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Occupational stress, a cross-sectional and logitudinal analysis

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OCCUPATIONAL STRESS, A CROSS-SECTIONAL AND

LONGITUDINAL ANALYSIS

by

NIGEL V JONES BSc(Hons) MPsych(Clinical).

Being a report of an investigation submitted

in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

at

Edith Cowan University

1996

ABSTRACT

This study investigated the presence of occupational stress among teachers. It did not set out to identify and explain variables associated with stress among teachers, rather the study focussed on the multitude of variables identified in the literature and sought to include these in a more extensive causal model.

The study was conducted in two main stages. Firstly, a cross-sectional survey investigated the presence of stress among 230 teachers, as measured by Psychological Stress, Physical Health, Job Satisfaction and a desire to Leave their Job. The survey obtained information on stress outcome variables (Psychological Stress, Physical Health, Job Satisfaction and Wanting to Leave), biographical information, personality (Hardiness, Type A Behaviour, Locus of Control, Extraversion and Neuroticism), psycho-social variables, (Social Support, Problem Solving, Emotional Coping mechanisms and Self Esteem) and work and life stressors (Role Conflict, Role Ambiguity, Job Responsibility, Job Future Ambiguity, Underutilization of Skill, Inequity of Pay, participation in Decision Making, Administrative Support, Relationships with Peers, Extra Work, Wanted Extra Work, Workload, Work Hours and major Life Events). Causal models using path analysis were then generated to account for the relationships found within the data.

Secondly a longitudinal study over six months was conducted on 242 teachers. The causal models generated in the first study were re-tested on this second group of teachers, both cross-sectionally and longitudinally. Furthermore the importance of existing levels of stress

in the prediction of future stress was assessed. Finally a three year follow up was conducted on the survey's participants.

The results of the investigations revealed that:-

- (i) the utility of demographic information in the stress process was inconsistent.
- (ii) that among measures of work stressors there are replication and redundancies.
- (iii) that the different stress outcome measures had different predictors.
- (iv) that the best fitting causal models for the stress process were direct effect models.
- (v) that existing stress levels are an important factor in the prediction of future stress levels.
- (vi) that those teachers who indicated a desire to leave teaching and/or were experiencing psychological stress, were more likely to leave teaching three years later.
- (vii) that there is a need to standardize both the outcome and predictor variables used in stress research.

The implications of these results were then discussed as were areas for future research.

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signature: _____

A solid black rectangular box used to redact the signature.

Date: 24/1/1997

ACKNOWLEDGMENTS

I would like to thank my supervisors, Professor Sybe Jongeling and Dr Amanda Blackmore, for their invaluable advice, and assistance, whenever they were needed during the preparation of this thesis.

Thanks are also due to Dr Judith Kearins and Dr John Watson of the University of Western Australia for their assistance in the preliminary stages of this thesis.

I would also like to thank the following people:-

All the anonymous teachers who took part in this research.

The then State Minister for Education the Honourable Federal Minister for Health Dr Carmen Lawrence, and Ms Petrice Judge for their assistance in obtaining access to the schools for research.

Ms Wendy Newman, organizer for the Teachers Union, for her assistance with obtaining funding for the mailing of the questionnaires, and her assistance in obtaining access to the schools for research.

Ms Beth Robinson and her fellow teachers who examined and piloted the initial draft of the questionnaire.

Dr Daniel Reidpath for his help with computer guidance and document proofing, Mr Andrew Plunket for assistance with the tabulation and Dr Brett Nener for assistance with document proofing.

Finally and most importantly my parents, brothers and Anita who have given their support and encouragement throughout.

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CHAPTER ONE

OVERVIEW

In the voluminous research produced on the stress concept since the pioneering research of Selye and Cannon, stress has been defined in many different ways. Hinkle (1973), for example suggested that stress included everything from hardships, strain, force, and pressure to adversity. Schuler (1980) defined stress as a substantial imbalance between the perceived demands on an individual and that individual's ability to cope with those demands. More recently, King, Stanley and Burrows (1987, p. 6) suggested that "Stress is a negative emotion strongly associated with doubt about coping"

Not only has there been a plethora of definitions used in stress research, there has also been a profusion of models examined. These models include direct effect models, mediating effect models, buffering models and combinations of these.

The direct effect models propose that stress outcome is independently affected by stress. This style of model is representative of much of the earlier work in model development and is the premise in the research paradigms of social epidemiology.

The mediating effect models describe how individual variation in personality, social support and/or other non-pathological responses may intervene in the impact of stressful life events. Moreover, that stress not only increases symptoms but also activates these non pathological responses which in turn influence symptoms.

The buffering effect models are a slightly more complex model and suggests that pre-existing social conditions and psychological predispositions interact with stressors to produce health consequences.

Despite differences in detail, however, the models all appear to share some basic underlying similarities. That is, they all share the dependent variable of adverse health change, be it physical illness, psychological ill-health, job dis-satisfaction or job turnover. The models also have as an underlying communality one or all of the following independent or predictor variables: stressors, (both life and work), personality disposition, psycho-social variables and biographical variables.

The models also share as an underlying communality some disturbing features:-

(i) Rarely do models examine the full range of potential stressors, psycho-social variables and personality variables acting at any one time.

(ii) Rarely are the models empirically based.

(iii) Rarely are the models longitudinal in nature.

(iv) The models do not appear to take into account the person's pre-existing levels of stress.

The current research project is designed to take into account the above four inadequacies in prior research and examine the prediction of stress, the general aim being to develop models of stress that utilize the pre-existing levels of stress. It accomplishes this using three studies, the first of which is cross sectional and seeks to produce stress models for testing in a longitudinal fashion. The second phase of research involves examining the various models' performance longitudinally as well as examining the importance that pre-existing levels of stress have on stress outcome. The third phase is a small follow-up of the sample used in the second phase and examines how prior stress levels affect employee turnover.

Chapters two and three provide a review of the literature. The review specifically covers topics related to the concept of stress, models in the stress literature, measures of stress, psycho-social mediators of stress and stress in teaching. Chapters four and five present the conceptual framework of the current research, summarising chapters two and three, presenting hypotheses, and outlining the methods of enquiry used in the present research. Chapters six and seven are concerned with the presentation and discussion of the results and the final chapter, Chapter eight, is concerned with general discussion, outline of future research and methodological issues.

CHAPTER TWO

STRESS: A PERSPECTIVE

Overview

This section focuses briefly on two topics. Firstly the development of the stress concept in terms of three conceptualisations is discussed: the engineering perspective, which considers stress as a stimulus based model; the medical view, which sees stress in terms of the body's response to its presence; and the relational conceptualisation where both stimulus and responses are considered. Secondly this chapter presents a brief outline of the myriad of models used in the stress literature.

The Concept of Stress

In 1964 Cofer and Appley suggested that there was surprisingly little homogeneity in the concept of stress despite its popularity in usage. More than thirty years later many believe that this is still the case. Elliot and Eisdorfer (1982), for example, state that "no one has formulated a definition of stress that satisfies even a majority of stress researchers" (p. 11). However, according to Dunham (1984), stress may be conceptualised in three ways, each of which has different implications. The engineering model considers stress as a stimulus based model. The medical model sees stress in terms of the body's response to its presence. And the relational model considers stress from the point of view of both stimulus

and responses.

The Engineering Model

The engineering model suggests that stress is the load or demand placed upon an individual, which produces a resultant strain or distortion. If this strain exceeds the individual's threshold, temporary or more permanent changes take place. The adage that "it's the straw that broke the camel's back" is consistent with the engineering model of stress. This definition conceptualises stress as a cause rather than a symptom and links health and disease to certain conditions in the external environment (Lazarus & Folkman, 1984).

Events are considered stressful within the engineering perspective if they lead to stress reactions. This type of definition, that sees stress in terms of a number of environmental stressors, makes it necessary to obtain a taxonomy of stressors which could be defined in terms of chronicity or duration. As a result much work has been conducted to identify the environmental sources of stress in the work and home environment. Elliot and Eisdorfer (1982) outline one taxonomy containing four types of stressors:

- (a) acute time limited stressors, such as a visit to the dentist,
- (b) stressor sequences, such as divorce, or bereavement,
- (c) chronic intermittent stressors, such as examinations for students,

(d) chronic stressors, such as a debilitating illness or marital problems.

The engineering model therefore, implies that a taxonomy of stressors might not be only necessary but also sufficient for understanding the stress process.

This taxonomy does not appear to be practical, since individual differences in vulnerability and reactions to stress have been indicated. Studies show that two individuals faced with the same stimulus may react in different ways. The military, for example, were interested in the effect of stress on the functioning of soldiers in combat. Stress was thought to increase a soldier's vulnerability to injury or death, and weaken a combat group's potential for action. Grinker and Spiegel (1945) suggested that some soldiers panicked during critical moments under fire or on bombing missions, and a tour of duty by such soldiers may lead to neurotic or psychotic-like breakdowns. Interestingly Grinker and Spiegel (1945) found that only a small number of soldiers actually experienced these breakdowns, despite all soldiers being susceptible to 'breakdown' given the right conditions. They indicated that the breakdowns were a combination of the characteristics of the soldier and the environmental factors affecting them before and during stressful military service.

Berkun, Bialek, Kearn and Yagi (1962) produced similar findings whilst studying stress in soldiers. They placed men in simulated combat situations involving simulated danger. However, subjects refused to acknowledge that the investigators would expose them to danger. Rather, they responded to the context, which they perceived as safe, and consequently they did not become stressed. It appears that the individual's perception of the

stimulus or context is an important factor. This belief is held by many of the modern researchers such as Kyriacou and Sutcliffe (1978a) and Folkman, Lazarus, Gruen and DeLongis (1986) who indicated that a person evaluates an encounter and determines its stressfulness. This evaluation, however, is obviously partly determined by the individual's personality.

The recognition of individual differences is not the only difficulty with the engineering classification. The defining of what is a stressful situation is dependent on the occurrence of a response from the individual that gives the stimulus situation (or so called stressful event) potency and meaning. As a consequence, the definition of stress is no longer stimulus bound but in fact becomes relational (a concept that will be elucidated shortly), that is, it can not be separated from the organism's reaction.

In the following section, in an almost dichotomous relationship to the engineering perspective, the medical orientation is examined which has a response based definition.

The Medical Orientation

The medical based perspective has been termed the response definition (Dunham, 1984), because it is the response of the individual or organism to a stressful event that is emphasised. Increases in heart rate or changes in the adrenal glands are examples of such responses. Clearly, the main thrust of this conceptualisation is the focus on the physical manifestation of stress. Origins of this conceptualisation are found in the medical literature

and stress is usually viewed on a physiological basis.

Much of the early work by Selye (1956) and Wolff (1950), is consistent with the response conceptualisation of stress. In the late 1930s and 1940s Hans Selye began research on the "fight or flight" (Cannon, 1935) response using rats. Selye exposed rats to a variety of damaging stimuli such as bacteria, toxins, heat, cold and other traumas, examining associated changes in the anterior pituitary and the adrenal cortex (the response). The rats developed hyperplasia of the cortex of the adrenal glands; shrinkage of the thymus, spleen, lymph nodes and other lymphatic structures, and bleeding ulcers in the lining of the stomach and duodenum. Selye concluded that the body had a programmed reaction to stressors, "a stress syndrome", (Selye, 1956), and this reaction subsequently became known as the General Adaptation Syndrome (GAS). In this concept "General" was used to describe the reaction to stressors, because the production of hormones were found to have an arousal effect on the entire body. "Adaptation" was used since the reaction increases the chances of survival by stimulating the body's defence mechanisms in preparation to fight or flee; and "Syndrome" was used because the reaction's individual manifestations are co-ordinated and interdependent.

Selye (1956) proposed three stages within the General Adaptation Syndrome, these being:-

- 1) The Alarm Stage; where the body first shows changes in response to a noxious entity.

2) The Stage of Resistance; which ensues if continued exposure to the entity is compatible with adaptation.

3) The stage of Exhaustion; following long continued exposure to the same entity to which the body has become adjusted eventually adaptation energy is exhausted. The signs of the alarm reaction reappear, but at this stage they are irreversible and the individual organism may die (Selye, 1956).

The syndrome, or reaction, in any particular case could stop at the first or second stage. Failure to cope however, would result in stage three.

During the 1940s and 1950s Wolff played an important role in the extension of the medical concept of stress. Like Selye, Wolff believed that stress was a dynamic state and that it was a result of the interaction of the organism with noxious stimuli. Wolff regarded stress as an end point, a state of the human body, and what impinged upon the body were stressors (Wolff, 1950); stress was defined in terms of the body's response.

There are problems with the medical conceptualisation. Specifically, since stress is defined by the response, there is no means of identifying what will be a stressor and what will not until the organism's reaction has been identified. Even if an organism's reaction was known, many reactions might then be taken to indicate stress when no stress was experienced (e.g., heart rate will rise from jogging but the individual may be relaxed and at peace) (Lazarus & Folkman, 1984). Hence, the response cannot be reliably judged as a

stress reaction without reference to the stimulus or context. Since the response definition fails to advise what it is about the response that indicates a particular stressor, it fails to take context into account, as well as individual differences in response to different contexts.

The third conceptualisation, the relational approach, attempts to look at pressures (the stimuli or engineering perspective) and the reactions (the responses, or medical perspective) together (Lazarus & Folkman, 1984) and is discussed in the following section.

The Relational Perspective

The concept of stress for this approach emphasises the relationship between the individual and the environment. It takes into account the nature of the environment and also the characteristics of the individual. Lazarus and Folkman (1984) suggested that "stress is a relationship between the individual and the environment that is appraised by the individual as taxing or exceeding his or her resources and endangering his or her well-being." (p. 19). They suggested that this concept grew out of the dissatisfaction with the problems of the previous two orientations, which did not clarify the exact nature of either the stimulus that produced the stress response or the response that indicated a stressor. Lazarus and Folkman (1984) suggested that it was the observed stimulus-response relationship which defined stress, not the stimulus alone or the response alone. The relational definition also allows for both psychological and physiological factors. Lazarus' definition, although an interactive one, is limited in that it does not suggest means for detecting when the demands upon the individual exceed his or her resources.

A more recent conceptualisation of stress by King, Stanley and Burrows suggests that stress is "a negative emotional experience which results from a person's negative thoughts about an inability to cope in his or her environment" (1987, p. 6). This definition accounts for the physical and psychological environments and, it also indicates that everyone can experience some level of stress and can experience stress every day and across time. Individual variation and an acknowledgment of the individual's discretion in deciding when the demands exceed resources are two elements of the conceptualisation by King et al. (1987), thus accounting for individual variation, and answering the problem posed in the previous paragraph. Successful coping is seen as resulting in no stress symptoms, while unsuccessful coping results in manifestations of stress symptoms. The manifestation or response may be in terms of short term or long term consequences. The manifestation may be psychological, physical, behavioural or a combination.

Summary of Stress Concepts

Three different ways of categorizing stress appear in the literature. The first was termed the engineering or stimulus definition, it suggests that stress is the load or demand placed upon a person and focuses on events in the environment such as natural disasters. A second approach, the medical orientation or response orientation, suggests that the stress response whether physiological or psychological, should be the focus of concern. The third approach in the classification of stress, attempts to look at the stimulus and the responses together and has been termed the relational approach. This concept takes into account the importance of the individual, as well as the physical and social environment in determining

stress reactions. The relational perspective was used in the development of this study, since it did not suffer from the flaws of the medical or engineering conceptualisations.

The various conceptualizations of stress have resulted in many attempts at model building to explain the process of stress. The following section examines some of these models.

Models of Stress.

Many attempts have been made to classify the models of stress and many categories have been used. Typically, however, they fall into one of four categories:-

- (i) The Direct Effects models.**
- (ii) The Buffering Effects models.**
- (iii) The Mediating Effects models.**
- (iv) The Combination models.**

To develop a clearer understanding of the underlying constructs, the following brief presentation outlines some of the models found in the stress literature.

Direct Effects Model

The Direct Effects model illustrated in Figure 1, indicates that stress outcome is independently affected by stress. This style of model is representative of much of the earlier work in model development and is the basic premise in the research paradigms of social epidemiology. The model also has as its basis the stress-distress formulation of Selye, outlined in the medical perspective of stress.



Figure 1. Direct Effects Model

According to Wilcox (1981), the research in general shows correlations ranging from .25 to .35 between life stressors and physical and psychological illness. The size of the correlations has been a major source of criticism for the Direct Effects model. Wilcox (1981) suggested that it is not surprising that such correlations were small, since, exposed to the same amount of life change at any one time, different individuals will evaluate the change differently and experience different levels of stress.

This line of thinking which, as indicated, grew out of research on stress during World War II, led to the suggestion of additional variables, such as personality or social support. It was proposed that these variables moderate or intervene in the relationship between life events and health outcome. These models, referred to in the literature as the Mediating Effects or Buffering Effects models, are described later.

Alternatively a more complex example of the direct effects model could be generated to involve personality and social resources, this is illustrated in Figure 2. This model focuses on the input of personal and situational constructs. The model is supported by the work of Andrews, Tennant, Hewson and Valliant (1978) who found that stressful life events, with poor coping and poor social support, explained approximately 43.3% of the variance in psychological distress as measured by the GHQ-20. Stressful life events alone, however, explained only 25% of the variance in GHQ scores. As a consequence Andrews et al. (1978) proposed a model that sees stressful life events, personal disposition (e.g., locus of control) and social situation (e.g., social support) as having independent relationships with psychological distress, and combining independently to burden (affect) the individual.

Mediating Effects Models

The Mediating Effects model describes how individual variation in personality, social support and/or other non-pathological responses intervene in the impact of stressful life

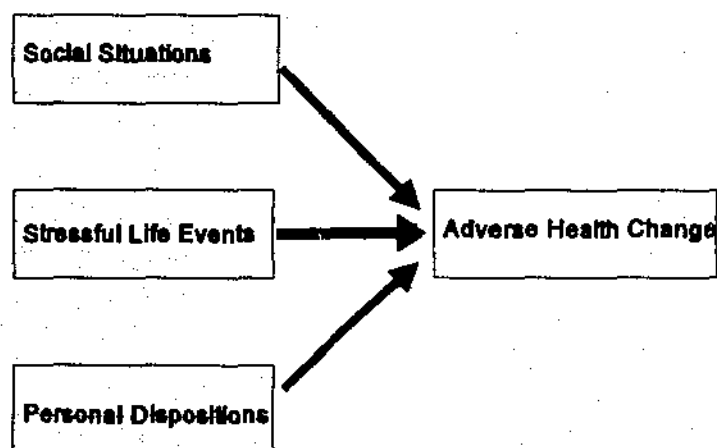


Figure 2. Complex Direct Effects Model

events. The model also describes that stress not only increases symptoms but also activates these non pathological responses which in turn influence symptoms (see Figure 3).

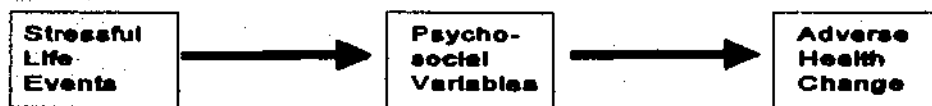


Figure 3. Mediating Effects Model

The model is supported by research conducted by Garrity, Marx and Some (1977).

A sample of 314 college students completed a life change questionnaire (Anderson's modification of the Schedule of Recent Experiences), the Langner 22 item measure of psychophysiological strain, and a measure of health status. Results indicated that when the measure of psychophysiological strain was partialled out, the relationship between life events and general illness, as indicated by Pearson correlation coefficients decreased. Garrity et al. (1977) interpreted this as indicating that psychophysiological strain mediated the relationship between life change and stress. A further examination of the data, however, indicated that although the correlations decreased, they remained significant, consequently direct effects appear to be still present.

A further example of the Mediating Effects model at work is the general conceptualisation offered by Friedman and Rosenman (1974) that certain life events or challenges to an individual's control over the environment will result in an increased risk of coronary heart disease in those individuals possessing the type A response pattern. Here the type A behaviour pattern is the intervening variable.

Buffering Effects Model

The Buffering Effects model appears to have grown out of a further attempt to explain individual differences in stress response. It is a slightly more complex model and is illustrated in Figure 4. This model suggests that preexisting social conditions and psychological predispositions interact with stressors to produce health consequences. Therefore, in the absence or reduction of relevant personal and social resources, the likelihood of an adverse outcome increases with the exposure to life stressors (Dohrenwend & Dohrenwend, 1981; Lin & Ensel, 1989).

The buffering model forms the basis of Zubin and Spring's (1977) Vulnerability model on the aetiology of schizophrenia. Here, life event stressors impinge upon an organism producing a consequent strain. The strain is mediated by the presence and/or absence of personal coping resources (the buffer).

