, 2003). Self-

efficacy was however, found to be negatively related to strain, consistent with other studies (e.g. Evers, Browsers & Tomic, 2002; Kalimo, Pahkin & Mutanen, 2003). In the teaching profession, Evers and colleagues found that teachers' self-efficacy related negatively to emotional exhaustion.

The possible explanation for the failure to detect the moderation effect of self-efficacy on the relationships between role stressors and strain may lie in the sources of role overload, role ambiguity and role conflict and their compatibility with self-efficacy. Self-efficacy was considered as a potential moderator in this study on the basis that it provided the perception of control over the stressors (Bandura & Locke, 2003). However, role overload that did not interact with self-efficacy, which seems to suggest that workloads given to the academics were beyond their task-specific self-efficacy concerning teaching and research. It could be construed that role overload was generated from organizational work systems and that academics have little control over this. Thus, the academics' beliefs in their ability to carry out their academic jobs could not help to reduce the strain resulting from assigned duties that deviated from teaching and research. For example, large class sizes could reduce the academics' ability to be effective in the classroom. The sense of being overloaded as a result of large class sizes has little to do with their belief in their ability to teach the subject matter. Therefore, self-efficacy did not function to mitigate the effects of role overload on strain.

The same explanation serves for the role conflict and strain relationship. Confidence in academics' ability to perform academic tasks may have little to do with the sources of the incompatible expectations and demands. Academics might have admitted that working with limited resources is inherent in Malaysia as a developing country (Rahman, 2005). As a result of the liberalization of tertiary

education, increases in student numbers have been greater than increases in research allocations. This situation is beyond the control of these academics. Thus, their self-efficacy could not buffer the effect of role conflict on strain.

Instead of the hypothesized moderation effect on stressor-strain relationships, self-efficacy had a direct effect on strain. This is consistent with empirical evidence finding main effects (Kahn & Byosiere, 1992; Sonnentag & Frese, 2003). Self-beliefs of efficacy play a key role in the self-regulation of motivation (Bandura, 1994) and in this study self-efficacy may have helped academics to motivate themselves to endure strain in order to accomplish certain goals. People are committed in activities to accomplish goals because they believe that they can do them (Atkinson, 1982). In their effort to achieve goals, strong self-efficacy guides their actions such as solving complex research problems and teaching difficult subjects. Thus, they will sustain their effort and endure the strain better.

In conclusion, the findings of the study suggest that organizational support, peer support, and self-efficacy did not interact with role stressors to reduce strain. Instead of moderating effects, there is evidence that these variables were negatively related to strain.

6.5 Mediation effects

I carried out mediation analyses to test whether (a) strain mediated the relationships between role stressors and outcomes of strain; and (b) cynicism, professional efficacy, and organizational commitment mediated the relationship between strain and intention to leave. I perform both cross-sectional and longitudinal analyses. In the first set of cross-sectional mediation analyses, the

results of this study provided support for four out of nine mediational routes for the role stressors-strain-outcomes relationships. In the second set, results supported two out of three mediational routes in the strain-outcomes-intention to leave relationships.

The longitudinal mediation effects warrant further discussion. First, the longitudinal analysis permits a better inference of directionality (Hoyle & Robinson, 2003) in which a predictor (e.g. strain) would lead to mediators (i.e. cynicism and organizational commitment) and mediators would lead to a criterion variable (e.g. intention to leave). Second, in terms of the association between predictor and criterion variable, a full mediation effect provides evidence that a predictor has an indirect relation with the criterion variable. For example, strain is related to intention to leave via cynicism and organizational commitment. Thus, the establishment of the causal relationship between predictor and criterion variables by incorporating the mediator variables is the most important contribution of the present study. The discussion of these mediational processes begins with strain as a mediator and is followed by the outcomes of strain as mediators.

Strain as a mediator

In brief, an examination of the results of the mediational analyses revealed broad support for strain as a mediator of the relationships between role stressors and outcomes of strain. Both cross-sectional and longitudinal analyses revealed four mediation routes. In the cross-sectional analysis, strain mediated the relationship between: (1) role overload and professional efficacy, (2) role

ambiguity and professional efficacy, (3) role ambiguity and organizational commitment, and (4) role conflict and cynicism.

Role overload, role ambiguity and role conflict were found to have independent contributions to outcomes of strain (i.e. cynicism, professional efficacy and organizational commitment). These relationships have been found to be significant in other studies (Golembiewski, Munzenrider & Stevenson, 1986; Schaufeli et al., 1996; Schwab & Iwanicki, 1982). Jex (1998) suggests that role stressors that are more proximal to outcome variables should have a greater impact than those that are typically more distal. For example, role overload appeared to be more proximal to professional efficacy than to organizational commitment. Previous research has established a link between workload and performance (Cox-Fuenzalida, 2007; Goldberg & Stewart, 1980; Matthews, 1986). In this study, academics might have attributed the reduction in their past performance (reduced professional efficacy) more to heavy workload rather than role ambiguity and role conflict.

The first mediation observed was strain mediated the relationship between role overload and professional efficacy. Academics with a sense of role overload will develop strain. An overextended feeling of strain reduces energy available for performing tasks and solving difficult problems at work (Schaufeli et al., 1996). This reduces the sense of professional efficacy. The indirect effect of role overload on professional efficacy is consistent with previous studies (Greenglass, Burke & Moore, 2003; Leiter, 1992). On the other hand, academics experiencing role conflict were more likely to develop cynicism. In fact at Time 1 strain fully mediated this relationship. Academics seem to have developed cynicism toward their organization, possibly because those organizations were perceived as not

providing them with adequate resources (Mirvis & Kanter, 1991). Highly cynical people tend to avoid involvement in organizational relationships for fear of exploitation (Golembiewski, Munzenrider & Stevenson, 1986).

Strain also mediated the relationship between role ambiguity and professional efficacy. This seems to suggest that when academics experienced role ambiguity, such as not knowing what was expected of them and also when they were unclear about goals, this induced strain, which in turn influenced levels of professional efficacy. Academics might have attributed the feeling of reduced professional efficacy partly because they were unclear about the assigned tasks. Previous research has indicated a strong association between role ambiguity and burnout constructs including professional efficacy (Cordes & Dougherty, 1993; Fogarty et al., 2000).

The third mediation observed is strain mediated the relationship between role ambiguity and organizational commitment. Mathieu and Zajac (1990) suggested that committed individuals are more vulnerable to the effect of role ambiguity because of their investment and identification with the organization. In the present study, academics seem to be reacting to role ambiguity by lowering their affective commitment toward their organization. Possibly, after a certain period of time, the uncertainty relating to work and career advancement still exists. They start to disbelieve the willingness of the university management to provide helps to overcome their feeling of ambiguity. Thus, they reduce their effort towards achieving organizational goals. The importance of role ambiguity as a predictor in the mediation process was evidenced further in the longitudinal analyses that will be discussed next.