This model has most often been used to illustrate the importance of social support and coping mechanisms. Cassel (1974, 1976), Antonovsky (1974) and Wilcox (1981) all

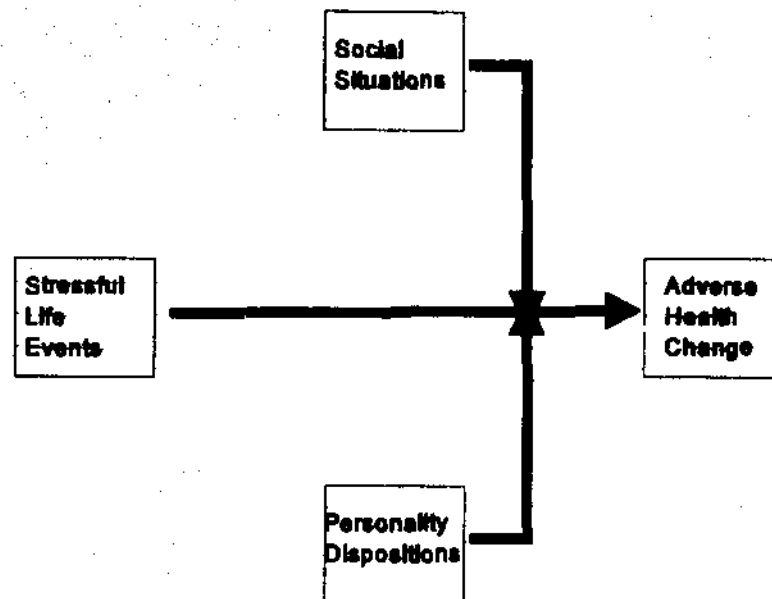


Figure 4. Buffering Effects Model

suggest that social supports serve as protective factors and buffer the individual from the consequences of stress. That is, the perception that others in one's social support network can and will provide necessary resources may result in the individual perceiving the stressor as less threatening.

Complex Models

The Complex models developed from a realization that the Direct Effects, Buffering and Mediating models need not be mutually exclusive and that they could be conceptually integrated (Dohrenwend & Dohrenwend 1981; Lin & Ensel 1989). Moreover Complex models allow for the development of feedback loops, a characteristic not present in the direct, mediating or buffering models. As indicated earlier, these feedback loops may be important in determining whether a threat is a stressor or not.

An example of a complex model without the presence of a feedback loop is termed the Life Stress Paradigm and is illustrated in Figure 5. The model shows the interaction among the social, psychological and physiological components. Each component involves potential stressors and resources to negate the effects of such stressors. Each component's effect may be seen as mediating, direct or interacting. The mediating effect is said to have taken place if the mediator's presence reduces the direct impact of the other. An interacting effect is said to have taken place when the presence of two forces affect well-being. For example, negative well-being can only be caused with the presence of social stressors and the absence of social resources. The last effect, direct, is self explanatory, that is, psychological resources will have an effect on well being with or without the presence of another variable (Lin & Ensel, 1989). In an effort to examine the model, Lin and Ensel interviewed 639 individuals over three years. Results indicated that stress and resource components of the psychological situation directly affect physical symptoms of stress.

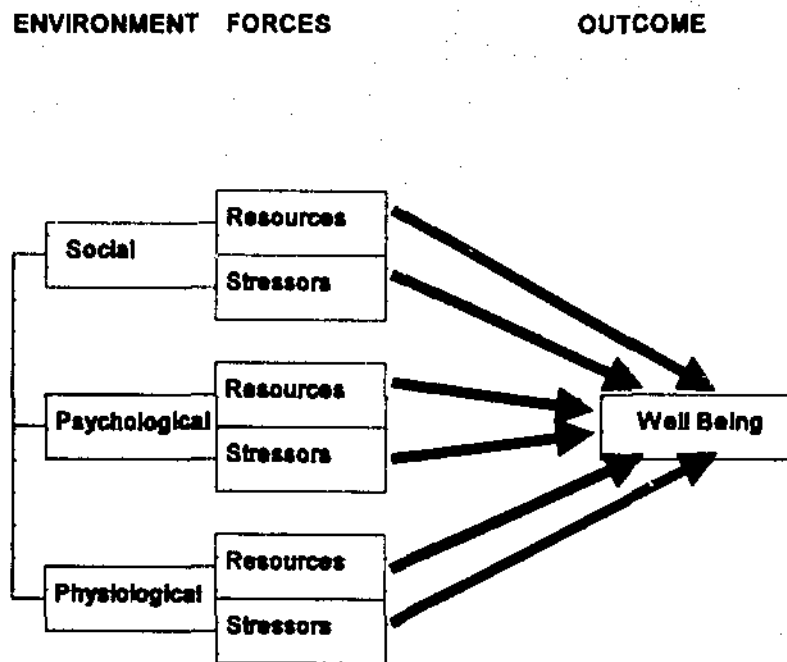


Figure 5. The Life Stress Paradigm

Social resources were found to buffer both physiological and psychological stress, while psychological resources mediated psychological stress only (Lin & Ensel, 1989).

Lin and Ensel, however, are not the only researchers who have looked towards the development of more complex models of the stress process. Cronkite and Moos (1984)

also approached the stress-illness relationship with a complex model that encompassed predisposing factors, stressors, moderating factors, and later illness. Predisposing factors include such variables as social status and the prior level of functioning of the individual. Their conceptual framework also sees stressors as containing both life events and ongoing stressors (e.g., spouse's level of depression or alcohol consumption). Social support and coping resources are perceived as moderating factors that may buffer or intensify the stress which has already been influenced by predisposing factors.

Kyriacou and Sutcliffe (1978a) have proposed a complex model of teacher stress. Their model, displayed in Figure 6, distinguishes between potential occupational stressors which are those aspects of the teacher's job that are subjective and actual stressors. The distinction between potential and actual stressors is determined by the appraisal of the potential stressor (box 2). This appraisal partly depends on the teacher's individual characteristics (box 7), the teacher's current stress levels (box 5), the coping resources available to the teacher (box 4), and the non work stressors acting on the teacher (box 8). It is also noted that it is the teachers' perception of their own ability to meet or cope with the demands made upon them, rather than their actual ability, that will determine their appraisals. This is consistent with the relational perspective and King's et al. definition discussed earlier.

Coping mechanisms (box 4) have also been introduced into the model to deal with the actual occupational stressors faced by the individuals. Individual characteristics (box

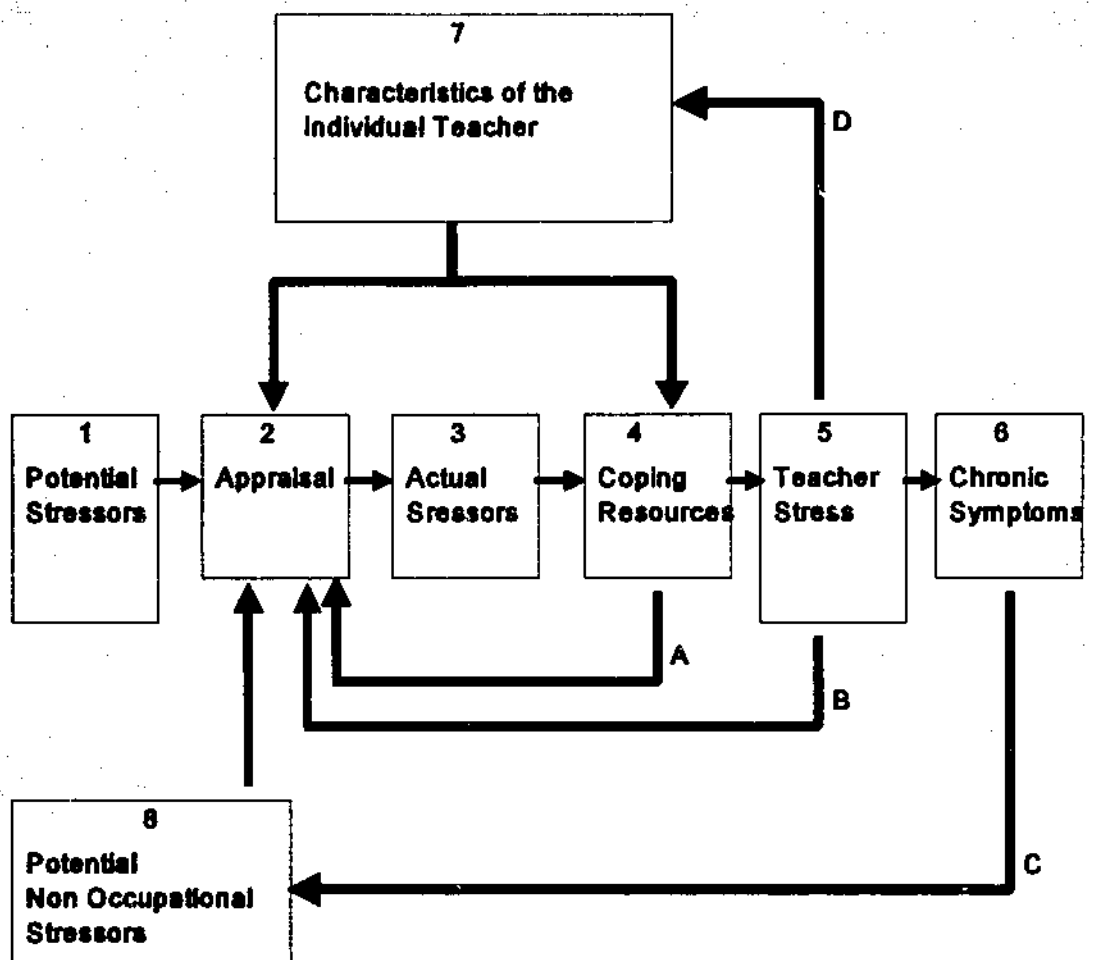


Figure 6. A Model of Teacher Stress

7), also help determine the coping mechanisms of the individuals. Teacher stress (box 5), is conceptualised as being directly related to the degree to which the coping mechanisms are unable to deal with the actual stressors and the degree to which the teacher appraises stress.

Teacher stress is defined by Kyriacou and Sutcliffe (1978a) "as a response of negative affect such as anger or depression." This response (box 6) may be physical or psychological. This is in line with King, Stanley and Burrows' (1987) definition of stress.

Kyriacou and Sutcliffe's (1978a) model, although not tested, highlights the use of feedback. The model indicates that four feedback loops exist. These feedback loops are shown in Figure 6 as (A) (B) (C) and (D). The first feedback loop (loop A) indicates that the coping mechanisms used by the teacher to reduce stress may influence the appraisal of stress. If for example denial is successfully employed as a coping mechanism then an actual stressor would be reduced to a potential stressor. Teacher stress itself may affect appraisal either directly, loop (B) or indirectly loop (C) by causing ill-health which in turn becomes a potential stressor. Finally, Wild and Hanes (1976) argued that failure to meet a demand in the past may affect an individual's ability to meet a demand in the future, this is illustrated by loop (D).

Tellenback, Brenner and Lofgren (1983) have built upon Kyriacou and Sutcliffe's (1978a) model by incorporating neighbourhood characteristics (see Figure 7).

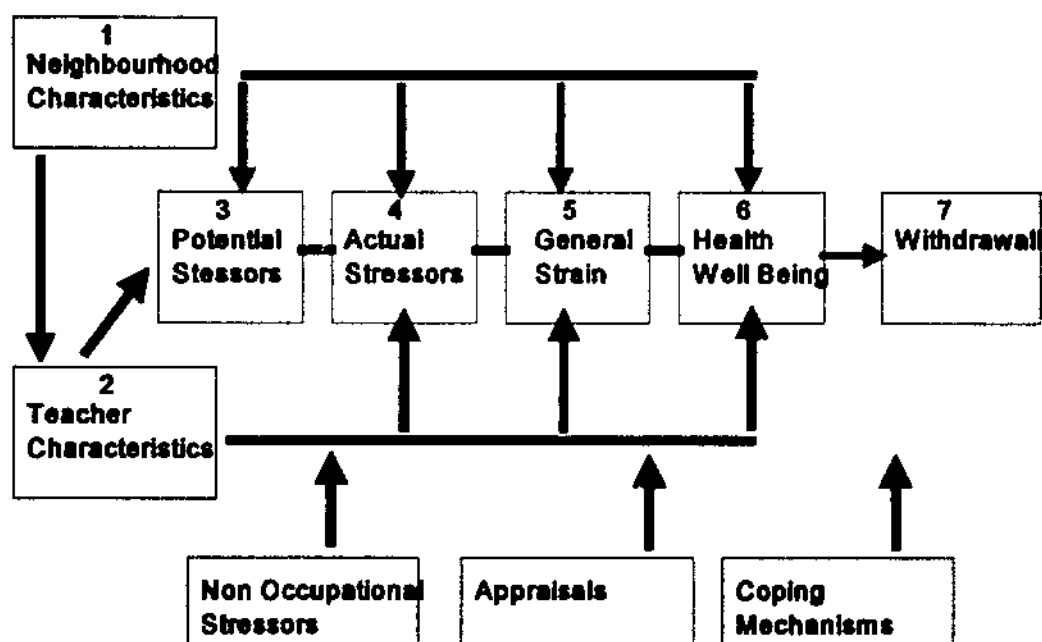


Figure 7. A Conceptual Model of Teacher Stress

They indicated that the social context of the school (box 1) and the teacher characteristics (box 2) determine potential stressors (box 3). Like Kyriacou and Sutcliffe, whether a potential stressor develops to an actual stressor (box 4) depends upon the teacher's appraisal. A second added concept involves general strain (box 5) described as overload, and occurs as a result of the build up of actual stressors. General strain is considered to affect health and well-being both psychologically and physically (box 6). Rather than health outcome being the final stage as in the Kyriacou and Sutcliffe (1978a) model, Tellenback et al. (1983) suggested that withdrawal (box 7), either psychologically or physically (e.g., absenteeism), is the final step in the process.

Tellenback et al. (1983) did attempt to test their model, on a sample of Swedish teachers. Results in general found support for the model. Neighbourhood and individual characteristics influenced potential stressors, which in turn were found to connect to actual stressors. The role which general strain played in the model was uncertain and possibly could be redundant, since some analyses found that paths led directly from actual stressors to health and wellbeing. This could also be the case for other variables within the model and points to the possibility of a simpler direct effects model underlying the more complex model (Tellenback et al. 1983).

Summary of Models of Stress.

A basic outline of several models in the literature was presented. Despite differences

in detail, the models all appear to share some basic underlying similarities. Firstly, they all share the dependent variable of adverse health change, be it physical illness, psychological ill-health or some other health measure of stress outcome.

Secondly, these models as a collective group, underpin the theoretical formulations of Folkman, Lazarus, Gruen and DeLongis (1986), Folkman and Lazarus (1980) and King, Stanley and Burrows (1987). They conceptualised stress as a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources. There are however, difficulties associated with the notion of appraisal in these models. In reality the appraisal of a demand and consequent coping style of an individual will depend on the individual's characteristics, such as the personality of the individual. Kyriacou and Sutcliffe (1978a) suggested that peoples' perception of their ability to meet or cope with demands, rather than their actual ability, will determine the appraisal of a demand. Lazarus (1966) and Tellenback et al. (1983) have indicated that differences in personality partly explain individual differences in appraisal. It would be unlikely that personality would be the only process, however, that would affect appraisal. One could also posit that previous experience and the success in handling previous experiences also affects the way in which one appraises present demands.

The research also has as an underlying communality one or all of the following variables, stressors (both work and life), personal dispositions or personality (appraisal), psycho-social mediators and biographical variables. The following chapter and associated seven sections examine these variables with specific focus on teachers and teaching,

beginning with work stressors.

CHAPTER THREE

STRESS IN TEACHING

Overview

Over the past 10 years there has been an increasing interest in occupational stress in the teaching profession. As a consequence there have been a number of studies and reviews focussed wholly or in part on the identification of what might be stressful elements of a teacher's work, the mediating factors of this stress such as personality, the extent of teacher stress and the symptoms of stress. This chapter has seven major sections, the first two outline research directed at occupational and life event stress. Sections three, four and five examine biographical variables, personality factors and the psycho-social variables associated with stress. Section six looks at the prevalence of stress in teaching, whilst section seven examines the symptoms associated with this stress.

Job Related Stressors

Cooper and Marshall (1976) developed a framework for discussing major categories of the factors (stressors) leading to stress. Their framework consists of seven categories, six of which will be discussed under the heading job related stressors. The seventh category, factors intrinsic to the individual will be discussed in a further section. Those six categories are:-

- 1) Factors intrinsic to the job.
- 2) Role in the organization.
- 3) Relationships within the organization.
- 4) Career development.
- 5) Organizational structure, and climate.
- 6) The relationship of the organization with the outside world.

Factors Intrinsic to the Job

Stress factors intrinsic to the occupation of teaching have received much investigation by those researchers studying work load and working conditions. McLaughlin and Shea (1960) investigated job satisfaction among 793 teachers in U.S.A. Teachers were asked to list items that they considered interfered with their daily task of teaching and caused dissatisfaction. Sources of dissatisfaction included excessive clerical work, supervisory duties at school and negative student attitudes.

Likewise Lawrenson and McKinnon (1982) indicated that clerical duties and paper work were major sources of dissatisfaction among teachers, claiming that although some teachers found them useful, they wanted to spend less time engaged in such duties. Similarly Lortie (1975) in a study of 94 teachers in the USA also found that major sources of concern were clerical duties, interruptions, time pressures, and troublesome students. Likewise, Travers and Cooper (1993), found that behavioural problems among pupils, lack of non student contact time and assessment of students were among the top 10 sources of pressure rated by 1790 British teachers. Rudd and Wiseman (1962) found from a survey of 590 teachers that inadequate facilities, teaching load, teacher training, and large classes

were a major source of dissatisfaction among British teachers.

Inadequate room conditions, overcrowded classrooms and lack of appropriate facilities in the form of equipment, all affect tolerance levels for stress (Coates & Thoresen, 1976; McGuire, 1979; Needle, Griffin & Svendsen, 1981; Otto, 1983). Large student numbers also increase marking and administration time (Otto, 1983), thereby increasing other stressors such as those indicated by Louden (1987), who found that psychological stress, as measured by the General Health Questionnaire, was significantly related to amount of time engaged in school-related activities out of school time. It appeared that most frequently this extra activity was related to clerical and programming duties.

Needle et al. (1981) found that the inability of teachers to leave the room even for 5-10 minutes, or the inability to take one half day off work at short notice significantly contributed to the feelings associated with stress in a sample of 937 teachers.

Other factors intrinsic to the occupation are work overload problems such as time pressure, excessive clerical work, lack of adequate teaching aids and/or instruction in big or heterogeneous classes (Brenner, Sorbom & Wallius, 1985; Coates & Thoresen, 1976; Kremer-Hayon & Kurtz, 1985; Kyriacou & Sutcliffe, 1977; Kaiser & Polczynski, 1982; Proctor & Alexander, 1992).

In sum, the factors intrinsic to the profession of teaching are many and varied, but as indicated it is only one of six factors important in occupational stress. The following

section, role problems, discusses the influence of role ambiguity and role conflict on teachers occupational stress.

Role Problems

Increased role responsibility due to changed work demands also add to teacher stress. Dunham (1984) suggested that besides teaching, teachers have pastoral care responsibilities as part of their role as "form" teachers. These demands lead to stress when these two roles clash, as when pupils want to talk to their teacher about personal problems at home e.g., child abuse, when the teacher is on the way to teach.

Katz and Kahn (1966) suggested that role conflict, which occurs when one person is asked by another to accomplish two objectives that are apparently incompatible, is common among teachers. For example a principal may ask a teacher to complete marking exam papers more quickly, but with fewer mistakes. This type of demand could lead to stress.

Dunham (1984) indicated that some teachers may also experience role ambiguity. This problem may arise as a "consequence of lack of factors regarding clarity of the scope and responsibilities of their job; uncertainty over what their colleagues expect of them; lack of information required to perform their tasks adequately; uncertainty about how their work is assessed. These uncertainties also increase during periods of change within the organization" (Dunham, 1984, p. 30).

Schwab and Iwanicki (1982) in a study of 269 teachers, examined the relationship of role ambiguity and role conflict to teacher stress (measured by feelings of emotional exhaustion and depersonalization). Results indicated that role ambiguity and role conflict accounted for a significant amount of teacher stress. Role conflict and role ambiguity were also considered to be significant predictors of emotional exhaustion by Burke and Greenglass (1995) in their longitudinal study of 362 teachers. Crane and Iwanicki (1986) in a similar study of 433 teachers found that a significant proportion of the variance in emotional exhaustion and depersonalization was attributable to role conflict and role ambiguity. Likewise, Kahn (1973) found that individuals suffering from role ambiguity experienced lower job satisfaction, higher job-related tension and lower self confidence. Moreover Proctor and Alexander (1992) in a study of 256 teachers in Scotland found that role conflict resulted in elevated levels of anxiety.