Strain partially mediated the relationship between role ambiguity and outcomes of strain, supporting the idea that role ambiguity has a direct effect on strain and an indirect effect on the outcomes of strain. In addition to the development of strain, academics also developed cynicism, low levels of professional efficacy and lack of organizational commitment. Thus, the evidence of mediation effects concerning the sequence of stress process of role stressors-strain-outcomes has supported the idea that strain is the key mediating variable in the stress process. Future research may investigate that, in response to strain, why individuals developed cynicism, low levels of professional efficacy and lack of organizational commitment, which can be considered as self-destructive behaviours (Leiter, 1991). These outcomes potentially lead to greater strain (Golembiewski et al., 1986). Possibly, in their perceptions, these outcomes were considered as a way to conserve the available emotional energy from depletion (Hobfoll & Lilly, 1993). They might have thought that they could protect themselves from emotional depletion by distancing themselves psychologically from work and colleagues.

Overall, the mediation effects of strain on the relationships between role stressors and the outcomes of strain provided support for the conceptualization of cynicism, professional efficacy and organizational commitment as consequences emerging from the pressure of role stressors. This is consistent with previous studies that found that role stressors were related to cynicism, professional efficacy and organizational commitment (e.g. Forgarty et al., 2000; Mathieu & Zajac, 1990). Consequently, this part of the mediational process offers a new insight into the stress process in which certain role stressors might have direct effects on certain outcomes. The nature of individual psychological reactions will

depend on the nature of job-related problem they faced. Future research may explore further Lazarus's transactional model of stress and coping, which proposes the concepts of primary and secondary appraisal (Lazarus & Folkman, 1984). Primary appraisal refers to an individual's evaluation of the threat posed by the stressors (i.e. whether positive, controllable, challenging or irrelevant), and secondary appraisal addresses what an individual can do about the situation (Cohen, 1984). This will help to understand how individuals react to certain role stressors and resulted strain.

The different nature of the indirect effects of role stressors on outcomes of strain also provided some evidence to support Kahn et al.'s (1964) role stress theory, which asserts that role overload, role ambiguity and role conflict are separate but correlated role stressors. The distinctiveness between the role stressors is evidenced by the different nature of their effects on the outcomes of strain. Role overload had an overarching effect only on professional efficacy, whereas role conflict had an effect on cynicism and role ambiguity had effects on all three outcomes of strain. Thus, the results support the conceptual distinction between role overload, role ambiguity, and role conflict as role stressors and provide additional evidence that they are empirically distinguishable (Gonzalez-Roma & Lloret, 1998). It is important to separate these role stressors since the three theoretically distinct constructs induced different outcomes. In this study, the findings suggest that the impact of the three role stressors on public universities in Malaysia was different.

The fact that strain partially mediated the relationships between the role stressors and the outcomes suggests that other emotional variables such as job satisfaction may mediate these relationships. The advantage to consider other

related mediators is to understand if the mediation of outcomes of strain is independent of the effects of other emotional variables (Kenny, Kashy & Bolger, 1998). Possibly, more emotionally stable academics may rationalize that, in response to the role stressors, there is little reason for them to experience strain. They may experience dissatisfaction with the job but maintain their emotional equilibrium. The feeling of dissatisfaction may lead them to involve themselves in non-academic work such as informal group activities and teaching outside universities (Seigall & McDonald, 2004). However, in the long run, these physical detachments may affect psychological attachments such as cynicism and lack of organizational commitment (Porter et al., 1974). Therefore, future research may also incorporate job satisfaction as a variable in the mediation model of role stressors and outcomes of strain.

To conclude, the mediation effects of strain in the relationships between role stressors and outcomes of strain seem to suggest that role stress studies that attempt to demonstrate the association between role stressors and the outcomes of strain have tendency to overestimate the direct effects of role stressors on the outcomes of strain (Fogarty et al., 2000). Role stressors were found to be contributing to strain before leading to outcomes of strain. In some cases, the direct effects of role stressors on outcomes of strain were insignificant when strain was included as a mediator. The findings of this study therefore partially support the theoretical model, which hypothesized that strain would mediate the effect of role stressors on cynicism, professional efficacy, and organizational commitment.

Outcomes of strain as mediators

I found that cynicism and organizational commitment mediated the effect of strain on intention to leave, while professional efficacy did not. In other words, the results of the study suggested that strain led to intention to leave through cynicism and reduced organizational commitment, but not through reduced professional efficacy.

Further inspection of the specific mediation effects revealed that the mediation effect of organizational commitment was quite robust, accounting for the biggest proportion of the overall mediation effects, in both the cross-sectional and the longitudinal analyses. These findings indicate that organizational commitment was a stronger mediator of the relationship between strain and intention to leave, compared with cynicism. However, both mediators fully mediated the relationship between strain and intention to leave (see Table 5.30 for the cross-sectional analysis and Table 5.34 for the longitudinal analysis). Previous research has established strong linkages between organizational commitment and intention to leave (Mor Barak et al., 2001; Rhoades et al., 2001).

The results of the present study also seem to suggest that cynicism has an immediate effect of strain. In order to preserve their well-being academics may have to be self-serving by detaching themselves from the job demands that were perceived as threatening. It is unlikely that someone will decide to leave the organization immediately after they experience strain. This is not surprising, since Porter and his colleagues asserted that cynicism represents an immediate effect of strain compared with organizational commitment, which was viewed as a long-term effect of the stressful work environment (Porter et al., 1974).

Moreover, organizational commitment was found to be a better predictor of intention to leave than was cynicism, which seems to suggest that it might be more beneficial for organizations to focus on increasing organizational commitment among employees rather than trying to directly reduce cynicism. Normally employees who are high on cynicism still perform basic duties stipulated in their employment contract (Fleming & Spicer, 2003), whereas employees who are low on organizational commitment tend to reduce their involvement in organizational activities (Morrow, 1983). When lack of organizational commitment appeared, it would be closely followed by the intention to leave (Rhoades et al., 2001).

Another issue that deserves attention is the non-significant mediation effect of professional efficacy in the relationship between strain and intention to leave. I hypothesized this mediation effect based on the theoretical foundation that people with the feeling of strain will develop a sense of incompetence in their work and then subsequently would have the intention to leave. Strain was earlier found to be associated with professional efficacy. However, a subsequent analysis found that professional efficacy had a non-significant relation with intention to leave, which means that professional efficacy was not a mediator in the relationship between strain and intention to leave. This is perhaps not entirely surprising. The empirical relationship between performance and intention to leave is not particularly strong (Fogarty et al., 2000; Huang et al., 2003; Lingard, 2003). People with low professional efficacy might psychologically withdraw without physically withdrawing. In other words, academics with a feeling of ineffectiveness at work do not necessarily have the intention to leave their job.