Another area that results in occupational stress for teachers is the relationships between the people within the organization, as discussed in the next section.

Social Relations at Work

Teachers' social relationships at work include their interaction with pupils, other teachers, the principal and parents, any of which may involve stressful interactions.

Pupils

Much has been written regarding the extent to which pupil behaviour appears as the main source of stress in teaching. Indiscipline in the classroom may range from cheek to violent and disruptive behaviour (Lowenstein, 1975). Of interest, however, is that although teachers express concern about misbehaving pupils, misbehaviour does not appear to be a major cause of stress in the classroom.

Coates and Thoresen (1976) in a review of 7 studies on teacher stress between 1939 and 1976, found only one study that reported discipline problems producing anxiety in experienced teachers. Among inexperienced teachers, however, 6 out of 15 studies reported anxiety was produced by discipline problems.

It appears that the student's attitude towards work (apathy, poor motivation) may in fact produce more stress than indiscipline itself (Kyriacou, 1980; Kyriacou & Sutcliffe, 1978b). Indeed, Lawrence, Steed and Young (1978) in a study of disruptive behaviour in a London comprehensive school, noted that the major problem facing teachers was in terms of work refusal by the students.

Mykletun (1984) suggested that it was the non fulfilment of teaching obligations or the teaching process that caused the stress. The child's disruptive behaviour, apathy or negative attitude towards learning were just causal factors in stopping the teaching process.

This finding is apparently in contrast to Pratt (1978) who found that aggressive and non co-operative students were major sources of stress among 124 primary teachers in the United Kingdom. Louden (1987) in a questionnaire survey of 2138 teachers in Western Australia, found that for both primary school and secondary school teachers, unacceptable student behaviour in the form of insolence and disobedience, as well as overt aggression towards other students was related to significant levels of stress as measured by the General Health Questionnaire among the teachers. Similarly Travers and Cooper (1993) in a random sample of 1790 British teachers found that behavioural problems among students was considered a significant occupational stressor. The inconsistent findings between Pratt (1978), Louden (1987) and Lawrence et al. (1978), may well be a function of semantics. Apathy or work refusal may be regarded in some studies as non co-operation or aggressive behaviour, while in other studies aggressive behaviour may only be coded if there is a direct overt expression of aggression.

Colleagues

Relationships between colleagues also appear to be of concern to teachers. Unfortunately however, according to Lortie (1975) teachers suffer from isolation, since they are physically cut off from other adults in a room filled only with students. Lortie (1975) further suggested that teachers have little opportunity to interact with their colleagues and supervisors or to receive professional and emotional support. Maslach (1976) highlighted the importance of social professional support in order to counter the effects of burnout (defined as a syndrome of emotional exhaustion and cynicism). Burnout rates were lower

for professionals who actively shared their personal feelings with their colleagues. This effect is highlighted by Travers and Cooper's (1993) study which indicated that the support of fellow colleagues in the staffroom was an important factor in coping with occupational stress. Likewise, having the opportunity to talk to more senior staff when experiencing occupational stress was associated with lower levels of anxiety among teachers in Proctor and Alexander's (1992) study of stress among primary school teachers in Scotland. Greenglass and Burke (1994) also found in their study of 361 teachers that co-worker support was negatively and significantly correlated with burnout (as measured by the Maslach Burnout Inventory). Therefore, because teachers work in isolation from their colleagues it could be expected that burnout rates would be higher.

This view is supported by Otto (1983) who suggested that teachers confront their stressors in isolation from other colleagues. However, she also suggested that the isolation may well be self imposed, since teachers often refuse to talk about their problems because they fear that the reasons lie within themselves, their own inadequacies rather than the organizational structure or the job.

Rudd and Wiseman (1962) in a survey of 590 teachers in the United Kingdom found that poor relationships among staff were major sources of dissatisfaction among teachers. Kyriacou and Sutcliffe (1978b) also found that the attitudes and behaviours of other staff were of concern to teachers. This concern subsequently correlated positively with teacher stress (as measured by self reported levels of stress). Galloway, Panckhurst, Boswell, Boswell, and Green (1986) in a survey of 40 primary school head teachers found that

concerns over the competence of fellow teachers correlated significantly with a self report measure of stress; similar findings were also reported by Holdaway (1978).

Principals

Principals may significantly influence teachers' working conditions for the better or worse (Litt and Turk, 1985) and hence affect teacher stress (Mykletun, 1984), through lack of adequate leadership skills or through failing to give support (Lawrenson & McKinnon, 1982; Brenner, 1982).

Kremer-Hayon and Kurtz (1985) surveyed 115 teachers from 13 schools. Results from the questionnaire indicated that the principal's leadership style (measured by a 42 item questionnaire, e.g., use of constructive criticism, response to teacher criticisms, encouragement of teacher involvement in school policy making, pushing for innovations and helping teachers fulfil their professional needs), was significantly correlated with burnout as measured by the Maslach Burnout Inventory. Moracco, Danford and D'Arienzo (1982) indicated that teachers perceived that the lack of administrative support, absence of insight on the part of the principals, and insufficient recognition from principals for good teaching were stressful. Litt and Turk (1985) found that principals were the most frequently cited sources of stress and reasons for leaving the teaching profession. Teachers reported that they were distressed regarding the lack of feedback provided by their supervisors about their teaching performance and felt unable to influence decision making in matters that directly affected them. Those teachers who perceived their principal as putting them at ease and

taking an interest in their welfare reported being more satisfied with their job.

Blase, Dedrick and Strathe (1986) in a self report study of 168 teachers in the U.S. found that a school principal's leadership style, characterized by a high level of structure and consideration, was related to lower levels of perceived stress and higher levels of satisfaction with the principal. Teachers also perceived this style of leadership as assisting them in their performance in the classroom.

Jongeling and Lock (1995) interviewed 24 teachers in Western Australia to examine how the actions of their principals affected their stress. Results indicated that teachers were concerned about the lack of support from the principal, inadequate communication and discipline policies as well as lack of participation in decision making and working in poorly managed schools.

Parents

Dropkin and Taylor (1963) found that relations with parents of children were a major cause of anxiety among inexperienced teachers. Farrugia (1986) also found that 18.8% of teachers sampled in Malta claimed that lack of appreciation by parents was a major source of frustration in teaching. Holdaway (1978) sampled 801 teachers from 20,000 employed teachers from Canada. He indicated that 30.8% of the respondents mentioned attitudes of the parents as a major source of dissatisfaction in teaching. Lawrenson and McKinnon (1982) also pointed to lack of recognition by parents as a major contributing variable in

teacher burnout.

Career Development

Both Cooper and Marshall (1976) and Kaiser and Polczynski (1982) suggested that career development were major sources of stress among teachers. Kaiser and Polczynski (1982) suggested further that career development accounted for two sources of potential job stressors; job insecurity and status incongruency. Status incongruency resulted from the levelling in career progression experienced by teachers, since most teachers reach their highest job title upon entrance to the organization at an early age. Louden (1987) also found that lack of promotional prospects appeared to be related to psychological distress among 753 secondary school teachers surveyed. This poor career structure has also been identified by Kyriacou and Sutcliffe (1978b) and Travers and Cooper (1993) as a source of stress among teachers.

Job insecurity has been studied by Needle et al (1981) who suggested that fear of involuntary transfer to another grade or building, or possible redundancy were major sources of stress. Needle's et al. (1981) findings were supported by Louden (1987) who found involuntary transfer to be of major concern to one quarter of 881 primary school teachers. Results indicated that there were high levels of distress among those respondents who had received an involuntary transfer.

Kyriacou and Sutcliffe (1977) and Moracco et al. (1982) both indicate that the

teacher's own professional training prior to the teaching experience or during teaching may be considered to be inadequate by the teacher. This will consequently make them feel that he/she is unprepared to carry out duties of a teacher.

Job insecurity and status incongruity combine to lead many teachers to frustration and health problems. However, the internal structure of the educational department may also result in stress for the teacher, as would the way in which that structure interacts with the wider community.

Organizational Climate, Structure, and Interface with the Outside World

Cooper and Marshall (1976) suggested that even being within an organization appears to be a source of stress to some people. People may feel that their opinion is not respected or that their behaviour is restricted by the organization. Margolis, Kroes, and Quinn (1974) reported that lack of participation in the decision making process, poor communication, restrictions on behaviour, and organizational politics all relate to poor physical health, depression, low motivation to work, low job satisfaction, and low life satisfaction. Dewe (1986) also suggested that lack of any effective consultation or participation in decision making, and inadequate support for curriculum changes have the potential for causing stress. This concurs with the findings of Holdaway (1978) and Loudon (1987) who reported that decision making, staffing procedures and perceived lack of departmental support were major sources of dissatisfaction among teachers.

Brenner (1982), Farrugia (1986), and Needle et al. (1981) all suggested that lack of influence on decisions or lack of real control over a person's own working conditions were factors that resulted in stress for teachers. This may be compounded if staff communication within the organization, which is considered to reflect organizational climate, is poor (Kyriacou & Sutcliffe 1977).

These findings are all supported in a study by Litt and Turk (1985) of 291 high school teachers. School climate was examined by measuring teachers' desire to participate in school functions, the organization within the school, general staff communication, the degree of decision making allowed, and sensitivity to the school's problems. School climate was found to be significantly related to general job dissatisfaction, ill health, (both physical and emotional), and intention to leave teaching.

The perceived relationship that the organization has with the outside world, according to Cooper and Marshall (1976), is also related to stress. It appears that public criticism directed at schools or the teaching profession's status in the community has been linked to stress. This conclusion is supported by Travers and Cooper's (1993) research that found society's diminished respect for teachers and the lack of support from the government were among the top 10 stressors among British teachers.

Kremer and Hofman (1985) examined the relationship of teacher professional identity and burnout. Using the Professional Identity Scale adapted from Herman's (1970) study of Jewish Identity, and a Burnout scale constructed by Hofman and Kremer (1981), they

sampled 126 teachers. Results indicated that burnout was positively correlated with professional identity, that is, those with little identification with the teaching profession were more susceptible to burnout.

Cunningham (1983) suggested that teachers are not respected or given credit within the educational profession, since all secondary reinforcements such as prestige, honour and money go to the persons who rarely see children inside of a classroom, such as the principals. Many competent teachers who realize that the only possible way to fulfil status needs are to leave the classroom and enter administration are doing so. This results in a role conflict, since many teachers enter the profession because they enjoy working with children. These teachers are often frustrated by current promotional channels and incentives that do not reinforce teaching per se but reward administration.

This is supported by Rempel and Bentley (1976) who sampled 3075 teachers in the U.S.A. Results indicated that differences in salary and status of teachers as compared with other professionals, was a major predictor of job dissatisfaction among teachers. Rates of pay were also a major source of dis-satisfaction among British teachers (Travers and Cooper, 1993).

Philips and Lee (1980) suggested that the community within which the school operates may also not be supportive of the school or teachers in general. To illustrate this, they alluded to the prevalence of crime in many of the urban schools in the U.S.A.. The physical violence against the school, staff and students were cited as particularly stressful for

teachers. They further suggested that crime was only one aspect of a more insidious cause of stress within teaching, and included poor financial support from the community, crises generated by various single issue groups, and lack of parental involvement within the school.

Summary of Job Related Stressors.

On the basis of self-report studies, it appears that causes of teacher occupational stress are many and varied. The types of stressors appear to fall into six categories: factors intrinsic to the job, role in the organization, relationships within the organization, career development, organizational structure and relationships of the organization to the outside world (Cooper & Marshall, 1976).

As indicated previously a second common factor among the models of stress was the presence of life events. The following section briefly presents the research surrounding this factor.

Stressful Life Events

In 1926 Evans noted that many cancer patients had personal relationship difficulties in the twelve months prior to the onset of the illness. LeShan in a 1959 review on the psychological factors associated with malignant disease, indicated that relationship difficulties was the most common psychological factor occurring prior to the onset of the

disease. These observations led to the general belief that significant life events which cause change in a person's personal or emotional life may predispose an individual to illness. In 1967, Holmes and Rahe established that social events requiring life adjustment were significantly associated with the onset of illness. Rahe (1974) also indicated that studies of Naval personnel who had high levels of stress as measured by the number of stressful life events experienced, suffered considerably more illness episodes during their months at sea than those with low stress scores.

High life stress scores have been associated with myocardial infarction, birth complications, diabetes, and cancer (Johnson & Sarason, 1979), as well as poor teacher performance and poor college grade point performance (Dohrenwend & Dohrenwend, 1981). Life stress has also been associated with the onset of psychological stress outcome such as anxiety, and depression (Roth, Wieb, Fillingim & Shay, 1989; Andrews et al. 1978).

Although findings of the relationship between life events and stress outcome are consistent, both retrospectively and longitudinally, the magnitude of the associations have tended to be small (see Rabkin & Struening, 1976; Sarason, deMonchaux & Hunt, 1975). Investigations aimed at determining why such relationships are small have sought to modify the scale. Some studies choosing to concentrate on undesirability of life events, indicate that undesirable life events are superior predictors of illness than either the total scale or the desirable life events (Paykel, 1974; Ross & Mirowsky, 1979). This is inherently difficult however, since what is considered undesirable for one person may not be for another e.g., divorce, which may be welcomed by one person and yet produce a suicidal depression in

another person. Moreover some researchers (e.g., Thoits, 1981) have not found support for the relationship of undesirable life events and stress.

Researchers have raised the issue that the correlations between life events and illness are an artefact of the overlap between the items on the life event scale and the dependent measures (Dohrenwend & Dohrenwend, 1981). Yet others (Brown, 1974; Gersten, Langner, Esienberg, & Simcha-Fagan 1977) have criticised the self report nature of the Life Events scale and posited that there is a self serving hypothesis, that is, people don't want to admit they are not stressed and therefore artificially increase their score. However, Tausig (1982) indicates that the applications of the modifications indicated previously, does little to raise the relationship between life events and stress scores. Moreover Tausig further suggests that either life events tap inadequately a useful concept or that the concept is measured well but has little direct influence on measures of stress.

Consequently researchers have turned their focus towards mediating variables such as personality and social support or to replace life stress with work stress. This indicates that such a lack of attention towards mediating variables and work stress constitute major limitations of the life event research. Such attention has yielded mixed results with a plethora of moderator variables being examined, including social support, locus of control, type A behaviour, neuroticism and arousability all with mixed results. Nevertheless in those studies which found significant relationships, the correlation still appears to plateau at about $r=.4$.

Replacing life stressors with work stressors has again failed to increase the magnitude of the relationship significantly. Little work, however, has been done on the combined impact of work and nonwork stressors on health, despite the fact that there has been much anecdotal reference to the importance of both. Galloway, Panckhurst, Boswell, Boswell, and Green (1982), in a survey of 176 teachers found that one in six reported feelings of extreme stress from the illness of their own children or other family members, and one in seven reported feeling under stress from financial commitments. Galloway et al. (1982) then suggested that because teachers feel under stress, they will have less time and energy for lesson planning, and their concentration will suffer in the classroom, thus creating further stressors for the teacher.

Klitzman, House, Israel and Mero (1990) surveyed 630 employees of a component parts plant of a manufacturing corporation in the USA. Results indicated that occupational stress and life stress, represented two independent sources of stress. It was further noted that stress in one may well exacerbate problems in another, however, there was no evidence to suggest that "spillover" was greater in one direction than another. Klitzman's et al. (1990) results also indicated that studies on stress should consider both occupational and life stress measures.

There appears to be a substantial number of work related stressors acting in an environment at any one time. To look at those stressors in isolation from the person's ongoing life stressors may in fact underestimate the stressors upon the person, since there may be an interaction effect. It has been suggested that not all people suffer psychological

or physical difficulties with the onset of similar environmental stressors. It appears that factors intrinsic to the individual may indeed modify, or in some cases eliminate these demands in some way, so that they pose few or no problems. This stress resistance has been associated with a variety of sources including Type A behaviour pattern (Friedman & Rosenman, 1974), hardiness (Kobasa, 1979), social support (Sarason, Levine, Basham & Sarason, 1983) and biographical variables such as age and gender (Feitler & Tokar, 1982).

The following three sections outline these intrinsic stress resistance factors of the individual. The first section outlines research directed at determining the influence of biographical variables on stress, the second examines research focused on personality factors and stress, and the third section looks at psycho-social factors such as social support and how they influence stress. Where possible, research is presented as it pertains to teacher stress.

Biographical Variables

Feitler and Tokar (1982), in a study of 3300 teachers from the U.S.A, found that levels of stress as measured by a 19-item check list, varied with age. Teachers aged between 31 and 44 reported experiencing higher levels of stress than did those aged over 44 or under 30. School location was also found to influence the presence of stress, with urban teachers experiencing greater levels of stress than rural teachers. In addition, reported stress level varied as a function of grade level taught, with teachers of lower grades reporting less stress than teachers of higher grades.

Schwab and Iwanicki (1982) found that the stress reaction (as measured by the presence of burnout) changed as a result of age, with younger teachers experiencing more emotional exhaustion and fatigue than older teachers. Sex and grade level taught were also found to be related to teachers' feelings of burnout, with male teachers displaying higher levels of 'negative attitudes' towards their pupils than female teachers. High school teachers also displayed greater negative attitudes towards students than did primary school teachers (Schwab, 1983; Schwab & Iwanicki, 1982). Beer and Beer (1992) also found a difference between high school and primary school teachers in their study of 92 teachers in Kansas. Results indicated that primary school teachers reported lower stress scores than high school teachers.

Laughlin (1984) in a study of 493 Australian teachers indicated that females tended to report more stressors concerning pupil and curriculum demands, while males tended to report more stressors related to professional recognition. This finding parallels that of Rudd and Wiseman (1962) who found that males and females tended to report differences in what they perceived as stressful or dissatisfying. Male teachers tended to report more dissatisfaction with professional issues such as pay and professional status, while female teachers appeared more concerned with size of classes. Likewise Travers and Cooper (1993) found that female teachers reported significantly higher levels of pressure from job insecurity, appraisal of teachers, overcrowding and management structure than male teachers. However this is inconsistent with Schwab and Iwanicki (1982) who indicated that males tended to report more concerns about negative pupil attitude than females.

D'Arienzo, Moracco, and Krajewski (1982) in a survey of 691 teachers from Elementary, Middle, Junior high, High schools, Senior high schools and Special education centres in Washington D.C indicated that demographic variables play an important role in occupational stress among teachers. The gender of the principal, type of school, and years of teaching experience were pertinent biographical variables in determining differences in stress levels.

Capel (1987) surveyed 78 full-time and part-time teachers employed in four British high schools using the same self report scale as Kyriacou and Sutcliffe (1978a, 1978b). Results indicated that three biographical variables correlated positively with stress. Specifically, years in present teaching position, number of extra curricular activities engaged in, and years of overall teaching experience were all associated positively with higher levels of teacher stress.

Other studies however, Kyriacou and Sutcliffe (1978b) and Hiebert and Farber (1984) found that biographical variables such as age, gender, length of teaching experience, and extent of training did not correlate significantly with perceived teacher stress. DeFrank and Stroup (1989) in a survey of 245 predominantly female teachers in Texas investigated the influence of demographic factors and teaching background on stress. They examined the variables age, education, years of teaching experience and grade taught. None of the variables examined predicted stress as measured by the Teacher Occupational Stress Factor Questionnaire. Likewise Fontana and Abouserie (1993), and Solman and Fled (1989) found no gender difference in teacher stress.

Results of studies examining biographical variables and stress are inconsistent, and as a consequence the relationship of variables such as gender and age with stress is inconclusive. The reasons for the inconsistencies are perplexing, but appear methodological in nature, being differences due to sample size and ethnicity. Differences also exist in what researchers used as stressors, for example Capel (1987) used role conflict and role ambiguity as stressors, whilst Kyriacou and Sutcliffe (1978b) used specific instances of stressors associated with teaching e.g., constant monitoring of students behaviour to measure the stressors. Kyriacou reports that among these stressors there were differences between teachers' responses but overall there were no significant differences.

Personality Factors and Stress Research

As Kobasa (1979), and Johnson and Sarason (1978) have indicated, not all people suffer psychological or physical impairment with the onset of objectively similar environmental stressors. This stress resistance has been associated with a variety of personality resources that could be referred to as structural variables. Major behavioural styles investigated include hardiness (Kobasa, 1979; Kobasa, Maddi & Kahn, 1982), type A behaviour pattern (Friedman & Rosenman, 1974), locus of control (Rotter, 1966), and introversion-extraversion (Kissen & Eysenck, 1962). These will now be discussed.

Hardiness

According to Kobasa (1979) "hardy" people involve themselves in whatever they are

doing (commitment), consider change to be normal and productive (challenge) and believe they influence the events forming their lives (control). Kobasa, Maddi and Kahn (1982) conducted a two-year longitudinal study of 259 male executives which indicated that those executives lower in hardiness were more likely to become ill than those with high hardiness scores. Nowack (1986) using similar hardiness measures as Kobasa, studied employees of a University over a four month period, finding that those individuals who were hardy experienced significantly less burnout (as measured by the Maslach Burnout Inventory) and less psychological distress (as measured by the Hopkins Symptom Checklist), than their less hardy colleagues. Likewise Rush, Schoel and Barnard (1995) studied 325 governmental employees and found that hardy individuals experienced less stress and higher levels of job satisfaction than less hardy individuals.

Holt, Fine and Tollefson (1987) in a cross-sectional sample of 192 teachers from a small U.S college town, asked teachers to complete the Teaching Events Stress Inventory, assessing their level of stress, The Maslach Burnout Inventory, to measure burnout; and the Locus of Control and Alienation Tests to assess hardiness. Results were comparable to the findings of Kobasa and colleagues. Those teachers with high stress scores and low burnout were less alienated (a measure of hardiness) than those teachers with high stress scores and high burnout. Although the results for locus of control were not statistically significant, Holt et al. (1987) did suggest that the results were in the predicted direction and therefore showed a trend. Specifically, those teachers with higher levels of burnout in response to stress were more externally orientated.

Hannah (1988), however, found that hardiness per se did not necessarily mediate stress. Using the 20-item short version of the Kobasa Hardiness scale and a 10-item Health Behaviour Index, they studied 133 college students over a period of five weeks. Their results indicated that the hardy personality was more concerned about health behaviour than the less hardy personality. Hannah (1988) argued that it was in fact this health behaviour that led to a reduction in stress-related outcome, not hardiness per se.

More recently, Roth et al. (1989) in a cross-sectional study, examined the disposition of hardiness for promoting stress resistance among 373 college students. Self reports of life stress (Life Experiences Survey) and physical illness (as measured by the Seriousness of Illness Rating Scale) were negatively correlated with hardiness. However, multiple regression indicated that hardiness did not act as a moderator. Schmied and Lawler (1986), also employed a cross-sectional design and found no support for the mediating effects of hardiness using Kobasa's scales when they studied 82 female secretaries.

One possible explanation for the inconsistent results lies with the research design employed. Those studies which found no effect for hardiness were typically cross-sectional in design. Only one of the several longitudinal studies reviewed failed to find a significant effect for hardiness.

A further explanation for the inconsistencies lies with the population samples. Typically, those studies which found a significant role for hardiness involved adults usually in professional positions. The one longitudinal study failing to find a significant effect for

hardiness did not use professionals, the reasons behind this were not elucidated.

Type A Behaviour

Type A behaviour pattern is said to be characterized by hostility, excessive drive and competitiveness, an unrealistic sense of time urgency and inappropriate ambition. Type B refers to the absence of this pattern (Friedman & Rosenman, 1974). The importance of Type A behaviour pattern in stress research comes from its perceived association with coronary heart disease (Rosenman et al. 1966; Bortner, 1969). Kobasa (1987) suggests people displaying type A behaviour pattern are stress prone and more likely to suffer the negative health consequences of stress. Ivancevich, Matteson and Preston (1982) indicated that managers who showed a high level of type A behaviour suffered ill health due to the effects of stressors. They suggested that the type B behaviour pattern moderated the effects of overwork and role conflict on blood pressure. Likewise, Woods and Burns (1984) and Mayes, Sime and Ganster (1984) have found type A behaviour pattern to be related to self reported depression, job dissatisfaction, and anxiety, as well as an increase in physical symptomatology.

Kobasa, Massi and Zola (1983), however, found type A behaviour to act as a moderator of physical distress, those subjects with type A behaviour pattern exhibiting less physical symptomatology than type B individuals. Nowack (1986) similarly found that type A behaviour acted as a buffer against psychological distress. Type A individuals experienced significantly less burnout than their type B counterparts. However, both the

Nowack (1986) and Kobasa's et al. (1983) studies combined type A behaviour with the presence of hardiness. In an exploration of the effect of type A behaviour and hardiness combined, Howard, Cunningham and Rechnittzer (1986) found that hardiness was the contributing main effect and once hardiness was removed from the data, type A was not found to buffer against physical symptomatology. Caplan and Jones (1975) study, however, did not concur with these results. In a longitudinal study they examined the effects of type A personality on college students during a computer shut down. They obtained data concerning the students immediately prior to the shutdown and 5 months later. Results indicated a small but significant support for the hypothesis that type A personality is a stressor. Type A students showed a larger positive correlation between anxiety and perceived changes in workload.

The Type A construct has been the subject of much controversy with regards to its usefulness as a moderator of stress, and consequently its effects are inconclusive. More recently however, the type A construct has been suggested to reflect the work environment rather than be a personality construct. Indeed Sorensen et al. (1987) and Howard et al. (1986) indicate that type A behaviour may in part be a function of the job experience and that the environment elicits the behaviour. This is also suggested by Gray (1979) who observed a number of teachers suffering from what he termed "Rushism" indicating it occurs only when teachers are under stress. That is, the type A behaviours of time urgency, aggression, and excessive drive occur only as a result of stress and reflect the environment that a person works within. This may well explain the inconsistencies in the literature since positive correlations with stress and type A would occur only if a person was under stress

from the person's environment. If there were no stressors in a person's environment then no such correlation would occur.

Locus of Control

Locus of control is concerned with the extent to which a person has a general expectancy of external or internal control over environmental events (Rotter, 1966). According to Phares (1976) the concept was developed to explain the tendency of some individuals to ignore reinforcement contingencies. It was suggested that the failure of some people to respond to rewards and punishment was due to an expectancy the person held surrounding their actions, that is, their actions would not lead to rewards, these people were classified as externals. Internals actively sought to control their environments and were more sensitive to reward contingencies.

McIntyre (1984), and Kyriacou and Sutcliffe (1979) have suggested that people with an internal locus of control appear to handle environmental stressors better than persons with an external locus of control. In his study of 684 teachers from the districts of Connecticut and Massachusetts (U.S.A), McIntyre (1984) found a low but statistically significant correlation between locus of control (as measured by the Adult Nowicki-Strickland Internal External Control Scale) and Burnout (as measured by the Maslach Burnout Inventory) of $r = .16$. Kyriacou (1980) found a positive correlation of .36 between a belief in external control and self reported stress among a group of teachers. This result supports the argument of McIntyre (1984) and Kyriacou and Sutcliffe (1979) that

people with an internal locus of control appear to handle stressors better than those with an external locus of control. This is consistent with Gadzella (1994), who also indicated that people who are identified with an external locus of control are more likely to experience higher stress.

Likewise, Capel (1987), in her study of 78 teachers found that 63% of the teachers in her sample had an internal locus of control, while 37% of the sample had external locus of control. Results indicated that it was those teachers with the external locus of control that felt higher levels of stress and higher levels of burnout. Parkay, Greenwood, Olejnik, and Proller (1988) investigated the relationship between locus of control and teachers' job stress (as measured by the 66-item Teacher Beliefs and Stress Profile Questionnaire). Results indicated that stress was negatively correlated ($r = -.15$) with internal locus of control, so that higher stress was associated with less internalised locus of control.

Tetrick and LaRocco (1987) examined the mediating effects of the ability to control events in the work place and role stress, job satisfaction and psychological well-being, using a sample of nurses, dentists and medical practitioners. Results indicated that the perceived ability to control had a moderating effect on the relationship between satisfaction and job stress. Control was also found to have a direct effect on job satisfaction and perceived stress.

Nelson and Cohen (1983) however, question the mediating effects of locus of control and stress outcome. In an eight week study using 192 college students, they examined the

effects of life stress (measured by the Life Experience Survey) on psychological distress (as measured by the Beck Depression Inventory, State Trait Anxiety Scale, and the Psychological Screening Inventory) and the mediating effect of locus of control (Rotter's I-E scale). Results indicated that locus of control failed to mediate the effect of life stress on psychological well-being. However, locus of control was found to be related to psychological distress independent of the occurrence of negative life events. Nelson and Cohen suggested that locus of control cannot be seen to mediate the life stress, psychological disorder relationship reliably.

At first glance it appears that locus of control also demonstrates inconsistent results in its association with stress. However Nelson and Cohen's (1983) results may be questioned, since it appears that the internal control group had a skewed range on the life experiences survey, possibly precluding the discovery of significant correlations.

Introversion-Extraversion, Neuroticism-Stability

Eysenck's Introversion-Extraversion and Neuroticism-Stability dimensions have also been associated with stress. The extravert focuses attention and interests on the external world, while the introverts' interests and focus are directed towards the inner world of themselves for ideas and concepts (Miller & Cooley, 1981). Individuals high on the neuroticism dimension tend to be prone to worries, anxieties and are easily upset. Surprisingly, however, few studies of stress have investigated either of these variables, those studies that have, however, demonstrate remarkable stability in their findings.

The more recent interest in these variables appears to have grown from their association with cancer. For example, Kissen and Eysenck's (1962) results of a study involving 116 cancer and 123 control patients tested before diagnosis on Eysenck's MPI, indicated that the control group was higher on neuroticism than the cancer group.

More recently one longitudinal study of mental health, life events, and social support has shown that neuroticism accounted for 69% of the variance in a measure of mental health (Henderson, Bryne & Duncan-Jones, 1981). Payne (1988) examined the mediating influence of neuroticism on the pressures of unemployment and psychological well-being over a period of two years. Results indicated that neuroticism was the only variable that accounted for a significant proportion of psychological wellbeing. It was hypothesised therefore that neuroticism alone was the major dispositional characteristic predisposing individuals to psychological wellbeing, that is, people low on neuroticism, under pressure were less likely to show symptoms of psychological distress than people high in neuroticism.

Duckitt (1984) using the 16PF, attempted to determine the personality traits which influence the relationship between social support and psychological distress. Only one of the 16 personality traits, showed any significant influence with social support, specifically extraversion. Results indicated that extraverts with low levels of social support reported higher levels of psychological distress than non extraverts, and extraverts with social support reported reduced distress.

Likewise Hotard, McFatter, McWhirter and Stegall (1989) found Extraversion

measured by both the 16 PF and the Eysenck Personality Inventory in general was related to greater subjective well-being. However unlike Duckitt (1984) the relationship was found to be mediated by neuroticism. That is, only among those people scoring high on neuroticism, did a positive relationship exist between extraversion and subjective well-being.

In a 7 year longitudinal study, Ormel and Wohlfarth (1991) examined the relationship between neuroticism, long term difficulties (those stressors lasting for a period greater than 2 months), life situation change (the extent to which a person's life situation improved or deteriorated between measurement occasions) and psychological distress. Their most striking result was the direct effect neuroticism held in the prediction of psychological distress over a period of 7 years.

Among teachers, Pratt (1976 cited Kyriacou, 1980) employed the Eysenck Personality Inventory and found significant correlations between his measure of reported stress and both neuroticism and extraversion. In a further study on teachers, Innes and Kitto (1989) used longitudinal data collected over 8 weeks to determine the influence of neuroticism, extraversion and perceived stress on health outcome as measured by a physical symptom checklist developed by House, Well, Landerman, McMichael, and Kaplan (1979), and the Health Opinions Survey (MacMillan, 1957) to indicate psychological stability. Results indicated that Neuroticism was an important predictor of both psychological and physical symptomatology, cross sectionally and longitudinally. Innes and Kitto indicated that the individual with high neuroticism was more likely to report health symptoms because they

were more sensitive to external stimuli and therefore react strongly towards them. Similar results have been found by Fontana and Abouserie's (1993) study of 95 Welsh school teachers. Their results indicated that neurotic teachers were significantly more prone to stress than stable teachers.

Summary of Personality Factors and Stress Research.

Research has to various extents linked all four personality variables examined to stress outcome. Personality does not however, appear to be the only variable associated with mediating stress responses. Psycho-social variables such as coping behaviour have also been found to mediate the stress response. The following section briefly examines some of the psycho-social variables associated with stress.

Moderating Variables and Stress Research

A further broad set of factors that have been found to influence the stressor-stress relationship are moderators such as social support, coping, and self esteem. These variables may be thought of as dynamic or plastic moderators since they change over time. According to Pearlin and Schooler (1978) the main aims of such moderators are to eliminate or modify the conditions causing the problem, to recast the experience in some way so that it seems less problematic, and to keep the emotional consequences of the problems within the person's capability.

Coping

As a mediator, the role of coping strategies in the aetiology of stress outcome has long been recognized, but only recently has it become a focus of research (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984). Coping strategies have been conceptualized as the individual's cognitive and behavioural efforts to manage environmental demands (Lazarus & Folkman, 1984).

Billings and Moos (1981) assessed the ways in which people coped with stressful events. They found that individuals invoked different styles of coping behaviour depending on the type of stress, using a more emotional style of coping for health related stressors and more problem focused for work-related stressors. Folkman, Lazarus, Gruen et al. (1986) indicated that problem-focused coping strategies were also associated with work related stressors and the use of these strategies was associated with more favourable outcomes for the person. In a more recent study Kohn, Hay and Legere (1994) found that for undergraduate college students, task oriented coping correlated negatively with perceived stress and psychiatric symptomatology, whilst emotional focussed coping was positively correlated with perceived stress.

Pearlin and Schooler (1978) in a detailed study of the structure of coping, attempted to investigate the efficiency of a number of different coping responses. Results tended to indicate that coping interventions were more effective when dealing with interpersonal problems such as marriage and child rearing, and less effective when dealing with

occupational factors.

Among teachers, little work has been conducted examining their coping mechanisms. Kyriacou (1980), however, has suggested that coping mechanisms among teachers in general reflect two components. The first component he termed direct actions, which were concerned with the sources of stress per se, for example, transferring a disruptive student who is a source of stress. The second component he termed palliative which dealt with the experience of stress. Palliative tactics were considered to include denial, use of drugs and somatic orientated approaches. This is a reflection of Lazarus's dichotomy (Lazarus, 1975; Roskier & Lazarus, 1980), and in a more relevant context appears to be reflective of Billings and Moos (1981) distinction between problem and emotional focused mechanisms. Palliative coping techniques being equated with emotional focused mechanisms and direct action techniques appear to be indicative of problem focused mechanisms.

Dewe (1986) analysed a sample of 1000 teacher self-reported coping mechanisms. It appeared that the most frequently used responses were palliative. Dewe suggested that this was possibly due to the fact that it was the only one effectively available for use.

Social Support

Interesting evidence exists to suggest that coping mechanisms per se are not the only moderating variables capable of reducing the effects of ill health from stressors.

Graf (1986) indicated that social support provides an individual with the necessary psychological supplies for the maintenance of mental and emotional health. While the definition of social support is a source of disagreement among writers, they agree at least that it "involves some kind of relationship transaction between individuals" (Zimet, Dahlem, Zimet & Farley, 1988, p. 31). More specifically, Shumaker and Brownell (1984) characterize social support as an exchange between at least two individuals, which is perceived by at least one of the individuals to be intended to enhance the well being of the recipient of the support.

Measures of support generally focus on either the number of friends to whom an individual can turn in a crisis (quantitative measure), or the individual's evaluation or perception of the adequacy of available supports (qualitative measure). Sarason et al (1983) suggest that these two measures may be different dimensions of social support, and that both are independently important in dealing with stressors. However, Zimet et al. (1988) claimed that most authors have found that perceived social support by the individual is a better predictor of psychological health, than quantitative measures of social support.

The exact nature of the social support/stress relationship, however, is uncertain. Antonovsky (1974) suggested that supportive others serve as a generalized resistance resource against the effect of social stressors. Cassel (1974, 1976), in a theoretical analysis of the relationship between social factors and stress, has suggested that social supports act as protective factors buffering or cushioning the individual from the physical or psychological consequences of exposure to the stressor situation.

Gore (1978) in her longitudinal study found that men who received high levels of social support from their families following redundancy showed lower levels of psychological stress, as measured by the extent of depression, than did those receiving low levels of social support. Here, social support mediated between stress and potential stressors (Gore, 1981; Cohen & Wills, 1985).

Some researchers maintain that social support deficits may contribute to stress independently of other stressors, having what is termed a direct effect. For example, Andrews et al. (1978) found no evidence for the buffering hypothesis of social support. However they did find that psychological impairment, as defined by the General Health Questionnaire was significantly related to social support. Still others believe that the effect of social support on health is not well established and that there are many methodological limitations to studies indicating effects (LaRocco, House & French, 1980).

Among teachers, an abundance of literature exists informing teachers to learn to cope with stress. Much of this literature suggests that teachers should increase the support they obtain from their environment and friends. For example, Kyriacou, (1981), Dunham (1984), Otto, (1986) and Cole and Walker (1989), all suggest increasing social support as a means to reduce stress. However, there has been little investigation into the support teachers receive, most is based on anecdotal evidence, yet as indicated earlier teachers do have feelings of isolation.

Russell, Altmaier and Van Velzen (1987), examined the effects of job related stressful

events and social support on burnout of 316 teachers. Results indicated that social support received from the teacher's supervisor, reassurance of worth and reliable alliances (having people available in your social support network that you can turn to in an emergency) were predictive of burnout, explaining 5.0 to 6.3% of the variance of burnout scores in addition to that explained by job stressors or teacher characteristics. Specifically, the presence of these supports had a positive effect on the reduction of burnout.

In addition to these work-based supports, Russell et al. (1987) found that relationships maintained outside of the work place were also useful in reducing the effects of stressors. Zabel and Zabel (1982) examined the impact of social support from administrators, colleagues and parents of students in a special education programme and the effects that this support would have on teacher burnout (Support was measured by rating, and the Maslach Burnout Inventory was used to estimate burnout). In a survey of 100 teachers, results indicated that support was correlated with burnout, those teachers with higher ratings of support reporting less burnout.

Brenner et al. (1985) used a systems approach and LISREL to determine the effects of social support in the stress-illness chain of events. In a longitudinal study, 63 teachers answered two questionnaires at 6 month intervals. Research results indicated that social support from colleagues and supervisors was not a significant mediator of the stress process.

These findings are inconsistent with Russell's et al. (1987) findings and other findings examining the importance of social support. Tellenback et al. (1983), Kyriacou and Sutcliffe (1978b), Mykletun (1984) and D'Arienzo et al. (1982) have all indicated that

relationships between colleagues and principals is a stress source rather than a moderator. Brenner's et al. (1985) inconsistent finding could therefore be expected.

Social support has not always found to be important in the stress process, for example Sheffield, Dobbie and Carroll (1994) evaluated the relationship between well-being as measured by the General Health Questionnaire and social support. Results of their survey of 120 secondary school teachers in Scotland found that social support was of little consequence in the prediction of psychological well-being.

One may conclude that findings with regard to social support have been inconsistent, several studies have reported evidence for a buffering effect, (e.g., Cobb 1976; Gore, 1978; Karasek, Triantis & Chaudhry, 1982, Kobasa & Puccetti, 1983; LaRocco et al. 1980; Wilcox, 1981), while other studies have found a direct effect (e.g. Aneshensel & Stone, 1982). With respect to this issue it may be that both hypotheses have validity, that during times of stress social support is an effective coping mechanism, and at those times it displays a buffering effect. Moreover it may be concluded that both buffering and direct effect models may be acting at the same time, and that results are dependent on the statistical techniques used by the researcher.

Self Esteem

Kobasa (1987) suggests that self esteem is the degree to which "individuals hold positive views and reject negative views about themselves: respectively the presence of self

esteem and the absence of self denigration" (p. 318).

Pearlin and Schooler (1978) used information gathered from interviews with 2300 people from Chicago, aged 18-65. They found that attitudes towards the self were an important resource in the mediation of the stress response. More specifically, the presence of favourable attitudes towards the self and the absence of attitudes of self denigration were useful in mediating the stresses resulting from marriage, occupation and parenting. Lundgren (1973), using self report questionnaire data from 285 people, also found that self esteem is an important attribute in mediating the effects of stress.

Cronkite and Moos (1984) investigated the effects of moderating factors in the stress-illness relationship among 242 families over a 12 month period. Results indicated that depressed mood was related to lower self esteem. Moreover among families the alleviating effects of self esteem were stronger for those people whose partners had high self esteem. In a 7 year longitudinal study Ormel and Schaufeli (1991) indicated that self esteem was moderated by stress, those people under stress experienced significant drops in their self esteem.