External factors such as the availability of alternative employment might have deterred them from deciding to leave their job (Greenglass & Burke, 2002).

The non-significant relationship between professional efficacy and intention to leave can also be understood by considering the role of self-efficacy. Literature indicates a strong relationship between self-efficacy and professional efficacy (personal accomplishment) (Evers et al., 2002; Greenglass & Burke, 2002; Wright & Cropanzano, 1998). People with high self-efficacy approach a difficult task as a challenge to be mastered (Bandura, 1994). Repeated successes develop mastery and a sense of professional efficacy. In this study, self-efficacy might have improved the sense of professional efficacy. Academics reported that they were capable of accomplishing those tasks, with very high mean scores on the self-efficacy scale (5.40 for Time 1 and 5.32 for Time 2). They might have believed that they were not to be blamed for any current shortcomings in teaching, research and service performance. Furthermore, they might have attributed the sense of reduced professional efficacy to the stressors or to external factors such as the organization, rather than factors within themselves. This is evidenced by strong correlations between perceived organizational support and organizational commitment. Meyer and Allen (1997) noted that work experiences such as organizational rewards, procedural justice, and supervisor support have demonstrated a stronger association with affective organizational commitment than personal characteristics of employees. Thus, taking personal abilities into consideration, academics might be of the opinion that there was no reason for them to quit their job.

However, there are advantages as well as disadvantages in this situation. The advantage is that professional efficacy may be beneficial to offset the effects

of cynicism and reduced organizational commitment on intention to leave. The feeling of competence at work allows strained academics to make better preparation, such as acquiring new skills and knowledge, and associating with their colleagues. The disadvantage is that academics with low levels of professional efficacy may threaten the well-being of the organization, its members, or both (Robbinson & Bennett, 1995). When academics with low levels of professional efficacy stay in the group, they will affect the motivation of other group members. Employees who are high on professional efficacy will be better able to help and motivate their colleagues, whereas employees who are low in professional efficacy tend to avoid collaborative relationships with their colleagues (Greenglass, 1991).

Overall, the findings of the present study provide evidence of the overarching effects of role stressors on the outcomes of strain. These effects might depend on the environmental and occupational context. However, it has become obvious that role ambiguity is indeed an important role stressor for academics in Malaysian public universities, though the relative contributions of role overload and role conflict were also significant. It is therefore necessary for academic managers in Malaysian public universities to understand role stress theory in order to manage stress among their academics.

6.6 Longitudinal findings

Most studies investigating stress phenomena use a cross-sectional design (Maxwell & Cole, 2007), and their results may be affected by common method variance. Common method variance is a type of spurious internal consistency which occurs when the apparent correlation among indicators or even constructs

is due to their common source (Spector, 2006). For instance, if the data source is self-reports, the correlation may be due the propensity of the subject to answer similarly to multiple items even when there is no true correlation among constructs. To offset these limitations I used three analytical approaches to examine the effects of predictor variables on criterion variables in order to infer longitudinal relations. Peiro et al. (2001) suggest that the effect of role stressors on strain is longitudinal because strain is induced by role stressors in a process that unfolds overtime. Therefore, this section will discuss the findings of the three analytical approaches and their implications for future research.

Recall that the analytical approaches used in this study produced different results. For example, in examining the relationships between role stressors and strain, under Approach 1 (i.e. effects of role stressors at Time 1 on strain at Time 2), only role conflict, but not role overload and role ambiguity, was related to strain. Under Approach 3 (i.e. the effects of changes in role stressors on changes in strain), role overload and role ambiguity, but not role conflict, were related to strain. This is inconsistent with the results from the cross-sectional analyses in which all role stressors were related to strain. On the other hand, examinations of the effect of strain on outcomes using approach 1 and 3 were rather consistent with the results from the cross-sectional analyses, except for the relationship between strain and organizational commitment (which was not significant under Approach 3).

As mentioned earlier, time lag seems to play an important role in determining the results from these analytical approaches (Zaheer et al., 1999). For example, the nature of the short-term effect of role conflict may have been confirmed by Approach 1, but not for role overload and role ambiguity which

have relatively longer-term effects on strain. For example, the perceptions of conflicting requests that contribute to role conflict can be eliminated relatively immediately when subordinates confront with their superior to clarify the matter. Therefore, without a proper time lag to suit the nature of the relationship between variables, Approach 1 appears to lack power to predict longitudinal relations.

Approach 2 did not produce any significant effects. One possible reason may be due to the autocorrelations between the variables. The change score might be related with the score at Time 1 (Bergh & Fairbank, 2002). In this study, possibly role overload and role ambiguity at Time 2 highly correlated with their initial levels. Moderately high correlations between variables at Time 1 and Time 2 confirm these (Table 5.12). Maxwell and Cole (2007) assert that if the correlation between variable at Time 1 and Time 2 were large, one would say that the variable is stable even if the mean score changes during the specified period. The change score approach (Approach 3) overcame this problem. This approach successfully removed the correlation between the change score and its initial component measure (Bergh & Fairbank, 2002) and gave better results. The results are also more consistent with the results from the cross-sectional analyses. Therefore, I suggest that Approach 3 is a better approach to examine longitudinal relationships.

6.7 Practical implications

One of the most important conclusions to be drawn from the results is that role ambiguity was found to be the stressor that was most closely linked to strain. Frequent changes in policies and regulations for things such as allocation of research funding, criteria for promotion, and curriculum design are potentially the

major sources of role ambiguity. This finding will help academic managers to reduce strain among academics by focusing on role ambiguity as an issue to be resolved. At the same time, the results of the study also suggest that role overload and role conflict were less threatening than role ambiguity for academics in Malaysian public universities. However, there should be a mutual understanding between academics and the university about the optimum level of role stressors that can promote productivity and individual well-being.

With regards to the longitudinal perspective, role overload and role ambiguity at Time 1 were not related to strain six months later. However, the changes in role overload and role ambiguity were related to changes in strain over a six-month lag time. These findings seem to suggest that these role stressors would take longer to have an effect on strain. Long-term effects of role overload and role ambiguity on strain imply that it might be difficult to prevent strain from occurring. Individuals may endure role overload and role ambiguity for a certain period of time in order to maintain their self-esteem (Bradley, 1978). The delay in recognizing the threats posed by role overload and role ambiguity may cause a delayed effect on strain. Long-term effects normally have lasting and adverse psychological consequences that may not become fully manifest within six months and could be difficult to rectify if left untreated.