Beer and Beer (1992) undertook to examine the relationship between depression, self esteem, and stress for a group of 92 school teachers in the U.S. Results indicated that self esteem was negatively and significantly correlated with total stress and depression.

Fletcher and Payne (1982) in a study of 148 teachers from the United Kingdom, found

that teachers had a higher than mid point score of self esteem as measured by questionnaire. Results also indicated no correlation between self esteem and any variable indicating stress. They concluded that self esteem does not moderate stress-strain relationships, or job satisfaction. Likewise Howell, Bellenger and Wilcox (1987) found that self esteem did not relate to stress as measured by job satisfaction, nor did self esteem moderate the relationship between occupational stress, as measured by role stress and job satisfaction.

This is in contrast to the above findings and also in contrast to the conclusions of Kobasa (1987), who suggested that although a paucity of research exists in the area of self esteem and stress, it appears to be a useful mediator. These inconsistent findings are questionable, however; Fletcher and Payne's (1982) results appear to be paradoxical, the teacher population showing higher than average levels of depression and higher than average levels of self esteem. Depression and self esteem are usually negatively correlated, therefore it would be unlikely that people high in self esteem would also be high in depression, one must therefore question his measures of stress.

Summary of Moderating Variables

The last three sections briefly presented a number of factors which appear to influence the relationship between stressors and stress. The factors examined included biographical information, the effect of which was undetermined; personality characteristics and psycho-social moderators, the nature of these effects again varying.

The remainder of Chapter Three examines the outcome of the interactions of these biographical, personality, and psycho-social variables with the stressors. That is, the presence of stress. This section is divided into two subsections firstly reviewing literature concerned with the prevalence of stress in teaching, and secondly looking at reported symptoms of stress among teachers.

The Prevalence of Stress in Teaching

In the USA alone, over 1000 workshops were given across the country on the topic of teacher stress during the 1970's. In 1978 the Chicago teachers union conducted a survey to determine the significance of stress and anxiety among their membership. The results revealed that 56.6% of 5000 respondents claimed to have experienced physical and/or mental problems as a direct result of stress in their job experiences (Walsh, 1979).

Feitler and Tokar (1982) surveyed 3,300 USA teachers using a 19 item checklist called Diagnosing Personal Stress. Results indicated that 16% of teachers perceived their job to be very stressful, while 76% of teachers rated their jobs as being stressful. Interestingly, only 7% indicated that their jobs were not stressful.

Kyriacou (1980) asked 257 British teachers to respond to the question "In general how stressful do you find being a teacher?" Results indicated that 4.7% were not stressed, 37.7 % reported being mildly stressed, 37.7% were moderately stressed, 15.6% reported

feeling very stressed and 4.3% said they were extremely stressed. Further analysis of the responses in terms of biographical information (e.g., sex, age, years experience), revealed no differences in terms of levels of reported stress.

Kloska and Ramasut (1985) surveyed 64 teachers in four British comprehensive schools using the same categories as Kyriacou (1980), finding slightly higher percentages of self reported stress. 1.56% indicated that they were not stressed, 9.38% slightly stressed, 54.69% moderately stressed, 28.13% very stressed, and 6.25% reported feeling extremely stressed. Proctor and Alexander (1992) found even higher levels of self reported stress in their study of 256 Scottish teachers. In response to the question "How stressful do you find teaching?" 67% found teaching to be considerably or extremely stressful, 32% found teaching slightly stressful and only 2% found it not at all stressful.

These results were similar to Fimian and Santoro (1983) who, using a Likert type self report questionnaire surveyed 365 full time special education teachers in Connecticut, USA. Results indicated that 25.5% had attended stress management workshops, 49.3% regularly took mental health days off due to job-related distress, and 8% reported seeking professional help for job-related stress.

Within Australia evidence of the increase in stress among teachers comes from ad hoc reports in newspapers and governmental reports on absenteeism and retirement rates. For example The Australian (April, 1990) suggested that the NSW Ministry of Education spent an estimated 50 million dollars in pensioning off teachers suffering from stress. In the four

years between 1980 and 1984 about 160 teachers per year in the state of Victoria were granted superannuation payments in the form of pensions. The mean age of teachers reportedly pensioned off for stress reasons was 44-45, and the reason stated for retirements in one half to two thirds of cases was psychological ill health. Approximately a further 10% of the retirements were for cardiovascular problems. In addition, hundreds of teachers each year apply for workers compensation for stress-related ill health (Otto, 1986).

In Western Australia, approximately 15% of the total teaching population (2138 teachers from Government schools) took part in a self report survey. Results indicated that 40% of Western Australian teachers could be considered, on the basis of their responses, to be experiencing psychological stress. This was 20 - 30% higher than what would be expected in the general population in the major city (Perth) of that state (Louden, 1987). In a further study of Western Australian teachers, Lock (1993) found that 80% of teachers perceived teaching to be moderately stressful, and of those that rated teaching as stressful almost 32% rated teaching as being very or extremely stressful.

In sum, self reports, retirement and workers' compensation data all indicate that teaching is a relatively stressful occupation.

Symptoms of Stress Among Teachers

Dunham (1984), suggested that there are two main classes of stress responses reported by teachers. The first he termed frustration and associated symptoms including

headaches, stomach upsets, sleep disturbances, hypertension and body rashes. Dunham further suggested that if these symptoms continued, depression was the likely outcome. The second response set he termed anxiety, and associated symptoms including feelings of inadequacy, loss of confidence, confusion in thinking and panic.

In 1984 Dunham collected a number of stress responses of teachers from self reports and interviews with teachers. Results indicated that stressors resulted in considerable staff frustration, which was expressed as irritability, and anger. Dunham noted that the other major response was anxiety. Dunham also suggested, however, that stressors were likely to cause the development of psychosomatic symptoms which included, stomach upsets, pain, skin disorders, and ulcers. Absenteeism, early retirement, leaving teaching and withdrawal were further responses to occupational stressors.

Cunningham (1983) suggested the symptoms of teacher burnout often began with feelings of unease, and included being tired, dissatisfied and depressed. Teachers who experienced burnout had associated physical maladies such as insomnia, frequent colds, headaches, loss of appetite or loss of sexual interest. Furthermore, Mace (1979) suggest that if such symptoms existed over an extended period of time they would develop into psychosomatic illnesses, such as obesity, respiratory problems, ulcers and coronary heart disease.

Cichon, Koff and Kotsakis (1978 cited in Needle, Griffin & Svendsen, 1981) indicated that more than half of the teachers in their sample reported experiencing physical illness,

which they believed was related to work stressors. In a study by Needle et al. (1981), 45% of all teachers reported suffering from chronic physical illnesses, such as high blood pressure, kidney or bladder trouble, insomnia, gastritis, asthma and heart disease. Furthermore, 96% of the respondents indicated that they experienced at least one symptom of physical illness such as feeling completely worn out at the end of the day, finding it difficult to get up in the morning, poor appetite, tightness in the chest or headaches.

As a second indicator of health status Needle et al. (1981) used a general well being scale (an 18 item questionnaire designed to measure selective aspects of subjective well-being e.g., good spirits, feeling sad or tired). Results indicated that 37% of the teachers reported feeling bothered a little of the time by illness, bodily disorders or fears about health.

Spanoil and Caputo (1979) found teachers to be suffering from one of two sets of symptoms of stress - personal and organizational. Included amongst personal symptoms were fatigue, worry, anxiety, anger, and cynicism (thought to measure burnout). The organizational variables included increased absenteeism, low motivation levels, a decline in performance and lack of communication. Otto (1986) investigated job satisfaction among teachers. Findings indicated that only one in four teachers scored high in job satisfaction and 20% indicated dis-satisfaction with teaching. Moreover Otto found that job satisfaction scores were inversely related to job stress and directly related towards teachers' intention to stay or leave.

Pratt (1978) found in his study of 124 primary school teachers that about 25% of his

sample obtained a score on the General Health Questionnaire (GHQ) that indicated psychiatric morbidity. Kyriacou and Pratt (1985) also found that there was a significant and strong positive correlation between teacher stressors (as measured by the Teacher Event Stress Inventory) and mental health, specifically anxiety, somatic and depressive symptoms (as measured by the Middlesex Hospital Questionnaire). Likewise, Fletcher and Payne (1982) indicated that teachers had a higher than average score on depression as measured by the Middlesex Hospital Questionnaire. They also indicated that depression correlated significantly with such occupational stressors as high work demand and lack of support.

In Travers and Cooper's (1993) study of occupational stress among British school teachers mental ill health as indicated by depression and generalized free floating anxiety was significantly higher than the national norms. This was perhaps confirmed by Proctor and Alexander's (1992) study of Scottish school teachers who found that 38% displayed clinical levels of anxiety. Travers and Cooper also found that 66.4% had considered leaving teaching, 27.6% were currently seeking alternative employment, and 13.3% were seeking premature retirement.

Overall the symptoms of stress may be classified in three ways, employing physical, psychological and/or behavioural indicators. Examples of various manifestations of stress exhibited physically include: shortness of breath, stomach problems, ulcers, coronary heart disease, headaches, skin irritations and blurred vision (Bloch, 1978; D'Arienzo et al. 1982; Cooper & Marshall, 1976; Needle et al. 1981). Psychologically teachers may suffer from depression, general feelings of worthlessness and insecurity, family problems, increased

irritability, negative attitudes towards their students, confused thinking, frustration, anger, anxiety (Cunningham, 1983; D'Arienzo et al. 1982; Dunham, 1984). Lastly teachers may also exhibit stress through behavioural manifestations by an increase in absenteeism and or a general reluctance to attend work, a decrease in job satisfaction, a withdrawal from all external school related activities, and an increase in alcohol and drug consumption (D'Arienzo et al. 1982; Dunham, 1984; Cooper & Marshall, 1976; Weiskopf, 1980).

Overall Summary

The following points emerge:-

i) That certain occupational characteristics and life events lead to adverse outcomes. Specifically, the idea that certain job characteristics lead to adverse outcomes has received much attention in the literature and among teachers the list of job stressors is long. Research indicates that teachers complain of work overload (Mykletun, 1984), role conflict and role ambiguity (Schwab & Iwanicki, 1982), clerical and administrative duties (Lawrenson & McKinnon, 1982), inadequate facilities, teaching load (Rudd & Wiseman, 1962), lack of decision making capability, responsibility (Dunham, 1984), pupil behaviour, relationship with colleagues, principals and public (Sandven, 1972; Kyriacou & Sutcliffe, 1977), organizational issues such as pay and poor career progression (Margolis et al. 1974).

Life stressors have also been included in the stressor-illness relationship. Holmes and Rahe's classic 1967 work indicated that life stressors play an important role in the

development of illness.

ii) That personality characteristics of the person influence the stressor-stress outcome relationship. The research examining the personality characteristics of the person and their influence on the demand stress outcome relationship is typified by Kobasa (1979), and Johnson and Sarason (1978), who indicated that not all people suffer psychological or physical impairment with the onset of similar environmental demands. This stress resistance has been associated with a variety of resources. Research suggests that Type A behaviour pattern (Friedman & Rosenman, 1974; Kobasa, 1987), Hardiness (Kobasa, 1979; Kobasa, Maddi & Kahn 1982; Kobasa, Maddi & Puccetti, 1982), Locus of control (Rotter, 1966; McIntyre, 1984; Kyriacou & Sutcliffe, 1979), and Introversion/Extraversion (Kissen & Eysenck, 1962) have all been found to influence the extent to which a person suffers psychological or physical impairment due to environmental demands.

iii) That variables such as social support, coping behaviour and self esteem affect the stress-outcome relationship. The influence of variables such as Social Support (Graf, 1986; Sarason et al. 1983; Cassel, 1974, 1976; Gore, 1978), coping behaviour e.g. generating alternative solutions to a problem, (Billings & Moos, 1981; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986) and self esteem (Kobasa 1987; Pearlin & Schooler, 1978; Cronkite & Moos, 1984) on the demand-stress outcome relationship has been the focus of much research, however, results have tended to be confusing and inconsistent.

iv) That biographical variables affect the demand-stress outcome relationship. Research examining the influence of biographical variables on the stressor-stress relationship have examined a plethora of variables. Despite this pursuit results have been consistently inconsistent.

v) That a large range of symptoms of stress occur, varying from those involving physical and psychological sequela to behavioural changes including job dissatisfaction and increased employee turnover.

Thus it can be seen that stressors acting upon teachers are many and varied, as are the resources teachers bring to combat the stressors. The following chapter presents the information pertaining directly to the current study. The chapter firstly presents a summary of the major problems associated with the research on stress highlighting areas for study, and questions for investigation. The chapter will also present the conceptual framework for the remainder of the thesis.

CHAPTER FOUR

CONCEPTUAL FRAMEWORK OF THE PRESENT RESEARCH

Introduction

Modern research concerned with stress has begun to centre upon the development of a clear model of the stress process. This research has been guided implicitly or explicitly by a general model, which assumes that work or life conditions lead to perceived demands on the individual. These demands if unmet lead to stress related outcomes such as depression, anxiety and physical illness (King, Stanley & Burrows, 1987; Tetrick & LaRocco, 1987). The models generated appear to have in common one of four general facets: work or life stressors, personality, psycho-social moderators, and/or biographical characteristics.

In the previous two chapters outcomes surrounding stress research were presented. This chapter seeks to present the conceptual framework for the current study. The first area of discussion highlights the limitations of previous stress research and it has been from these limitations that the current study has been developed. These limitations were classified into two general areas either limitations relating to the research itself or limitations relating to the selection of models to explain relationships. The chapter then outlines the current research and provides hypotheses for examination.

Limitations

The following two subsections are concerned with the limitations present in much of the previous stress research. For ease of reading they have been summarized under two sections, limitations in research and limitations in model development.

Research

Even though the models of stress tend to share similar constructs, little work has examined the full range of potential job-related stressors acting at one time. Instead, most studies have examined the effect of a few stressors at one time. It is also of note that most research has concentrated on occupational or life stressors rather than both at the same time, thereby not elucidating the potential interaction between these two sources of stress. Studies dealing simultaneously with many or all of these variables are necessary to understand whether their effects are largely independent of each other or whether they influence or mediate through another variable.

As with research focusing on work and life stress variables, many studies have examined only one personality variable at a time, and in isolation from other variables such as job demands or coping behaviour. Generally, studies have also failed to examine the relationship between social support, coping and stressors. One exception is the research conducted by Billing and Moos (1981) who suggested that a relationship existed between social resources and coping methods. Billings and Moos (1981) proposed that studies and

analyses which only include one of these constructs will overestimate the importance of one or the other in functioning. Studies have also failed to examine style of coping in relation to personality traits. The importance of examining the relationship between personality variables and coping strategy is illustrated by Kirmeyer and Diamond (1985). The research focused on the way in which police officers with different personality characteristics appraised and coped with stressful events. Results indicated that those officers with type A behaviour patterns selected coping strategies that were more active and narrowly focused on the problem than did those with type B patterns.

It appears then that studies dealing simultaneously with many or all of these variables are necessary to understand whether they influence or mediate through another variable.

It is also possible in relation to work stresses, that many of the variables examined in different studies are in fact qualitatively similar and are thus measuring a similar construct. It appears that a useful aim would be to examine a full range of potential work stress variables for a particular sample and then examine their co-variation.

Thus one of the first questions of the current study is concerned with the reduction of the number of occupational stress variables, contained in the study. Similarly the number of possible biographical variables used in stress studies also have been large. Therefore, phase one of the current research is also concerned with their reduction and the nature of their relationship with stress outcome variables.

Problems also occur when one examines the measures of stress. Research studies to date have used a substantial and varied cross-section of measures designed to represent stress outcome. Examination of the literature indicates that these different measures have different predictors. A useful aim and thus a further research issue would be to examine different stress outcome variables, on the same sample population, and thereby determine whether there is an overlap among the predictors.

Model Formulation

To date, although many models have been developed, few if any have been empirically tested. Rather, most remain within the realms of theory, only a few are tested on samples to see the process in action. Model research has also not been successful in demonstrating how work stressors, life stressors, personality and psycho-social variables may interact, often because not all classes of variables have been included in the same research. A further aim for the present research is thus the generation of a model of the stress process which includes all of these variables. Moreover, with the exception of a few studies, most research examining the influence of these variables have been cross-sectional in design. The exact nature of the relationship between the variables and stress is thus not open to causal inference, and as a consequence research may well benefit from increased longitudinal research.

There is also little research examining how failure or success in meeting a demand in the past will affect an individual's ability to meet or cope with a demand in the future

(Kyriacou & Sutcliffe 1978a; Wild & Hanes, 1976). This problem takes on more importance in the light of the work by Grant, Patterson, Olshen and Yager (1987), who indicated that the person's antecedent health had received little attention from research. Moreover when it had received attention it was often regarded as noise, confounding the stressor-stress relationship and removed by statistical manipulation. In a study examining the importance of prior level of illness, Grant et al. (1987) found that the best predictor of stress outcome (as measured by the 66 item Symptom Checklist) was level of previous symptoms. As a consequence a further issue for investigation related to the current research is the importance of an individual's stress level at any given time on his or her future stress level.

Clearly, the limitations of previous research suggest that it would be useful to generate an empirical theoretical model that proposes relationships among variables. Upon generation, the model may then be tested or re-examined on a second sample, which would be both longitudinal and cross-sectional and therefore provide some answers to the influence of stress outcome variables on the stress process. The research sought to accomplish this in two phases:-

- a) Reduction of Variables (PHASE I)
- b) Generation of an empirical model (PHASE I)
- c) Testing of this model (PHASE II)
- d) Examining for possible feedback loops. (PHASE II).

Phase I

Phase I was initially concerned with the reduction of the various stress variables to a more manageable number and the creation of empirical models using cross-sectional research.

Reduction of Variables

The first phase of the current study is a cross-sectional study that examines the relative significance of occupational and life stressors, personality, psycho-social variables and demographical variables in the prediction of stress. Due to the large numbers of occupational stressors available there is a need to check for any co-variation in the variables. Factor analysis was thus chosen to examine for redundancies among these variables.

As indicated previously the importance of demographic variables in the prediction of stress outcome was uncertain. During this phase of the research the utility of demographic variables in the prediction of stress outcome was assessed by MANOVA.

Generation of an Empirical Model

Most models on stress have as their basis stressors producing a stress reaction be it behavioural, psychological or physical. These models have been mostly theoretical in

nature and, as indicated previously, little research has focused on generating an empirical model of the stress process. Moreover the models generated often do not include all classes of variables identified (demographic, work stressors, life stressors, personality and psycho-social moderators). Those models generated often only account for a small proportion of the overall variance in the outcome variable. It is expected that by the inclusion of all classes of variables in the model a greater proportion of variance in the outcome variables will be accounted for and furthermore that the interaction of these variables will be elucidated.

It is also expected that by the inclusion of psychological, physical and behavioural stress measures the independent measures will interact differently with each of these. This may provide reasons for differences found between models in the literature.

Phase II

Phase two of the current research is the longitudinal component of continual model development, testing and follow up.

Model Testing

As indicated earlier, much of the current models present in the stress literature are theoretical in nature and many of those that are data driven have not been tested on different populations. This section of the current research is aimed at re-testing the models

developed in the first phase of the research, on a new sample. It was expected that the relationships found in the first sample will hold in the second sample.

Longitudinal Development

As a further extension of the current literature the present research sought to determine whether the models generated cross-sectionally in phase one of the current research would generalise to longitudinal models. Moreover since a measure of stress was taken at the beginning of the testing period the influence that this pre-existing level of stress had on future levels of stress (feedback loops) would thus be open to examination.

Summary

The present study is divided into two phases. The first phase seeks to reduce the number of variables and develop a data driven model of the occupational stress process, and develop hypotheses regarding the relationship between variables found in the data driven model. The second phase aims to answer questions developed in the first phase and determine the importance of prior level of stress in the stress process. The Aims for phase one of the present study are:-

- 1) To reduce the 12 occupational stress variables in number by factor analysis before using these variables in further research.

2) To investigate the relationship between demographic variables and the stress outcome variables of psychological health, physical health, wanting to leave and job satisfaction.

3) To investigate the effect that the demographic variables would have on the independent measures.

4) To investigate whether different independent variables will predict different stress outcome variables.

5) That as a necessary precursor to phase two, a model of the stress process will be developed and further aims for investigation will be developed.

In sum, the aims and rationale for the first phase of the current research have been presented. The following chapter is concerned with the methodology of the research for phase one.

CHAPTER FIVE

METHOD PHASE ONE

Subjects

A total of 700 teachers from the Western Australian Ministry of Education were approached. Letters and questionnaires were mailed with the approval of the Teachers' Union, and were distributed through school principals. Of those 700 teachers, 230 (32.8%) responded, consisting of 95 (41.3%) males and 135 (58.7%) females. Respondents ranged in age from 21 to 64 years with a mean age of 37 years. Tenure ranged from 1 to 45 years with a mean of 12.5 years. This return rate although low is not inconsistent with similar research conducted in Western Australia. For example, Lock and Jongeling (1994) obtained a return rate of 35% in their inquiry into the occupational stress of primary school teachers.