On the other hand, the relatively more immediate effects of strain on cynicism, professional efficacy, and organizational commitment suggest that stress intervention efforts will be more difficult if academics are exposed to role stressors for a long period of time. This means that university management has to be swift to reduce strain before it leads to cynicism and reduces both professional efficacy and organizational commitment. Whenever a moderate to high level of

strain is detected, it is likely that cynicism, reduced professional efficacy and low organizational commitment will occur. In this study, cynicism and organizational commitment, but not professional efficacy, were predictors of intention to leave. The strong correlation between organizational commitment and intention to leave implies that it might be more difficult for the management to intervene in the stress process when academics have a lack of organizational commitment. Even though academic turnover is not a serious problem in Malaysian public universities (Morris et al., 2004), cynicism and lack of organizational commitment have potentials to reduce organizational productivity (Seigall & McDonald, 2004).

Organizational support and peer support did not have the anticipated buffering effects, which seems to imply that supportive culture is not functioning well in Malaysian public universities. Researchers postulate that in order to have a buffering effect, there must be a match between the source of support and the source of stress (Jackson, 1992; LaRocco et al., 1980). Since academic managers might have failed to identify the needs of academics, the latter did not receive the particular kinds of support that they needed to face certain role stressors. Therefore, university management should take proactive steps to identify the elements of support (i.e. emotional, informational and instrumental) that are needed by academics. This can be done through employee need analysis. This need analysis process should be able to identify the gap that is the differences between types support that have been provided and types of support that are required by employees (Witkin & Altschuld, 1995). Previous research has shown that employee needs assessment is beneficial for organizations to assist their employees at work (Burton & Merrill, 1991; Grant, 2002).

Mediation analyses also provided evidence of a causal structure that could help academic managers to find effective ways to intervene. In the first set of mediation analyses, strain mediated the relationships between role ambiguity and the outcomes of strain. In the second set of mediation analyses, cynicism and organizational commitment fully mediated the effect of strain on intention to leave. In other words, the inclusion of these mediators in the model explicated the relationship between predictor and criterion variables. When strain leads to increased cynicism and reduced organizational commitment, academics are more likely to leave their jobs. However, even though strain leads to reduced professional efficacy, lack of professional efficacy does not appear to make academics more likely to leave their jobs. Thus, the mediation analysis is useful because it can help to identify the variables (mediators) that are critical for stress intervention programmes. Merely focus on reducing strain per se might not be enough to reduce cynicism and increase organizational commitment if the root cause of the problem that were role stressors were not managed. Academic managers should also focus on reducing or eliminating the role stressors that caused strain. Therefore, this part of the study provides academic managers with a greater understanding concerning efforts to reduce cynicism and to increase organizational commitment among the academics using organizational antecedents such as clear job descriptions and organizational communication (Clampitt & Downs, 1993; Gaertner & Nollen, 1989; Mowday et al., 1982; Wanous, Reichers & Austin, 2000).

In summary, this study provides information on stress experiences among academics in Malaysian public universities, which complement existing stress studies that have been carried out mainly in Western countries. In the Malaysian

context, role ambiguity was found to have strongest influence on strain among the three role stressors, which differs from the primary importance of role overload reported in the West (Lee & Ashforth, 1996; Peiro et al., 2001). This may be because of the higher degree of uncertainty faced by academics in a developing economy like Malaysia. These preliminary findings serve as grounds for further research relating to stress in the Malaysian higher education sector. I suggest that further research should examine organizational context variables such as task characteristics, structure and motivating potential of jobs (Ashforth, Saks, & Lee, 1998; Rousseau, 1978), which may interact with role stressors to reduce strain. This notion was supported by Podsakoff and colleagues who suggested that future research on human behaviour in organization should consider organizational context variables (Podsakoff, Niehoff, MacKenzie & Williams, 1993). Ashforth, et al. (1998) found that job design was beneficial to motivate employees to overcome problems at work. Researchers have used many different organizational context variables including tasks characteristics such as task identity, task significance, autonomy, dealing with others, variety, feedback, and learning (Rousseau, 1978).

6.8. Theoretical significance

The findings of this study have several theoretical implications. First, this study supports the role stress theory (Kahn et al., 1964) that role stressors are related to strain. The model specifies that individuals who are exposed to role stressors will first experience strain and then other consequences. Role stress theory contributes to knowledge discovery through the understanding of what types of psychological consequence can be expected as a result of certain role

stressors. In this study, the hypothesized role stressors, particularly role ambiguity, were found to be associated with strain and also to have overarching effects on professional efficacy and organizational commitment. Role overload had an overarching effect on professional efficacy and role conflict had an overarching effect on cynicism. Therefore, future research trying to find the best approach to reduce psychological consequences of stress should understand the type of stressors and the nature of their effects.

The second theoretical implication concerns the stress process. The theoretical contribution with respect to mediation effects mainly refers to the improved understanding of the indirect effect of a mediator between a predictor and a criterion variable (Baron & Kenny, 1986). The findings also might help to identify intervention points in the process by providing evidence for a sequence of events, or specific phases of stress process. This sequence of event helps researchers to investigate phases of change in stress phenomena at workplace as results of role stressors. In this study particularly, changes in stress phenomena occur from the encounter phase (i.e. role stressor), to the experiential phase (i.e. feeling of strain) and then to the attitudinal formation phase (i.e. cynicism). Theoretically, different phases have their different intervention component. For example, Ivancevitch and colleagues identified three categories of stress intervention that suit to three phases of stress phenomena that are reducing workplace stressor, helping employees to modify their perception of stressors and helping employees to cope effectively with the consequences of stress (Ivancevitch, Matteson, Freedman, & Phillips, 1990). Therefore the mediation analyses in this study are useful for investigators seeking to identify the critical components of an intervention (MacKinnon & Dwyer, 1993).

Another implication that underlies the stress process is changes in individual emotional states. Literature supports the idea that emotions exert a direct and powerful influence on individual behaviour (Loewenstein, Weber, Hsee & Welch, 2001; Russell, 2003). Therefore, emotion should be incorporated in stress studies to identify factors that related to the depletion of emotional energy. Emotions are subjective experiences that are often associated with feelings, mood and attitude (Scherer, 2005). These subjective experiences presumed to have an important monitoring and regulation function that influence individual's cognitive appraisal of person-environment interaction (Scherer, 2004). One of the possible variables to be considered is job satisfaction. As an emotional state, job satisfaction has received much attention in organizational behaviour research (Steers & Porter, 1979).

Finally, the findings of this study refine our understanding of the psychological process underlying the stressor-strain-outcome relationship. Therefore adopting this model of the stress process will help to better understand occupational stress among academics in Malaysia, which complements stress studies that have been done in Western countries. Overall, the role stress theory that has been adopted as the conceptual framework in this study provided evidence of how work environments influence an individual's attitudes and affective reactions in an organization.

6.9 Limitations of the study

The results of this study need to be viewed in the light of the study's limitations. The first limitation pertains to the generalizability of the findings. Since this study was conducted using academics from five large public

universities, it may not represent levels of occupational stress in all public universities in Malaysia or in private universities. This study may only represent the experience of staff in large universities that have a relatively established curriculum design and a larger number of students. Despite the fact that these universities set the standard for Malaysian higher education, proper generalization of the findings will require an assessment of a wider array of settings (e.g. years of establishment, research emphasis, and public or private university).

The second limitation concerns the six-month lag time that was used in this study to examine the effect of predictors on criterion variables. There were neither theoretical arguments nor enough empirical evidence in the literature that gave sufficient guidance for specifying a single most appropriate time lag for the effects of variables on one another (Finkel, 1995). Consequently, I used a six-month lag time because it constitutes a full cycle of the academic semester that was adopted by all of the targeted universities. It is possible that a full academic year might be more appropriate to predict the effects of role overload and role ambiguity on strain, because the key performance indicators for academics, such as teaching loads, research publications, and the number of students supervised, are calculated on a yearly basis. Therefore, it is recommended that future research test the effect of role stressors on strain using lag times of more than six months to see if the results obtained differ.

The third limitation addresses the absence of qualitative data to augment the quantitative results of this study. Although the results of this study supported many of the main hypotheses presented, especially the direct effects and mediation hypotheses, by relying solely on questionnaires the opportunity of the respondents to give feedback was limited. The use of interview data to

supplement the quantitative measures in future studies could provide a more in-depth picture of this phenomenon. Qualitative data provide descriptive relationships between variables in which data collection is not constrained by predetermined categories of response, allowing for a level of depth and detail that my existing data cannot provide (Patton, 2002). For example, qualitative data may have uncovered reasons why academics experienced role ambiguity.

A final limitation concerns the operationalization and measurement of stress constructs. It is important to note that the present study did not fully assess the appraisal and coping process as proposed by Lazarus' transactional model. Lazarus (1966) described stress as arising from a transaction between the individual and the environment, including the individual's perceptions, expectations, interpretations and coping responses. This study only measured the degree to which academics experienced each of the concepts (i.e. variables) in the proposed model and not the appraisal process per se.

6.10 Future research

Future research based on the results of this study may proceed in theoretical, methodological and contextual directions. Theoretically, the non-significant moderation effects of support measures and self-efficacy on the relationships between role stressors and strain should be investigated more deeply, both quantitatively and qualitatively. For example, peer support, which failed to buffer the effect of role stressors on strain, should be investigated further to identify the elements of support that are related to role stressors. Sources of support that are independent of sources of role stressors will increase the likelihood the support to interact with the role stressors to reduce strain (Blau,

1980). Therefore, future studies may want to examine further the types and levels of supportive relationships that exist in a particular occupation.

One of the possible moderators of role stressors-strain relationships for future research to examine is job control. Based on the results of the study, which indicate that role ambiguity is a main predictor of strain, it is my opinion that it may be useful to investigate job control as a moderator. Karasek's (1979) job demand-control model has been frequently used to study the moderating effect of job control on the relationship between role ambiguity and strain in various occupations (Fernet, Guay & Senecal, 2004; Wong, DeSantics & Staudenmayer, 2007). It is expected that the perception of job control may also be crucial for academics. The freedom of inquiry by academics is essential for innovation and creativity (Tight, 1988). The feeling of job control among academics includes the ability to freely express their opinion without fear from institutional censorship or discipline. Literature indicates that job control is negatively related to role ambiguity (Elovainio & Kivimaki, 2001; Jackson & Schuler, 1985). The worker's chance to influence his or her duties may interact with role ambiguity to reduce strain (Elovainio & Kivimaki, 2001). Therefore, I expect that job control could reduce the impact of role ambiguity on strain among academics. This is particularly important since the literature indicates that job demands among academics are increasing and job control is decreasing (Winefield, 2000).

Since self-efficacy did not buffer the effect of role ambiguity on strain, future studies may want to consider including tolerance for ambiguity as a moderator of the relationship between role ambiguity and strain. Literature indicates that tolerance for ambiguity can moderate the impact of role ambiguity on strain (Frone, 1990; Keenan & Mcbain, 1979; O'Driscoll & Beehr, 1990).

Research projects as part of academic job involve variable levels of uncertainty depending on their size and complexity (Schrader, Riggs & Smith, 1993). A set of specialized skills and talent in individual academics is necessary to accomplish the complex tasks of research (Roberts, 1988). I would expect that academics with higher tolerance for ambiguity will be better prepared for unstructured tasks and to deal with the complexity of teaching and research.

Future research may also improve on the methods used in this study. As mentioned above, one of the options is to include a wider range of stressors. In this study, analysis of variance showed that role stressors only explained a small portion of the variance in strain. Since strain has been associated with a wide variety of work and non-work conditions, future research should include stressors that are broader than those investigated in this study. For this purpose, consideration of the interaction between work and home life might be useful. For example, many researchers cite work-family conflict as one of the major stressors (Carlson & Perrewé, 1999; Jex & Elacqua, 1999; O'Driscoll et al., 2003), but there have been few studies of levels of work-home conflict among academics (Kinman & Jones, 2008).

Contextually, recommendations for future research include further work that involves all public universities and private universities as well. Conceivably, academics at the newer and smaller universities have different needs and expectations than their fellow academics in the big universities, as well as different resources such as training and teaching facilities. Academics in smaller universities teach more hours, whereas academics in big universities have to spend more of their time on research. Moreover, smaller universities in Malaysia are more predominantly undergraduate institutions than the big universities which

have more enrolment of graduate students. The demands on supervision time and skills for graduate students are higher than for undergraduates (Aitkenhead, 2002). Therefore, it would be valuable to determine if the nature of role stressors is similar or different when a wider array of settings is considered.

6.11 Policy and social implications

The findings of this study have important implications for the management of stress in academic settings. The implications are centred on four areas: 1) strategies to reduce role stressors; 2) development of mechanisms to detect strain; 3) strategies to reduce strain; and 4) stress intervention strategies that involve the management of cynicism, professional efficacy and organizational commitment.