Questionnaire

The questionnaire examined biographical information (See Appendix I) and 27 different variables with clearly established relevance to stress. These 27 variables were classified into five groups based on already existing literature classifications. It must be pointed out, however, that in following other large scale research studies on teacher stress in Western Australia, most of the scales listed below are of North American origin and may contain minor cultural differences. However, like the General Health Questionnaire, which has been used extensively in studies by Punch & Tutteman (1991) and Loudon (1987) the

other scales were administered as they were without re-standardization for the Australian population. The scales were:-

1) Occupational Stressors:- Role Conflict, Role Ambiguity, Work Load, Job Responsibility, Job Future Ambiguity, Underutilization of Abilities, Inequity of Pay, Participation in Decision Making, Hours Worked, Extra Work, Administrative Support, and Relationships With Colleagues.

2) Life Stress:- Life Events Questionnaire.

3) Personality Variables:- Hardiness, Locus of Control, Type A Behaviour, Extraversion, and Neuroticism.

4) Psycho-Social Moderators:- Social Support, Problem Solving, Emotional Coping Mechanisms, and Self Esteem.

5) Stress Outcome Measures:- Psychological Stress (General Health Questionnaire), Physical Health, Wanting to Leave, and Job Satisfaction.

Information on each of the scales incorporated into the questionnaire compiled for the present research is provided below

Occupational Stressors

Role Ambiguity and Role Conflict

Role ambiguity refers to the lack of clear, consistent information regarding responsibilities of a person's occupation. Role conflict has been described as the simultaneous occurrence of two or more sets of behaviours for an individual (Schwab & Iwanicki, 1982). Both concepts were measured by Rizzo, House and Lirtzman's (1970) 14-item self-report questionnaire (See Appendix II). Each item is rated by the respondent on a 7 point likert scale. A high score on either scale is indicative of high levels of role ambiguity and conflict. Pierson (1981, cited by Schwab & Iwanicki, 1982) in an unpublished paper, examined the construct validity and found that Principal Components Analysis yielded a solution supporting a two factor structure. Cronbach coefficient alpha reliability was 0.85 for role conflict and 0.86 for role ambiguity.

Workload

Workload refers to the amount of work a person is given, and was measured by the Quantitative Work Load Index and the Combined Quantitative Work Load Index, see Appendix III. For both scales each item is rated by the subject on a 5 point likert scale. The two scales have demonstrated reliability of .76 and .83 respectively (Caplan, Cobb, French, Van Harrison & Pinneau, 1975), but no demonstrated validity.

Job Responsibility

Job Responsibility was measured by the Responsibility for Person E scale (Caplan et al. 1975), a 4 item measure, using a 5 point likert scale, with a reliability of .89, but no measured validity. The scale is shown in Appendix IV.

Job Future Ambiguity

Job Future Ambiguity refers to the amount of certainty the respondent had about his or her job and career. This was measured by the Job Future Ambiguity Scale, a 4-item measure, using a 5-point likert scale, with no tested validity but a reliability of .79. See Appendix V (Quinn, Seashore, Kahn, Mangione, Campbell, Staines & McCullough, cited in Caplan et al. 1975).

Underutilization of Abilities

Underutilization of Abilities refers to the under use of one's skills or training. This was measured by three items each using a 5-point likert scale. The scale has good reliability, $r=.85$. No validity has been given for this scale, it appears in Appendix VI (Caplan et al. 1975).

Inequity of Pay

Inequity of Pay was measured by a 3-item, 5-point likert scale with reliability of $r=.81$. No validation studies have been provided for this scale. With this measure Caplan et al. (1975) sought to determine the extent to which individuals are satisfied with their monetary remuneration for the work they perform (See Appendix VII).

Decision Making

Participation in Decision Making (Appendix VIII) was again measured by three, 5-point likert scales. No validity data was supplied but the scale had reliability of .8 (Lichet, 1961; Caplan, et al. 1975).

Hours Worked

Hours Worked, Appendix IX, refers to the number of hours worked by the respondent, and was measured by a single item response.

Extra Work

Overtime, Appendix X, was gauged by a single item response, requesting the amount of extra work the respondent had completed during the last week (Caplan et al. 1975).

Administrative Support

The relationship with the boss was assessed by the extent to which the respondent felt he/she had received or lacked support from superiors. It was measured by a slightly modified version of the 7-item likert style administrative support factor of the Teacher Occupational Stress Factor Questionnaire (Clark, 1980, cited in Morocco, Danforde & D'Aruenzo, 1982). The internal consistency of this scale is reported as .91 (Cronbach's alpha). The factorial validity of this scale was assessed by Principal Components Factor Analysis with Oblique solution (Morocco et al. 1982). Results indicated that this factor named administrative support, was independent of the other factors and represented the literature as a whole, (i.e., the literature has found administrative support or lack thereof, to be a producer of stress) (see Appendix XI).

Relationship With Colleagues

Relationship with colleagues, see Appendix XII, was assessed as the extent to which teachers felt that they had positive or negative relationships with their colleagues. It was measured by a slightly modified version of the 7-item Relationships with Teachers factor of the Teacher Occupational Stress Factor Questionnaire. The internal reliability of this scale is .85 (Cronbach's alpha). Evidence of the validity of the Teacher Occupational Stress Factor Questionnaire comes from Clarke (1980, cited in Morocco, Danforde & D'Aruenzo, 1982) and Morocco et al. (1982) both of whom obtained the same factor structure.

Life Stress

Life stress was measured by the Holmes and Rahe (1967) Social Readjustment Rating Scale, see Appendix XIII. Studies by Rahe (1968) and Rubin, Gundersen, and Doll (1969) with naval populations have shown that the Social Readjustment Rating Scale has low but consistent validity for predicting minor illness. Casey, Masuda and Holmes (1967) report test re-test reliability between .64 and .74 for a sample of 88 physicians with a 9 month re-test period. Life stress refers to the extent to which a person suffers from various life events over the past 12 months, for example, divorce or death of a family member. Each of these events have different values, and the person's total life stress is the sum of each of these values.

Personality Variables

Hardiness

Hardiness was measured by Kobasa's Hardiness Scale (See Appendix XIV) which consists of three dimensions, (commitment, control and challenge). Commitment is measured by the alienation from self and alienation from work scales of the Alienation test (Maddi, Kobasa & Hoover, 1979). Challenge is measured by the security scale of the California Life Goals Evaluation Schedule (Kobasa, Maddi & Puccetti, 1982). Control is measured by the external Locus of Control Scale (Rotter, Seeman & Liverant 1962) and the powerlessness scale of the Alienation Test (Maddi et al. 1979). These five scales have

shown high intercorrelations and define jointly one factor in a Principle Components Factor Analysis (Kobasa, Maddi & Kahn 1982). The Hardiness Scale has shown a test re-test reliability of .61 over a five year period, (Kobasa & Puccetti, 1983).

Locus of Control

Locus of Control was measured using the sub scale 'control' of Kobasa's Hardiness scale. This disposition was measured by the External locus of control scale (Rotter et al. 1962) and the powerlessness Scale of the Alienation Test (Maddi et al. 1979). Rotter's scale has demonstrated validity and reliability (e.g., Phares, 1976). The powerlessness measure shows an internal consistency of .88 and a test re-test reliability of .71 over a three week period (Kobasa, Maddi, & Puccetti, 1982).

Type A Behaviour

Type A Behaviour was measured by the Framingham Type A Behaviour Questionnaire, see Appendix XV. The scale consists of ten statements that characterise the overt behaviours that are descriptive of type A behaviour and gives a continuous score between 0 (type B or low type A) and 10 (high type A). Research by Haynes, Feinleib, Levine, Scotch and Kannel (1978) indicated that the scale had a reliability of .71 and .70 for males and females respectively. The Framingham Type A Scale has been validated against structured interview, with concordance rates of between 60-70% (Haynes et al. 1978; MacDougall, Dembroski, & Musante, 1979).

Extraversion and Neuroticism

Extraversion and Neuroticism were measured by Eysenck's (1958) 12-item true or false questionnaire, six questions assessing neuroticism and six questions assessing extraversion, see Appendix XVI. Correlations and factor analysis revealed that the 12-item questionnaire demonstrates good validity, and split half reliabilities were .79 for neuroticism and .71 for extraversion (Eysenck, 1958).

Psycho-Social Moderators

Social Support

Social Support was measured by the Multidimensional Scale of Perceived Social Support, a 12-item, 7-point likert scale, see Appendix XVII. Cronbach's coefficient alpha, a measure of internal reliability, was .88. Test re-test reliability coefficients over a period of 3 months was found to be .85. The scale also demonstrated strong factorial validity (Zimet, Dahlem, Zimet & Farley, 1988).

Coping Behaviour

Coping behaviour was measured by Billings and Moos' (1981) self report measure, The Methods and Focus Check List, see Appendix XVIII. The items are either problem focused (e.g., considering several alternatives for handling the problem, trying to find out

more about the situation) or emotional focused (e.g., trying to reduce tension by eating more, preparing for the worst) coping styles. Adequate internal consistency and independence of the focus of coping categories have been demonstrated previously (Folkman & Lazarus, 1980).

Self Esteem

Self Esteem was measured by the adult form of the Stanley Coopersmith Self Esteem Inventory. Bedeian, Geagud and Zmud (1977) computed test re-test reliability estimates for 103 college students. Coefficients were .80 for males and .82 for females. Concurrent, construct and predictive validity have also been demonstrated (Coopersmith, 1981).

Stress Related Outcomes

Psychological Stress

Psychological stress was measured by the 30-item General Health Questionnaire. The GHQ was developed for use in community surveys to detect non-psychotic psychiatric disorders (Goldberg, 1972). Reliability data have been reported by Goldberg (1978) who calculated split half reliability of the GHQ-60 at .92, and indicated similar results for the GHQ-30. Test re-test reliability is estimated at .90 for a 6 month interval. However, because GHQ scores are potentially highly variable for the same respondent over time, depending on the respondent's emotional state, test re-test estimates of reliability are

something of a methodological problem. It must be noted that the reliability estimates achieved are for people who did not change in their psychological stability over time. The validity of the GHQ has been demonstrated in terms of construct validity (Goldberg, 1972). It has also been normed on an Australian sample (Tennant, 1977).

Physical Health

Physical stress was measured by Belloc, Breslow and Hochstim's (1971) Physical Health Spectrum Questionnaire. The questionnaire utilizes 11 questions to place individuals on a continuum from severe disability to symptom free state. Andrews, Schonell and Tennant (1977) validated this scale for an Australian Community. They compared individuals' scores on the questionnaire with family physicians' assessments. The two sets of scores had a correlation of 0.84. A copy of this questionnaire is shown in Appendix XIX.

Wanting to Leave

A further measure, the extent to which a person was prepared to leave teaching, was assessed by a single item question shown in Appendix XX.

Job Satisfaction

Job Satisfaction was measured by the Job Satisfaction Index, a 7-item likert type measure developed by Kahn, Wolfe, Quinn, Snoek and Rosenthal (1964), a copy of which

is found in Appendix XXI.

Procedure

Subjects were contacted by mail using the internal mail system of the Western Australian Ministry of Education. Country subjects were chosen randomly, whilst all subjects in the metropolitan area were contacted only if their school was in the Ministry's Swanbourne education district of Perth Western Australia. Attached to the questionnaire was a letter outlining the research and soliciting the subject's responses (See Appendix XXII). Subjects returned their questionnaire through the Ministry's internal mail system. To prevent increased pressure on an already over surveyed population no letters of follow up were used in this phase of the research.

On return, the responses from the questionnaires were coded and prepared for further analysis. The data were subjected to three stages of analysis:-

- 1) Data reduction by the use of Factor Analysis.

- 2) Examination of relationships between variables within the model through correlational and descriptive techniques.

- 3) Model formulation through path analysis.

Results of this analysis are presented in chapter five.

Ethical Issues

Participants were asked to complete a set of questions about themselves. Some of these questions asked for detailed personal information about the participant's physical health, psychological health and personality. Reynolds (1982) indicated that participants in research studies risked invasion of privacy and embarrassment, however, since in this research, there was no post research consultation it was decided that there would be no major intrusion into the participants' private feelings, providing the responses were kept anonymous and confidential.

There were, therefore, two major ethical issues: (i) the qualification of the researcher to understand and handle the sensitive psychological, physical and personal information, and (ii) participant confidentiality. The researcher undertaking this study was a clinical psychologist and was authorized by statute to understand, interpret and keep in confidence the information collected by the research.

The issue of confidentiality was paramount. To achieve this, all responses in phase I of the research were anonymous. In Phase II participants were given a code as an identifier. At the end of the longitudinal phase the key to the code was destroyed, assuring the participants confidentiality. All participation in this study was voluntary.

CHAPTER SIX

RESULTS AND DISCUSSION, PHASE ONE DATA REDUCTION AND MODEL BUILDING

Overview

The following chapter presents the results and discussion of phase one, the cross-sectional component of the study. The results and following discussions are presented in four sections. The first section deals with reduction of occupational stressor measures and employs factor analysis to reduce the number of variables used. The second section uses MANOVA to examine the relationship of demographic variables to outcome measures of stress and the personality and psycho-social variables. Thirdly multiple regression and path analytic techniques are used to generate models for testing in the second phase of research. Finally a general formulation of the results of phase one, and questions for further investigation are presented.

Data Reduction (Research Aim 1)

Factor analysis is a multivariate statistical method used to summarize data by grouping together variables that are intercorrelated (Tabachnick & Fidell, 1983). The method used here follows that used originally by Spearman in 1904 when he analysed tables of intercorrelations between psychological tests to find underlying common factors. Thus

the factor analytic technique employed was used not simply to reduce data but also to reveal redundancies in sets of variables when it was considered that one or more variables behaved in a similar manner, that is, their correlations with other variables were similar (Tabachnick & Fidell, 1983). It must be noted that this was an exploratory factor analysis only and the results were used in conjunction with the prevailing literature in the selection of redundant variables.

Only one set of the variables, work stressors or demands was subjected to a Principal Components Factor Analysis with a Varimax Rotation and Kaiser Normalization. This was due to the large number of work stressor variables selected for investigation. Principal Components Analysis was chosen because the prime aim was data reduction and choosing of one marker variable to represent each factor. Marker variables were those observed variables with the highest factor loadings and/or greatest reliability. They were usually only correlated highly with one factor and defined clearly the nature of that factor. The solution was computed by using 1.0 as the initial estimate of the communalities (Tabachnick & Fidell, 1983).

Three factors with Eigen values greater or equal to one emerged from the analysis accounting for 49.6 % of the total variance, (Table 1). Factor 1 accounted for 26.5% of the variance. The marker variable used to indicate this factor was Role Conflict with a loading of .69807. Factor 2 accounted for 14.5% of the variance. The marker variable chosen to represent this factor was Role Ambiguity with a loading of .66244. Factor 3 accounted for 8.6% with its highest loading being for Extra Work, .74975.

Table 1

Factor Loadings of Principal Component Factor Analysis for Job Stressors.

Variable Name	Factor 1	Factor 2	Factor 3
Underutilization	0.47186	0.41033	-0.28097
Hours Worked	0.25446	0.0824	0.68006
Extra Work	-0.23229	0.15762	<u>0.74975</u>
Work Load	0.35439	-0.07776	0.54286
Decision	-0.17018	-0.4881	-0.03334
Responsibility	0.23926	-0.52668	0.43385
Future Job	0.04494	0.62516	0.052
Pay Inequality	0.65298	0.08629	0.08124
Role Conflict	<u>0.69807</u>	0.23548	0.33068
Role Ambiguity	0.21418	<u>0.66244</u>	0.13687
Admin Support	0.66864	0.40415	0.1507
Peer Conflict	0.56103	0.39263	0.02619

Note Marker Variables are Indicated by Bold and Underlined Type.

The findings that role conflict, role ambiguity and extra work were the salient variables in the factor analysis are not inconsistent with previous literature. Hamel and Bracken (1986) found that work load, underutilization of skills, role ambiguity and role conflict were the named factors in a factor analysis of the Job Stress Questionnaire for a mixed work force. However, when the sample was restricted to only professionals, results revealed only three factors, work load, role conflict and role ambiguity.

Demographic Variables (Research Questions 2 and 3)

Research question 2, enquired as to the relationship between the demographic

variables and the criterion variables of Psychological Health, Physical Health, Wanting to Leave the Job and Job Satisfaction. These relationships were assessed by the use of MANOVA, and a summary of these results are shown in Table 2.

Table 2

Summary Table of MANOVA for Biographical Variables.

	Psychological Stress	Physical Health	Wanting to Leave	Job Satisfaction
Gender	N.S	N.S	N.S	N.S
Age	N.S	N.S	N.S	N.S
Education	N.S	N.S	N.S	N.S
Years in Occupation	N.S	N.S	N.S	N.S
Location of Job	N.S	N.S	N.S	N.S
Hours in Contact with Students	N.S	N.S	N.S	N.S
Preference for Job Location	N.S	N.S	N.S	N.S
Grade Teaching	N.S	N.S	N.S	*

* = Significant at $p < .05$

N.S. = Not Significant.

In all but one case (Grade level taught), demographic data did not affect stress outcome measures. This result was consistent with previous research such as Kyriacou and Sutcliffe (1978b) and Hiebert and Farber (1984), who indicated that demographic variables such as age, gender, length of teaching experience and extent of training did not correlate

with perceived stress. These findings are replicated in the study of DeFrank and Stroup (1989). Louden's (1987) results of a survey of Western Australian teachers in 1984 also found no significant variations in stress due to demographic variables.

For Grade level taught [$F(1,227) = 4.29$ $p < .03$], results indicated that Primary school teachers reported greater job satisfaction ($M=19.2$; $S.D=6.8$; $n=122$) than Secondary school teachers ($M=17.6$; $S.D=3.9$; $n=97$). The findings are consistent with those of Feitler and Tokar (1982) who in a study of Texan teachers found that stress levels varied as a function of grade level taught, with teachers of lower grades reporting less stress than teachers of higher grades.

Research objective 3 aimed to determine the effect biographical information would have on personality and psycho-social measures. As Table 3 indicates a number of biographical variables were found to have associations with these measures, but no consistent pattern emerged.

Gender was found to produce differences in both hardiness [$F(1,216) = 14.96$ $p < .001$] and role conflict [$F(1,216) = 23.6$ $p < .001$]. For hardiness, results indicated that males reported less hardiness ($M= 69.2$ $S.D=11.9$ $n=91$) than females ($M=75.2$ $S.D=10.7$ $n=127$). This result is inconsistent with the early findings of Kobasa et al. (1983) and Nowack (1986) who indicated that gender was not a variable that influenced hardiness. Moreover it also contradicts the research that has suggested that hardiness is less pronounced among women than men (Holahan & Moos, 1985; Schmeid & Lawler, 1986).

Table 3

Summary Table of MANOVA for Biographical Variables

	Neuroticism	Type A Behaviour	Hardiness	Self Esteem	Social Support
Gender	N.S	N.S	*	N.S	N.S
Age	N.S	N.S	N.S	N.S	N.S
Education	N.S	N.S	N.S	N.S	N.S
Years in Occupation	*	N.S	N.S	N.S	N.S
Location of Job	N.S	N.S	N.S	N.S	N.S
Hours in Contact with Students	N.S	N.S	N.S	N.S	N.S
Preference for Job Location	N.S	N.S	N.S	N.S	N.S
Grade Teaching	N.S	N.S	N.S	N.S	N.S

	Role Conflict	Role Ambiguity	Life Events	Extra Work
Gender	*	N.S	N.S	N.S
Age	N.S	*	*	N.S
Education	N.S	N.S	N.S	N.S
Years in Occupation	N.S	*	*	N.S
Location of Job	N.S	N.S	*	N.S
Hours in Contact with Students	*	N.S	N.S	N.S
Preference for Job Location	N.S	N.S	N.S	N.S
Grade Teaching	N.S	N.S	N.S	N.S

* = Significant at $p < .05$

N.S. = Not Significant.

In the present study males were found to experience more Role Conflict ($M=31.9$ $S.D.=9.3$ $n=91$) than females ($M=24.9$ $S.D.=11.1$ $n=127$). This is consistent with Long and Gessaroli (1989) who also found that males reported experiencing more role conflict than females. This is of some concern since Bem (1975) indicated that greater stress could be experienced when prevailing sex role expectations are incongruent with occupational roles.