The first implication is the formulation of a strategy to reduce role stressors. Organizations typically have responded to employee stress by offering various stress intervention programmes, such as stress management training, that are designed to help employees to cope more effectively with stressors in the workplace (Maddi, Kahn, & Maddi, 1998; Murphy & Sorenson, 1988). It might be difficult to change a stressor that is inherent in the system. Therefore, stress management programmes offer an alternative solution by developing certain coping mechanisms in which academics are capable of altering the perception of a stressor by changing their mind set toward the stressor. Other alternative solution is to help academics to change their behaviour to deal with the stressful situation. For example, academics could organize a research group and learn from their seniors. Their seniors may help them to change aspects of their situation, for example by explaining difficult concepts and sharing data analysis software.

Furthermore, I suggest that academic managers need to find ways for academics to respond reasonably to role stressors. Lazarus' transactional model (Lazarus & Folkman, 1984) points to the appraisal process on the premise that people perceive role stressors as threats to their well-being. If the appraisal process that influence the outcomes of role stressors, academic managers should help academics in interpreting and evaluating the role stressors to their advantage. Strategies can be formulated to change the mind set of these academics so that they could see role stressors as challenges to be mastered . Instead of seeing threat in role stressors, with the new mind set they will be able to see opportunities associated with role stressors. Practically, academic managers should established linkages between efforts and rewards that provide motivation for academic to face role stressors (Nadler & Lawler, 1983; Vroom, 1964)

It is also evident that of the three role stressors, role ambiguity appeared as the most important determinant of strain. Indeed, role ambiguity is a well-researched domain of occupational stress (Ashforth & Lee, 1990; Lee & Schular, 1980; Rizzo et al., 1970) and should receive much greater attention from practitioners and policy-makers. Role ambiguity is also an important issue in academic settings (Ivancevich & Donnely, 1974). Therefore, an academic should be equipped with a clear job description to reduce role ambiguity. In a specific example, Neumann and Neumann (1990) found that goal setting through goal specification assisted in reducing uncertainty and role ambiguity in producing research publications. Goal setting was found beneficial to increase role clarity by focusing individuals' efforts and attentions in a specific direction (Maurer, Weiss, & Barbeite, 2003).

Ambiguity can also be reduced through proper management of feedback and information. Prior studies have found that positive feedback reduced role ambiguity, while negative feedback increased role ambiguity (Peiro, González-Romá & Lloret, 1994; Pousette, Jacobsson, Thylefors, & Hwang, 2003; Sawyer, 1992). For academics, feedback can be an important resource for clarifying goals in teaching and research and also finding appropriate working methods to solve difficult research problems. Moreover, since the level of information available today is cited in most stress studies as being a major contributor to role ambiguity (Sawyer, 1992), academics should have access to important information such as information relating to task fulfillment and career development.

Another alternative to overcome role ambiguity is that universities have to take steps to increase academics' tolerance for ambiguity. Budner (1962) defined tolerance for ambiguity as "the tendency to perceive ambiguous situations as desirable (p. 29)". Individuals with higher tolerance for ambiguity will perform better in complex tasks (Jonassen & Grabowski, 1993). Proactively, university management may provide training for academics to be more tolerance to task ambiguity. Individual characteristics such as intellectual curiosity and cognitive complexity have been found to be associated with research interest (Kahn & Scott, 1997) and these personal characteristics have the potential to increase tolerance for ambiguity (Ehrman & Oxford, 1990).

The second implication concerns the mechanisms to detect strain. It is strongly recommended that university management develop a mechanism to detect strain among academics. Because strain functioned as a link between role stressors and outcomes, it is importance to detect strain before it leads to some adverse consequences. By identifying academics whose strain is relatively high,

management could concentrate on actions to intervene in this process. However, research has shown that the ability to recognize stress among individuals is rather poor (Thompson, Ostler, Peveler, Baker, & Kinmonth, 2001; Volkers, Nuyen, Verhaak, & Schellevis, 2003). The university may use physical as well as psychological techniques to detect strain. Even though academics may be skeptical about medical examinations to detect their stress levels, efforts should be made by university managements to obtain medical records related to mental stress such as heartbeat, blood pressure, and blood sugar level (Hugdahl, 2001). Academic managers also should promote stress awareness and provide them with the understanding of psycho-somatic relationships in which psychological stress may affect their bodily functions. On the other hand, psychological effects of stress can be obtained through surveys that contain variables such as role stressors, strain and organizational commitment. This technique offers several advantages such as ease of administration, scoring and assessment of key dimensions of stress (Razavi, 2001).

The third implication concerns the efforts to reduce strain. These efforts can be taken proactively before strain occurs. The proposed stress process model based on Lazarus transactional model provides an opportunity for the university management to intervene in the stress process. Even though this study did not detect any interaction effects between potential moderators and role stressors, the negative direct effects of the potential moderators on strain shed some light on mechanism for preventing strain from occurring. While in the past coping with stress was seen mainly as reactive (Greenglass, 2002), in which intervention takes place once strain has been detected, with the early detection of the existence of role stressors, management can use variables such organizational support, peer

support, and self-efficacy to reduce strain. They have to be more proactive in handling the role stressors at the early stage (proactive coping) rather than being reactive in nature or becoming involved more in the later stage when the role stressors have made an impact (Schwarzer & Taubert, 2002). Therefore, I recommend that the university management use this knowledge to design stress prevention strategies. As mentioned earlier, tolerance for ambiguity also could be considered as a potential moderator.

With regard to perceived organizational support, university management should provide conditions that enable academics to perform the duties and responsibilities required of them, receive evaluations that help them to improve their work and become more aware of the role they play to achieve organizational objectives. The ability of academic managers to diagnose the needs of academics is important to providing the right kinds of support. Task-specific training pertaining to research, such as short courses on contemporary research methodology, state-of-the-art techniques for data analysis, and how to publish in refereed journals, should be provided to reduce role ambiguity among academics.

Peer support that does not function to buffer the effects of role stressors on strain also needs attention from university management. Prior research has empirically found that peer support was useful to help workers to deal with role stressors (Cohen & Wills, 1985; Van Vegchel et al., 2004). However, in this study peer support did not interact with role stressors to reduce strain. Therefore, academic managers should investigate the elements of support (i.e. emotional, informational and instrumental) that are needed by academics so that these elements would interact with role stressors to reduce strain. At the same time, since peer support was found to be negatively related to strain, there is an

opportunity to improve this helping relationship, such as strengthening *esprit de corps* and group problem solving. Teaming inexperienced academics with more experienced academics on formal activities such as curriculum development, research projects, and organizational committees might be beneficial. Besides sharing the ideas and knowledge, the less experienced academics may be able to have emotional and informational support from their seniors that would reduce the perception of high levels of role stressors and subsequently will reduce strain. Individual academics should also be trained in certain human skills such emotional skill and listening skill to enable them to help each other during a stressful situation.