Age of individuals undertaking the survey, affected two variables, Role Ambiguity [$F(3,215) = 4.98$ $p<.01$] and Life Events [$F(3,215) = 4.43$ $p<.01$]. A comparison of means (Duncans Multiple Range Test, $p<.05$) indicated that older adults aged between 43 and 65 reported significantly less Role Ambiguity than adults aged between 21 and 42, indicating that as role becomes better understood with age less ambiguity arises. This result is shown in Table 4.

For Life Events, (Table 5) post hoc analysis (Duncans Multiple Range Test, $p<.05$), indicated that individuals aged between 21 and 36 experienced significantly more life event stress than individuals aged between 43 and 65, and individuals aged between 21 and 29 experienced more life event stress than individuals aged between 37 and 65.

Years in Occupation was found to associate with three biographical variables: Neuroticism [$F(3,215) = 4.4$ $p<.01$], Role Ambiguity [$F(3,215) = 3.7$ $p<.01$]; and Life Events [$F(3,215) = 4.2$ $p<.01$]. A comparison of means (Duncans Multiple Range Test $p<.05$) are displayed in Tables 6 to 8.

Table 4

Means of Role Ambiguity for Age of Teachers

Age	Role Ambiguity	
21-29	21.6	a
30-36	22.1	a
37-42	19.9	a
43-65	16.6	

Note: Means not sharing a common subscript are significantly different,
Duncans Multiple Range Test $p < .05$.

Table 5

Means of Life Events for Age of Teachers.

Age	Life Events		
21-29	211.9	a	
30-36	192.3	a	c
37-42	165.1	b	c
43-65	136.2	b	

Note: Means not sharing a common subscript are significantly different
Duncans Multiple Range Test $p < .05$

As can be seen from Table 6 it seems that the more years spent in the occupation the less neurotic a person appears. Overall younger teachers scored higher on Neuroticism than older teachers.

Table 6

Means of Neuroticism for Age of Teachers.

Age	Neuroticism		
21-29	1.04	a	
30-36	0.54	a	c
37-42	-1.12	b	
43-65	-0.8	b	c

Note: Means not sharing a common subscript are significantly different

Duncans Multiple Range Test $p < .05$

For Role Ambiguity (Table 7), teachers who had spent 1 to 11 years in the occupation demonstrated significantly more Role Ambiguity than teachers who have spent 18 to 45 years in the occupation.

Finally as in the case of Role Ambiguity, teachers who had spent between 1 and 11 years in the occupation had substantially higher mean Life Event ratings than those who had spent 18 to 45 years in the occupation, (Table 8), this is in keeping with the age and life events pattern of results.

Table 7

Means of Role Ambiguity for Years Teachers Have Spent in the Occupation.

Years in Occupation	Role Ambiguity		
1-6	21.3	a	
7-11	21.8	a	
12-17	19.9	a	b
18-45	16.8		b

Note: Means not sharing a common subscript are significantly different

Duncans Multiple Range Test $p < .05$

Table 8

Means of Life Events for Years Teachers Have Spent in the Occupation.

Years in Occupation	Life Events		
1-6	211.5	a	
7-11	179.9	a	
12-17	174.6	a	b
18-45	135.1		b

Note: Means not sharing a common subscript are significantly different

Duncans Multiple Range Test $p < .05$

Location of Job, whether in the country or city, was found to vary with Life Events only [$F(1,217) = 4.3$ $p < .05$], those teachers having city jobs demonstrated less Life Event stress ($M=165$ $S.D.=111$ $n=155$) than those in the country ($M=202$ $S.D.=132$ $n=64$). This would be expected, since a move to the country changes social and financial networks and thus country teachers would score higher on the life events questionnaire.

Finally, the Number of Hours in Direct Contact with the students varied significantly with only one of the mediator variables, that of Role Conflict [$F(3,215) = 3.01$ $p < .05$]. Duncans Multiple Range test ($p < .05$), see Table 9 indicated that those teachers in contact with students between 32 and 40 hours a week displayed significantly more Role Conflict than those teachers who had direct contact for up to 18 hours a week. In general it is reasonable that those teachers demonstrating more contact with students should have greater amounts of role conflict, since by the very fact of increasing contact with students they are increasing their exposure to situations in which role conflict may occur.

From the results the effects of demographic information on the presence of occupational stress appears to be limited. Current results did not elucidate the importance of demographic variables in the stress process. One may perhaps posit that in an ideal situation, or fully normalized environment, stressors and the reaction to them would be evenly distributed throughout the population, and not related to any demographic variables. The fact that some demographic variables are important in some situations and not others, may be a result of the skewness or non-normality of the sample of the population rather than a direct result of the demographic variable per se. Alternatively, the results could be due to

chance fluctuations in the data and not to any real effect.

Table 9

Mean Role Conflict Experienced by Teachers as a Result of Hours in Direct Contact With Students.

Hours in Contact with Students	Role Conflict		
0-18	24.3	a	
19-27	27.4	a	b
28-31	28.8	a	b
32-60	30.7		b

Note: Means not sharing a common subscript are significantly different

Duncans Multiple Range Test $p < .05$.

Correlation Procedures

Stepwise multiple regression analysis was then conducted to determine the best predictors of each of the four criterion measures of stress. This was necessary to address question four, which stated that different variables would predict different stress outcomes. Following these calculations, path analysis was conducted to address question five, that is to formulate the models for testing in a longitudinal fashion in Phase II of the research.

Psychological Stress

The significant predictors for psychological stress-related outcomes (As measured by GHQ-30) are shown in Table 10. This result indicates that teachers were more likely to report Psychological Stress if they also reported higher Neuroticism, higher Life Stresses, less Social Support, lower Self Esteem and higher Type A Behaviour.

Table 10

Results of Multiple Regression Analysis in Predicting Occurrence of Psychological Stress.

Dependent Variable	Independent Variable	Progressive R	Progressive R ²
Psychological Stress	Neuroticism	0.385	0.148
	Life Events	0.455	0.207
	Social Support	0.489	0.239
	Self Esteem	0.504	0.254
	Type A	0.519	0.269

Physical Health

The significant predictors of Physical Health are reported in Table 11. Like those

found for Psychological stress, high Neuroticism, Life Events, Type A Behaviour and low Social Support were the significant predictors of Physical Health, with a combined R^2 of .17. The exception was Self Esteem, which was not found to be a significant predictor of Physical Health.

Table 11

Results of Multiple Regression Analysis in Predicting Occurrence of Physical Health.

Dependent Variable	Independent Variable	Progressive R	Progressive R^2
Physical Health	Neuroticism	0.301	0.090
	Life Events	0.360	0.129
	Social Support	0.393	0.154
	Self Esteem	0.415	0.172

Wanting to Leave

The predictors of Wanting to Leave produced a combined R^2 of .17, the major predictors being low Hardiness, low Self Esteem, and high Role Conflict (Upper half of Table 12). Analysis of the hardiness construct however, revealed that the commitment dimension of hardiness was the important predictor for Wanting to Leave. Re-analysis

through Multiple Regression indicated that when commitment replaced hardiness the R^2 was .20, the results are displayed in the lower half of Table 12.

Table 12

Results of Multiple Regression Analysis in Predicting Occurrence of Wanting to Leave.

Dependent Variable	Independent Variable	Progressive R	Progressive R^2
Wanting to Leave	Hardiness	0.306	0.093
	Self Esteem	0.365	0.133
	Role Conflict	0.414	0.172
Wanting to Leave	Commitment	0.388	0.150
	Self Esteem	0.425	0.180
	Role Conflict	0.451	0.203

Job Satisfaction: Primary School Teachers

Since prior results indicated that primary school teachers suffered from significantly less job dissatisfaction than high school teachers, the predictors of Job Satisfaction were investigated in the two samples separately. Results are displayed in Table 13.

Table 13

Results of Multiple Regression Analysis in Predicting Occurrence of Job Satisfaction for Primary and High School Teachers.

Dependent Variable	Independent Variable	Progressive R	Progressive R ²
Job Satisfaction Primary School Teachers (n=125)	Hardiness	0.357	0.127
	Type A Behaviour	0.401	0.161
Job Satisfaction Secondary School Teachers (n=97)	Role Conflict	0.406	0.165
	Hardiness	0.471	0.222
	Self Esteem	0.524	0.274
	Role Ambiguity	0.554	0.306

As can be seen from the table, for primary school teachers, the predictors of job satisfaction were high Hardiness, and low Type A Behaviour, the total amount of variance accounted for being $R^2 = .16$. As indicated in the method section, Hardiness combines three dimensions, commitment, challenge, and control. It follows that people who are committed to their job would receive greater satisfaction from it. As with Wanting to Leave, re-analysis indicated that indeed R^2 increased from .16 to .19 using Commitment as the predictor instead of Hardiness, see the upper half of Table 14.

Table 14

Results of Multiple Regression Analysis in Predicting Occurrence of Job Satisfaction for Primary and High School Teachers Using Commitment in Place of Hardiness.

Dependent Variable	Independent Variable	Progressive R	Progressive R ²
Job Satisfaction Primary School Teachers (n=125)	Commitment	0.385	0.148
	Type A Behaviour	0.437	0.191
Job Satisfaction Secondary School Teachers (n=97)	Commitment	0.498	0.248
	Role Ambiguity	0.557	0.310
	Self Esteem	0.583	0.340

Job Satisfaction: High School Teachers

For high school teachers the predictors of Job Satisfaction were high Hardiness, low Role Conflict and Role Ambiguity and high Self Esteem with $R^2 = .31$ (lower half of Table 13). As found with Wanting to Leave and Job Satisfaction for primary school teachers, the substitution of Commitment for Hardiness produced changes in the predicting equation. In this case the results changing dramatically, Commitment, Role Ambiguity, and Self Esteem being the only predictors with an R^2 of .34, Role Conflict being removed from the equation. Results are displayed in the lower portion of Table 14.

Research Question 4

Research question 4 enquired as to whether different stressors would predict different stress outcomes, and as a result generate a reason for the inconsistent results found in much of the stress literature with regard to the predictors of stress. From the results (Tables 10, 11, 12 and 14), it is apparent that the criterion measures of stress do have different predictors. Wanting to Leave and Job Satisfaction having quite different predictors to Psychological Stress and Physical Health. It was interesting to note however the degree of overlap between Psychological Stress and Physical Health, and between Job Satisfaction and Wanting to Leave.

Research Question 5, Model Development

Path analysis was used to answer research question 5, concerning which model, (Direct, Buffering or Mediating, illustrated in Figures 2, 3 and 4) accounts for the highest proportion of variance for each criterion measure of stress. Path analysis allows for the investigation of relationships between directly measured independent variables and one or more directly measured dependent variables (Kenny, 1979) and was thus suited to investigate this question.

For the models, the chi square goodness of fit statistic and associated degrees of freedom, the total coefficient of determination, were calculated and the decision made as to which model accounted for the largest amount of variance in the dependent variable was

made. In each case the Direct Effects model provided the best goodness of fit statistics and accounted for the greatest amount of explained variance. Table 15 shows the amount of variance accounted for by the Direct Effects models for each of the dependent variables.

Table 15

Amount of Variance Accounted for by Direct Effects Models for Each Dependent Variable.

Model	Total Amount of Variance
Psychological Stress Direct	26
Physical Health Direct	17.5
Wanting to Leave Direct	20.3
Job Satisfaction Primary School Direct	18.8
Job Satisfaction High School Direct	33.9

For the criterion measure of Psychological Stress the best fitting model was the Direct Effects model. This model accounted for 26% of the total variance. Figure 8 illustrates the Direct Effects model and includes the significant predictor variables identified in the present study.

For the criterion measure of Physical Health, analysis indicated that the best fitting

model was the Direct Effects model which accounted for 17.5% of the total variance and is shown together with its significant predictor variables in Figure 9.

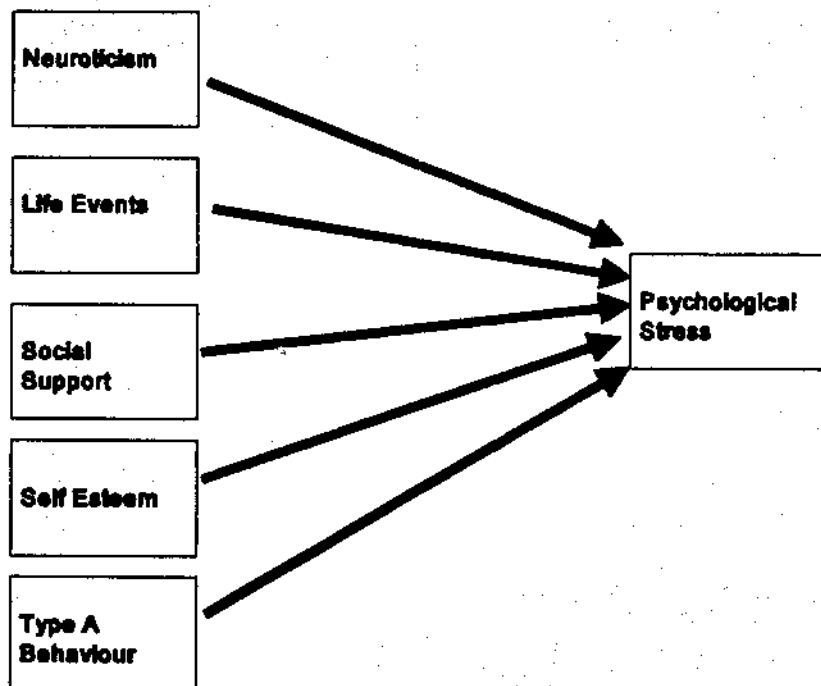


Figure 8. Direct Effects Model for Psychological Stress.

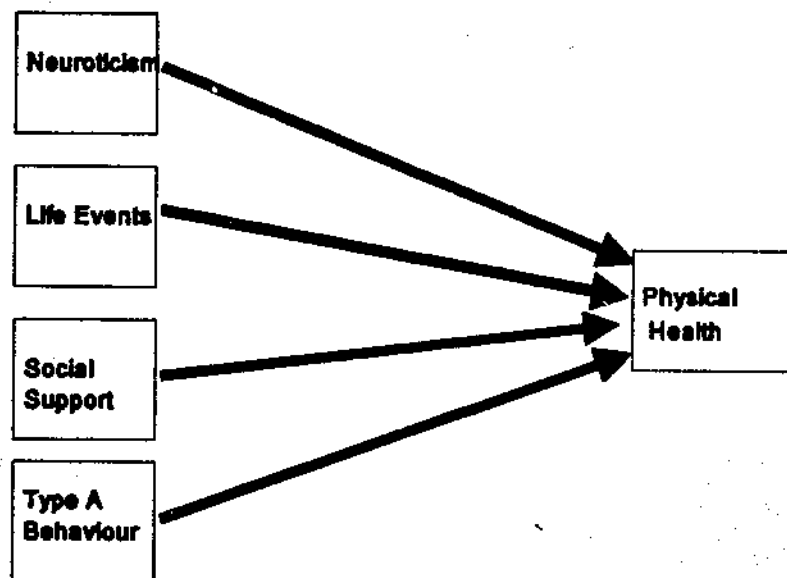


Figure 2. Direct Effects Model for Physical Health

For the criterion measure of Wanting to Leave the Direct Effects model accounted for 20.3% of the total variance. This model, together with its significant predictors is illustrated in Figure 10.

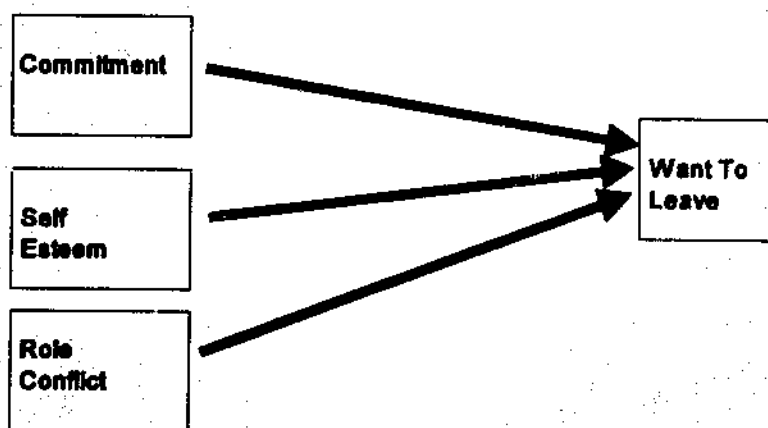


Figure 10. Direct Effects Model for Wanting to Leave

For Job Satisfaction, as in the other cases two sets of analysis were conducted, first with primary school teachers and second with high school teachers. Results indicated that the Direct Effects model accounted for 33.9% of the total variance for high school teachers and 18.8% of the total variance for primary school teachers. These models together with the significant predictor variables are illustrated in Figures 11 and 12.

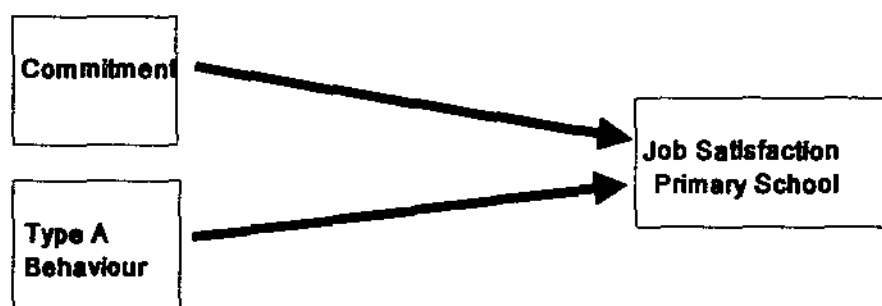
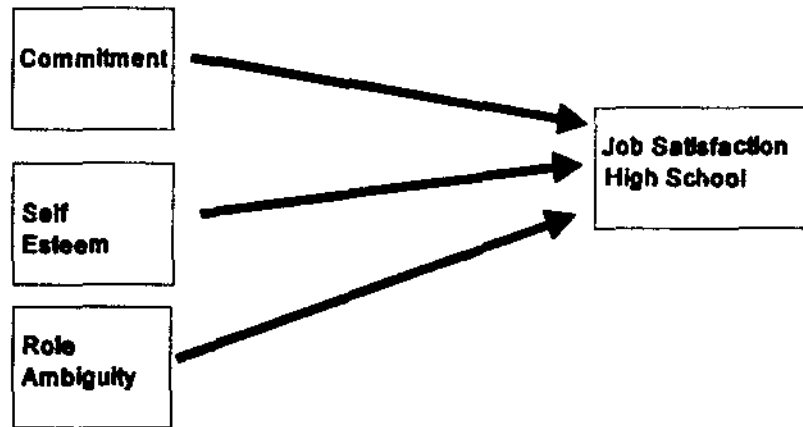


Figure 11. Direct Effects Model for Primary School Teachers Job Satisfaction



**Figure 12. Direct Effects Model for Secondary School Teachers
Job Satisfaction**

The results indicate that the direct effects models account for the greatest amount of variance, for each of the four outcome variables. This was consistent with much of the prevailing literature which found general support for the Direct Effects model. The present results are inconsistent with Edwards, Baglioni and Cooper's (1990) finding however, in that no support was found for the Mediating Effects model. In support Israel, House, Schurman, Heaney and Mero (1989) indicate that direct effects models do not negate the presence of other means of influence such as mediating effects, but rather the direct models demonstrate

the more salient effects.

Formulation

From Phase I of the research the following points emerge:-

The 12 occupational stressors investigated were indeed reduced in number to three, those three being Role Conflict, Role Ambiguity and Extra Work. This was consistent with previous research (Hamel & Bracken 1986). It must be noted then that perhaps there is a great deal of overlap between what each stressor variable measures. Therefore, some standardization of work stressors would be appropriate for future research.

The second research question of phase I sought to investigate the relationship between demographic variables and the criterion measures of stress. Only one criterion measure demonstrated any association with any demographic variable, that being Job Satisfaction. High school teachers reporting less Job Satisfaction than primary school teachers.

The third research question sought to elucidate the association between demographic variables and the dependent variables. Except for random fluctuations little additional variation in stressors was accounted for by demographic variables.

The fourth research question investigated whether different independent variables predicted different dependent variables. In general, results found that different independent

variables did predict different dependent variables, Psychological Stress was predicted by Life Event stressors, Neuroticism, Social Support, Self Esteem and Type A Behaviour. Physical Health was predicted by Life Event stressors, Type A Behaviour, Social Support and Neuroticism. Wanting to Leave the job was predicted by Commitment, Self Esteem and Role Conflict. Job Satisfaction for primary school teachers was predicted by Commitment and Type A Behaviour, while for high school teachers Job Satisfaction was predicted by Commitment, Self Esteem and Role Ambiguity.