The fourth implication is the stress intervention strategy. Even though turnover among academics is not a serious problem in Malaysian context (Morris et al., 2004), the process of deciding to leave the organization possibly involves hidden costs such as lower productivity, product defects and absenteeism (Seigall & McDonald, 2004). Since the results of this study indicate that cynicism and organizational commitment mediated the relationship between strain and intention to leave, university management should take steps to detect levels of cynicism and organizational commitment. Literature indicates that communication is a good strategy to solve problems in organizations (Clampitt & Downs, 1993). Poor communication can cause delay in detecting stress outcomes that have reached a serious level, contributing to low organizational commitment. Indeed, there are other stress management interventions that can be implemented by universities in Malaysia, such as stress inoculation, job redesign and wellness programmes (Hattie, Myers, & Sweeney, 2004; Seaward, 2004). For instance, stress inoculation training that deals with cognitive and affective factors helps

individuals to cope with the aftermath of stressful events (Meichenbaum, 1996). Kelloway and Barling (1991) found that job design that provides task identity, autonomy, and feedback was negatively related to strain. The element of job design specifically job control was found to be beneficial to increased psychological well-being (e.g. Wall, Clegg & Jackson, 1978).

Academic managers may help academics to cope with high levels of cynicism and also help to foster organizational commitment. Lazarus and Folkman (1984) defined coping as changing cognitive and behavioural efforts. This cognitive process can change the psychological state of individuals (Bandura, 1977). Motivation was found to be strongly related with goal setting (Locke & Latham, 1990). Therefore joint agreements between managers and academics in relation to new goals and expectations are believed to be beneficial to reduce cynicism and then increase organizational commitment.

To sum up, the findings of this study indicate that university management should be aware of the delicate balance between the level of role stressors and the level of strain. A minimum level of role stressors may potentially affect organizational productivity. On the other hand, increasing the level of role stressors above a certain level will definitely increase strain, potentially leading to greater intention to leave.

6.12 Overall conclusion

It can be concluded here that stressors, strain and its outcomes are interrelated, which means that role stressors at work covary with strain, which in turn relates to increased cynicism and decreased organizational commitment even though its covariation with professional efficacy was rather weak. Subsequently,

cynicism and lack of organizational commitment were related to intention to leave.

Important findings of this study that need to be investigated more deeply are role ambiguity and its relationship with strain, the non-significant effects of moderators and the failure of professional efficacy to mediate the relationship between strain and intention to leave. The findings of this study also indicate the need for further exploration of the exact mediational process in the relationships between role stressors and outcomes of strain. In this study, strain has mediated certain role stressor-outcomes relationships that will potentially help interventionist to deal with outcomes of strain better by managing the relevant role stressors.

In summary, research that adds new knowledge about stress in the workplace will aid both practitioners and managers to take steps to reduce strain by managing role stressors, reduce strain by introducing employee support programmes that can serve as moderators of stressor-strain relationship and intervene in the process of turnover by managing the outcomes of strain. This study of academic stress in Malaysian public universities has provided evidence that such actions are beneficial. Last but not least, the present study has provided new insights about occupational stress in Malaysian universities by systematically exploring the stress process among their academics.

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Assalamualaikum/Hello:

**RESEARCH ON STRESS AMONG MALAYSIAN PUBLIC UNIVERSITY
ACADEMICS**

Research Information

- Ph.D Researcher: Mohd Kamel bin Idris, Department of Psychology, FASS, The University of Waikato, Private Bag 3105, Hamilton, New Zealand, Phone: +64 (7) 8384466 Facsimile: +64 (7) 8585132, Email: mkbi1@waikato.ac.nz or Dept of Management and Marketing, Faculty of Economic and Management, Universiti Putra Malaysia. 43400 Serdang, Selangor Darul Ehsan. Phone: 603-89467696 E-mail: mkamel@putra.upm.edu.my
- Thesis Title: Occupational Stress in Academic Life: A Case of Malaysian Public University Academics
- Purpose: To investigate the stress pattern among Malaysian public university academics.
- Sponsors: Self-sponsored study.
- Supervisor I: Prof. Dr. Michael O'Driscoll (Psychology), Email: .odriscoll@waikato.ac.nz.
- Supervisor II: Assoc. Prof. Dr. Paul Taylor (Psychology), Email: ptaylor@waikato.ac.nz.

Participation Information

- Confidentiality: Your answers will be treated confidentially. The findings of the study will be used for academic purposes. Your name is optional in this questionnaire.
- Survey Result: It will be made available in statistical form.
- Questionnaire: Please complete the questionnaire by yourself. It should be returned to the researcher using the stamped envelope attached or left at your Faculty office.
- Your Right: Your participation will be greatly appreciated, but it is not a must. You can stop at any point, or choose not to answer any particular question, for any reason.
- Why You? This study is trying to explore the possibility of reducing the strain and its consequences among Malaysian academics. You have been selected to represent population to provide information about the study.
- Contact: My supervisors and I would be very happy to answer any question you might have. Please write to the address, email or ring the above telephone numbers.

Thank you very much for your cooperation.

HOW TO FILL OUT THIS QUESTIONNAIRE

This questionnaire has twelve sections which measure four categories of variables. It may take about 20 minutes of your precious time.

You only need to **tick** your answer in the ellipses provided. Please indicate your answer to the questions by using the following categories;

- | | | |
|-----------------------|-----------|----------------|
| “Strongly disagree” | | “Never” |
| “Moderately disagree” | | “Rarely” |
| “Slightly disagree” | OR | “Sometimes” |
| “Slightly agree” | | “Often” |
| “Moderately agree” | | “Very often” |
| “Strongly agree” | | “All the time” |

Example:

	Never	Rarely	Sometimes	Often	Very often	All the time
Been able to concentrate on what you are doing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

You are welcome to give comments, opinions or remarks using the space provided.

If you need the survey result for yourself, please complete the “Copy of Result” form and cut it off at the line below, then send it to me separately from the completed questionnaire.

“Copy of Result” Form

I would like a summary of the Research Results to be posted/emailed/faxed to me at:

Name:

Postal Address:

Email Address:

Fax Number:

Thank you

The feeling of strain

Please indicate whether or not you have experienced the following situations

in the past three months.

	Never	Rarely	Sometimes	Often	Very often	All the time
Been able to concentrate on what you are doing?	<input type="radio"/>					
Lost much sleep over worry?	<input type="radio"/>					
Felt you are playing a useful part in things?	<input type="radio"/>					
Felt capable of making decisions about things?	<input type="radio"/>					
Felt constantly under strain?	<input type="radio"/>					
Felt you couldn't overcome your difficulties	<input type="radio"/>					
Been able to enjoy your normal day-to-day activities?	<input type="radio"/>					
Been able to face up to your problem?	<input type="radio"/>					
Been feeling unhappy or depressed?	<input type="radio"/>					
Been losing confidence in yourself?	<input type="radio"/>					
Been thinking of yourself as a worthless person?	<input type="radio"/>					
Being feeling reasonably happy, all things considered	<input type="radio"/>					

Feeling toward work - Cynicism

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
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I have become less enthusiastic about my work	<input type="radio"/>					
I have become less interested in my work	<input type="radio"/>					
I have become cynical about whether my work contributes anything	<input type="radio"/>					
I doubt the significance of my work	<input type="radio"/>					

Feeling of professional efficacy

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
I have effectively solved most of the problems that arise in my work.	<input type="radio"/>					
In my opinion, I am a good academician.	<input type="radio"/>					
I have accomplished many worthwhile things in this job.	<input type="radio"/>					
I have contributed to my university through my work.	<input type="radio"/>					
So far, I have done my job effectively.	<input type="radio"/>					
I am satisfied with my accomplishment at work	<input type="radio"/>					

Your commitment toward the university – Organizational commitment

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

I do not feel a strong sense of belonging to this university	<input type="radio"/>					
I do not feel “emotionally attached” to this university	<input type="radio"/>					
This university has a great deal of personal meaning for me	<input type="radio"/>					
I do not feel “part of the family” in this university	<input type="radio"/>					
I would be very happy to spend the rest of my career with this university	<input type="radio"/>					
I enjoy discussing my university with people outside it	<input type="radio"/>					
I really feel as if this university problems are my own	<input type="radio"/>					

Your intention to leave the university

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
Over the past 12 months, I have thought about quitting my present job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan to look for a new job within the next 12 months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will actively look for a new job outside of this university over the next year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Resource constraint

Please rate the frequency of interference with the following factors that create difficulty in carrying out your academic task.

	Never	Rarely	Sometimes	Often	Very often	All the time
Poor equipment or supplies	<input type="radio"/>					
Organizational rules and procedures	<input type="radio"/>					
Other employees	<input type="radio"/>					
Faculty leadership (e.g dean and head of departments)	<input type="radio"/>					
Lack of equipment or supplies	<input type="radio"/>					
Inadequate training	<input type="radio"/>					
Interruptions by other people	<input type="radio"/>					
Lack of necessary information about what or how to do it.	<input type="radio"/>					
Inadequate support staff	<input type="radio"/>					

Your willingness to continue filling the questionnaire is greatly appreciated.

A sense of role overload

	Never	Rarely	Sometimes	Often	Very often	All the time
How often does your job require you to work very fast?	<input type="radio"/>					

How often does your job require you to work very hard?	<input type="radio"/>					
How often does your job leave you with little time to get things done?	<input type="radio"/>					
How often is there a great deal to be done?	<input type="radio"/>					
How often do you have to do more work than you can do well?	<input type="radio"/>					

A sense of role ambiguity

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
My job has clear, planned goals and objectives.	<input type="radio"/>					
I feel certain about how much authority I have.	<input type="radio"/>					
I know that I have divided my time properly.	<input type="radio"/>					
I know what my responsibilities are.	<input type="radio"/>					
I know exactly what is expected of me.	<input type="radio"/>					
My supervisor's explanation of what is to be done is clear.	<input type="radio"/>					

A sense of role conflict

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

I receive an assignment without adequate resources	<input type="radio"/>					
I work with two or more groups who operate quite differently.	<input type="radio"/>					
I work on unnecessary things.	<input type="radio"/>					
I have to bend a rule or policy in order to carry out an assignment.	<input type="radio"/>					
I receive conflicting requests from two or more people.	<input type="radio"/>					
I have to do things that should be done differently.	<input type="radio"/>					
I have to do things that are likely to be accepted by one person and not accepted by others.	<input type="radio"/>					
I receive an assignment without resources to complete it.	<input type="radio"/>					

Perceived support from the university

	Strongly disagree	Moderately Disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
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The university takes pride of my accomplishment.	<input type="radio"/>					
The university really cares about my well-being.	<input type="radio"/>					
The university values my contribution to its well-being.	<input type="radio"/>					
The university strongly considers about my goals and values.	<input type="radio"/>					
The university shows little concern for me.	<input type="radio"/>					
The university is willing to help me if I need a special favor.	<input type="radio"/>					

Perceived support from your peers

Please indicate how often you get support from your colleagues in terms of:

	Never	Rarely	Sometimes	Often	Very often	All the time
Helpful information or advice?	<input type="radio"/>					
Sympathetic understanding and concern?	<input type="radio"/>					
Clear and helpful feedback?	<input type="radio"/>					
Practical assistance?	<input type="radio"/>					

Your belief on your own capabilities - Self-efficacy

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

I am confident in my ability to deliver my lecture to students.	<input type="radio"/>					
I am confident in my ability to carry out research projects.	<input type="radio"/>					
I am confident in my ability to provide professional services.	<input type="radio"/>					
I am confident in my ability to supervise my students' projects.	<input type="radio"/>					
I am confident in my ability to publish articles in refereed journals.	<input type="radio"/>					

Comments: _____

Demographic Information

Gender

Male

Female

Length of Service Variable	Time	Sum of Squares	d.f.	F-statistic	Significant
Resource Constraints	1	2.080	4	.953	.435
	2	1.792	4	.914	.457
Role Overload	1	3.491	4	1.404	.235
	2	2.495	4	1.030	.394
Role Ambiguity	1	1.599	4	.640	.635
	2	1.058	4	.790	.533
Role Conflict	1	.733	4	.187	.945
	2	1.034	4	.521	.720
Organizational Support	1	4.104	4	.921	.453
	2	9.921	4	2.434	.049
Peer Support	1	2.189	4	.608	.658
	2	8.099	4	2.202	.071
Self-Efficacy	1	3.150	4	2.381	.054
	2	3.150	4	1.777	.136
Strain	1	.654	4	.437	.781
	2	1.991	4	2.044	.091
Cynicism	1	7.674	4	1.329	.261
	2	4.320	4	.966	.428
Professional Efficacy	1	1.972	4	1.036	.390
	2	6.645	4	1.484	.209
Organizational Commitment	1	2.798	4	.652	.626
	2	1.911	4	1.248	.293
Intention to Leave	1	4.722	4	.756	.556
	2	1.766	4	.300	.877

Faculty/School : _____

Thank you for your cooperation

Appendix B

Summary of analysis of variance between all universities on all study variables at Time 1 and Time 2