From these results it is clear that various combinations of these variables predict different stress outcome variables, leading to the suggestion that this is one reason behind the inconsistencies in the stress literature with regards to predictors of stress. Congruent with this was the finding that life stressors were an important variable in the prediction of stress for both Psychological Stress and Physical Health, but not for stress measured by the occupational constructs of Job Satisfaction or Wanting to Leave. It appears, then, that occupational stress is measured only by attributes of the individual and work stress. The more global stress measures of Psychological Stress and Physical Health were predicted by external stressors, attributes of the individual and work stressors.

Research question five was the final stage of the cross-sectional component of the study and aimed to develop, by the use of path analysis, models of the stress process for each of the criterion measures of stress.

The present research found that the best fitting models for the stress process were

direct effect models indicating as Israel et al. (1989) suggested that, although the major variables are related to each other in some ways (as demonstrated by the correlations), the variables all had substantial independent direct influence on the stress outcomes. The emphasis on direct effects as a model of stress is consistent with prior research by Israel et al. (1989) and Menaghan and Merves (1984), but not with other work (House & Wells, 1978; LaRocco et al. 1980). However as indicated by Israel et al. (1989) the variables used in the prediction of stress outcome may in fact have other effects even though the direct effect is the one that is the most salient.

The next chapter, chapter seven, is concerned with Phase II of the research. In Phase II the longitudinal component of the research is addressed, specifically the relationships and models developed in phase I are re-tested and extended. From the results of Phase I, however, a number of questions can be posed for further investigation.

Research Aims/Questions for Phase II (Longitudinal)

6) Due to the inconsistencies often found among the relationships in the stress literature it would seem appropriate to re-test the relationships found in phase I with a new sample. It is expected that the relationships in phase I will generalize to Phase II.

7) As indicated by Edwards et al. (1990) it is inappropriate to develop models post hoc in order to account for relationships among data. As a consequence the models generated will be re-tested in Phase II of the present research. It is expected that the models

formulated in Phase I of this research will generalize to Phase II.

8) Phase II of the current research is mostly concerned with the generalization of the models developed from cross-sectional data in Phase I to longitudinal data.

9) Phase I could not examine the importance of feedback loops between variables. That is, the effects of stress at time 1 on stress at time 2. The research in Phase II seeks to determine if stress at time 1 contributes to the prediction of stress at time 2.

10) Finally the nature of the relationship among the stress outcome variables of Physical Health, Psychological Stress, Wanting to Leave and Job Satisfaction will be examined.

CHAPTER SEVEN

METHOD, RESULTS AND DISCUSSION: PHASE TWO

MODEL REPLICATION AND LONGITUDINAL DEVELOPMENT

Overview

This chapter is in two sections. Section one presents the methodology used in the longitudinal phase of the current study. Section two presents the results and discussions from this phase and answers to the research questions posed at the end of chapter six. Section two is itself split into a number of sub-sections. Firstly, the generalizability of relationships and correlations between variables found in phase I to the relationships in phase II are examined. Secondly the generalizability of the structures of the models generated in phase one are compared to phase two's results. Here, more detailed discussion of the relationships within the models are presented and comparisons to findings already in existence in the literature are made. Thirdly, the interrelationships between the criterion measures of stress are examined. Fourthly, the generalizability of cross-sectional relationships to longitudinal data and the importance of feedback loops in the prediction of stress are investigated. Finally, a long term follow up of subjects and their actual leaving rates are added to the data.

Method

Subjects

All 700 first year teachers of the Western Australian Ministry of Education were approached with the permission of both the Teacher's Union and the Ministry. Of those approached 242, (34.5%) returned their first questionnaire, of those 242, 144 teachers or (61.5%) returned the second questionnaire. Of those 144 teachers, 97 or 67.4% returned the third questionnaire.

Questionnaire

A questionnaire measuring the variables that were chosen from the factor analysis in the first phase was again used. It contained scales measuring the following: Life Events, Role Conflict, Role Ambiguity, Commitment, Type A Behaviour, Self Esteem, Neuroticism, Social Support, Physical Health, Psychological Stress, Job Satisfaction and Wanting to Leave. The reliability and validity for each of these measures has already been presented in the method section of Phase I.

Procedure

Questionnaires were mailed to all teachers in their first year of contract. Each questionnaire had a covering letter, see Appendix XXII, XXIII and XXIV. It was stressed

that the completion of the questionnaire was completely voluntary.

A reminder letter, See Appendix XXV, was sent four weeks later if the questionnaire had not been returned.

A second set of questionnaires was sent three months later to those subjects who returned the first set; this questionnaire was similar but no longer contained the biographical information. A reminder letter was sent four weeks later, to those subjects who did not return their questionnaires.

Finally six months later the third and final questionnaire was sent. This was an exact copy of the questionnaire sent on the second occasion. A reminder letter was also sent if questionnaires were not returned within four weeks.

Data were collected, collated and then analysed according to the questions generated from Phase I.

Three years later as part of a long term follow-up, subjects who returned the first questionnaire were traced through the Schools and Staffing Handbook, produced by the Ministry of Education, to determine whether they were still present within the Ministry.

Results and Discussion

Research Question 6 (Generalizability and Replication of Relationships).

Research question 6 was concerned with the generalizability of relationships found in Phase I to Phase II of the research. Tables 16-19 show cross sectional correlations for Phase I and each of the three data collection periods for Phase II. With the exception of two measurements, correlations were all in the same direction for Phase I and all three data collection periods in Phase II. The two inconsistencies were firstly Life Events with Psychological Stress; here during Phase I and the first and third collection periods of Phase II, correlations were positive, however, at the second data collection period in Phase II, the correlation was negative. Secondly, Job Satisfaction with Social Support, in Phase I and the first and second data collection periods of Phase II the correlations were positive, however in the third data collection period the correlation was negative; however this correlation was not significant. It is not known why these variations occurred. Except for these two inconsistencies, stability of relationships occurred across time and samples.

Research Question 7 (Generalization and Replication of Models)

Research Question 7 suggested that all models generated in Phase I would be replicated cross-sectionally in Phase II. Since the models developed in Phase I were

Table 16
Correlations Between Variables, Phase One.

	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events	Commitment
Want to Leave	1												
Physical Health	.265***	1											
Psychological Stress	.292***	.336***	1										
Hardiness	-.306***	-.215***	-.197***	1									
Job Satisfaction	-.399***	-.129*	-.248***	.335***	1								
Social Support	-.102	-.189**	-.236***	.154**	.211***	1							
Self Esteem	-.266***	-.237***	-.322***	.238***	.191**	.311***	1						
Neuroticism	.197***	.279***	.382***	-.209***	-.249***	-.122*	-.164**	1					
Type A Behaviour	.194**	.301***	.385***	-.211***	-.182**	-.097	-.371***	.333***	1				
Role Conflict	.289***	.184**	.175**	-.329***	-.276***	-.187**	-.092	.174**	.388***	1			
Role Ambiguity	.160**	.205***	.242***	-.173***	-.246***	-.230***	-.164**	.203***	.183**	.386***	1		
Life Events	.118	.275**	.341***	-.092	-.062	-.101	-.219***	.282***	.254***	.273***	.247***	1	
Commitment	-.388***	-.216***	-.239***	.782***	.398***	.235***	.258***	-.210***	.158**	-.395***	-.241***	-.113*	1

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 17
Correlations Between Variables, Phase Two, Time 1.

	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events	Commitment
Want to Leave	1												
Physical Health	.229***	1											
Psychological Stress	.418***	.414***	1										
Hardiness	-.200***	-.240***	-.321***	1									
Job Satisfaction	-.548***	-.259***	-.349***	.301***	1								
Social Support	-.151**	-.189**	-.309***	.226***	.250***	1							
Self Esteem	-.275***	-.237***	-.466***	.383***	.275***	.309**	1						
Neuroticism	.139*	.323***	.388***	-.257***	-.228***	-.201***	-.410***	1					
Type A Behaviour	.176**	.309***	.380***	-.241***	-.152**	-.153**	-.278***	.355***	1				
Role Conflict	.279***	.266***	.342**	-.208***	-.364***	-.176**	-.172**	.164**	.267***	1			
Role Ambiguity	.305***	.237***	.354***	-.294***	-.340***	-.323***	-.265***	.277***	.249***	.365***	1		
Life Events	.040	.187**	.213***	-.050	-.035	-.095	-.133*	.139***	.230***	.232***	.106	1	
Commitment	-.338***	-.216***	-.397***	.855***	.424***	.267***	.369***	-.267***	-.220***	-.254***	-.348***	-.060	1

Note

* p<.05, **p<.01, ***p<.001

Table 18
Correlations Between Variables, Phase Two, Time 2.

	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events	Commitment
Want to Leave	1												
Physical Health	.192*	1											
Psychological Stress	.317***	.366***	1										
Hardiness	-.316***	-.310***	-.407***	1									
Job Satisfaction	-.564***	-.311***	-.335***	.347***	1								
Social Support	-.049	-.366***	-.365***	.228**	.145*	1							
Self Esteem	-.178*	-.438***	-.389***	.435***	.349***	.211**	1						
Neuroticism	.283***	.225**	.215**	-.192*	-.233**	-.037	-.374***	1					
Type A Behaviour	.200**	.272***	.335***	-.160*	-.166*	-.021	-.251***	.146*	1				
Role Conflict	.355***	.200**	.364***	-.294***	-.346***	-.134	-.294***	.099	.406***	1			
Role Ambiguity	.313***	.192*	.390***	-.156*	-.419***	-.130	-.355***	.115	.325***	.424***	1		
Life Events	.132	.060	-.027	-.126	-.140*	-.018	-.190*	.237**	.080	.069	.091	1	
Commitment	-.462***	-.323***	-.453***	.794***	.539***	.211**	.514***	-.272***	-.243***	-.373***	-.297***	-.145*	1

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 19
Correlations Between Variables, Phase Two, Time 3.

	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events	Commitment
Want to Leave	1												
Physical Health	.119	1											
Psychological Stress	.344***	.360***	1										
Hardiness	-.161	-.193*	-.389***	1									
Job Satisfaction	-.443***	-.139	-.119	.355***	1								
Social Support	-.118	-.137	-.327***	.271**	-.054	1							
Self Esteem	-.237*	-.289**	-.402***	.538***	.245**	.436***	1						
Neuroticism	.211*	.294**	.237**	-.272**	-.107	-.054	-.393**	1					
Type A Behaviour	.298**	.346***	.462***	-.275**	-.181*	-.132	-.361***	.346***	1				
Role Conflict	.318***	.186*	.254**	-.397***	-.401***	-.256**	-.317***	.025	.296**	1			
Role Ambiguity	.314***	.198*	.311***	-.359***	-.392***	-.254**	-.288**	.222*	.196*	.529***	1		
Life Events	.010	.162	.072	-.203*	-.172*	-.068	-.202*	.219*	.141	.100	.171*	1	
Commitment	-.300**	-.256**	-.440***	.821***	.423***	.327***	.567***	-.354***	-.337***	-.423***	-.382***	-.254**	1

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

all direct effects models, Multiple Regression was used to examine this question.

Psychological Stress

The significant predictors for psychological stress related outcomes (as measured by GHQ-30) were shown in Table 10. The model indicated that teachers were more likely to report psychological stress if they also reported higher neuroticism, higher life stresses, less social support, lower self esteem and higher type A behaviour. Table 20 displays the results of the replication of this model on Phase II data at each of the three data collection periods. As can be seen from the table, replication demonstrated consistency in the proportion of variance accounted for by the predictors at each of the three cross-sectional periods.

Neuroticism.

The fact that neuroticism was a predictor of psychological stress is consistent with the description of a high neuroticism score given by Eysenck and Eysenck (1964) who noted that such individuals are likely to suffer from various psychosomatic problems (p. 9). The results of this study are also consistent with Cramer (1991), Payne (1988), and Innes and Kitto (1989), who all indicated that neuroticism was linked to psychological stress.

Table 20

Multiple Regressions Retest of the Psychological Stress Model, Cross-Sectionally, for Three Time Periods.

Dependent Variable	Independent Variable	Total R	Total R ²
Psychological Stress	Neuroticism		
	Life Events		
	Social Support		
	Self Esteem		
	Type A Behaviour		
Time 1		0.578	0.334
Time 2		0.566	0.320
Time 3		0.571	0.327

There are some concerns regarding the tendency of people with high scores on neuroticism to exaggerate health symptoms and as a consequence their results may be exaggerated (Costa & McCrae, 1985, 1987). However Costa and McCrae (1987) indicated that these people have a tendency to experience negative or distressing emotions and to possess associated behavioural and cognitive traits. Stress itself is defined as a negative emotional experience which results from negative thoughts about an individual's ability to cope in his or her environment (King, Stanley & Burrows, 1987). From these definitions it appears that neuroticism and stress should correlate. Innes and Kitto (1989) indicated

neuroticism may influence a reaction to stressors by creating greater reactivity to stress in the individual and also causing the individual to report an effect. In research aimed at predicting stress outcome, the very fact that neurotic individuals pay more attention to their symptoms and are more likely to report the effects of stressors, acts as an important predictor of stress outcome. Therefore, the objection raised by Schroeder and Costa (1984) that high scorers in neuroticism would contaminate the relationship because of this self reporting, only supports the concept's use as a predictor of stress.

Life Event Stress.

The fact that Life Event Stress was found to predict Psychological Stress is consistent with much of the prevailing literature (Nelson & Cohen, 1983; Johnson & Sarason, 1979; Wilcox, 1981; Andrews et al. 1978). This suggests that as life stress increases the propensity to suffer from psychological stress increases. Selye (1974) indicated that any event in one's life which causes a change or requires some readjustment in one's behaviour or life conditions is stress producing. It is this mechanism, by which life events appear to produce the psychological stress that is indicated by the present research. However, as indicated previously, Life Events did not demonstrate consistency in its relationship with the Psychological Stress measure. The second measurement time in Phase II demonstrated a negative relationship, in all other measurement periods life events and psychological stress demonstrated a positive relationship. No reason for this inconsistent relationship can be suggested.

Social Support.

Social Support was considered to be a predictor of Psychological Stress, results indicating that as social support decreased there was an increase in psychological stress. As was consistent with a number of previous investigations (Andrew, et al. 1978; Gore, 1978; Zimet et al. 1988; Duckitt, 1984; Monroe, 1983; & Cobb, 1976) the greater the social support the less reported psychological distress.

Self Esteem.

In this study Self esteem was also found to be a significant predictor of psychological Stress. That is, those people low in self esteem were more prone to report psychological stress symptoms than people high in self esteem. These results are consistent with Kaplan, Robbins and Martin (1983) who investigated the direct and interactive effects of self image in a ten year longitudinal study of young adults. They found a direct relationship between self derogation and subsequent report of psychological distress. This was also consistent with the findings of Parkay et al. (1988), Pearlin and Schooler (1978), Lundgren (1978), and Cronkite and Moos (1984) who all indicated that self esteem or the extent to which a person engaged in self denigration was an important attribute in the stress process. Lazarus and Folkman (1984) indicated that lowered self esteem was an important variable in how a person perceives stressors, that is, those people with lowered self esteem were more likely to perceive stressors as intolerable. Moreover, self esteem has been linked with increased presence of depression and/or anxiety, both being symptoms of psychological distress (Beck,

Rush, Shaw & Emery, 1979). It follows that it could be expected that individuals with low self esteem should be demonstrating some psychological stress.

Type A Behaviour.

The contribution of Type A to the stress process is well documented, and the present results, which indicate that as a person engages in more type A behaviour the propensity to suffer psychological stress also increases, is consistent with a substantial proportion of the literature e.g. Nowack (1986), Cramer (1991), Kobasa, Maddi and Zola (1983).

Inter-relationship among the predictor variables.

Tables 16-19 show the relationships between the predictor variables of Psychological Stress. As can be seen from the tables many correlations were found to be significant. Neuroticism was found to have a positive relationship with Life Events, associations ranging from $r=.14, p<.05$ to $r=.28, p<.001$, indicating that as life event stress increases so does neuroticism. This result is consistent with the findings reported by Ormel and Wohlfarth (1991) who indicated that Neuroticism and Life situation change had a positive relationship, although the exact mechanism by which this occurs was not determined. It was suggested, however, that people scoring high in neuroticism were more likely to admit to experiencing stress. This is also consistent with the postulation of Costa and McCrae (1985). As a consequence, a positive relationship between life stress and neuroticism could be expected.

Neuroticism and Self Esteem were negatively correlated ranging from $r = -.37$ $p < .001$ to $r = -.41$ $p < .001$, suggesting that as scores on Neuroticism increased scores on Self Esteem decreased. This would be expected, since self esteem is necessarily a feature of a stable personality, therefore as instability increases (as measured by neuroticism) and the person's tendency to experience negative behaviours and negative cognitions increases, the ability of the person to maintain self esteem would decrease.

Also correlated were Neuroticism and Type A Behaviour, associations ranging from $r = .14$ $p < .05$ to $r = .33$ $p < .001$. This relationship indicated that as Type A Behaviour increased so did Neuroticism. Such a result is consistent with Cramer (1991) who also found a strong inter-relationship between Type A Behaviour and Neuroticism. The essence of type A behaviour itself is one of hurriedness, competitiveness and aggression, and neuroticism is characterised by anxiety, and emotional instability (Eysenck & Eysenck 1964; Costa & McCrae, 1985, 1987), therefore an association would be expected to exist between these two constructs.

Social Support and Neuroticism also demonstrated a relationship, however, only two of the four correlations were significant, although all indicated a consistent negative direction (see Tables 16,17,18 and 19). For this relationship, as Neuroticism increased Social Support decreased. This was consistent with the findings of Hotard et al. (1989) who also indicated that people who scored high in neuroticism had poorer social relationships.

The correlation between Social Support and Self Esteem ranged between $r = .21$

$p < .01$ and $r = .44$ $p < .001$ which indicated that as people's social support increased so did their self esteem. This is consistent with Cooley (1902) and Krause (1987) who have suggested that these two variables are intrinsically related. The concerning feature was co-linearity; however, self esteem and social support are established constructs and as a result co-linearity was not a concern.

As with Social Support and Neuroticism, Type A Behaviour and Life Events were also correlated. In this case although all four correlations were positive only two were significant, indicating that as Type A Behaviour increased so did the reporting of major Life Events. This could be a result of the neurotic characteristics shared by type A behaviour as identified by Eysenck (1983). Under these circumstances and following that indicated by Costa and colleagues, one would expect higher reporting of life stresses by people with type A behaviour patterns.

In sum, Psychological stress was predicted by Neuroticism, Type A Behaviour, Social Support, Self Esteem and Life Event Stress. Results found that the model was consistent in the amount of predicted variance accounted for by these variables. The next section deals with the effects of Neuroticism, Life Events, Type A Behaviour and Social Support on Physical Health.

Physical Health

As indicated in chapter five the significant predictors of Physical Health were high

Neuroticism, high Life Events, high Type A Behaviour and low Social Support. Table 21 displays the results of the replication of this model on Phase II data at each of the three data collection periods. As can be seen from the table replication demonstrated consistency in the proportion of variance accounted for by the predictors at each of the three cross-sectional periods.

Table 21

Multiple Regressions Retest of the Physical Ill-Health Model Cross-Sectionally, for Three Time Periods.

Dependent Variable	Independent Variable	Total R	Total R ²
Physical Health	Neuroticism		
	Life Events		
	Type A Behaviour		
	Social Support		
Time 1		0.410	0.168
Time 2		0.378	0.142
Time 3		0.412	0.170

Neuroticism.

This relationship indicated that those teachers higher in neuroticism were more likely

to suffer from physical symptoms of stress. As is consistent with Innes and Kitto (1989) high scorers on neuroticism appear more likely to be aware of their physical symptoms and as a consequence be more able to report them. This effect is not inconsistent with Schroeder and Costa's (1984) claims that neuroticism contaminates the reporting of stress responses, since as mentioned previously under psychological distress, the very fact that neuroticism predicts reporting makes it a good predictor of stress symptoms, by either contamination or awareness.

Life Events.

As for Life Events and Psychological Stress the association between Life Event Stress and Physical Health has been demonstrated by a number of researchers during the past three decades e.g., (Weiss, Dlin, Rollin, Fischer & Bepler, 1957; Graham, & Stevenson, 1963; Holmes & Rahe, 1967; Wyler, Masuda & Holmes, 1971). Research investigating the relationship between life change magnitude and disease onset indicates that the life events assume etiological significance by evoking attempts at adaptation to the life change that are accompanied by psychophysiological reactions. These alterations in body functions may lead, in turn, to dysfunction and tissue damage or discomfort. Such changes may render the body open to assault by a number of noxious pathogenic environmental agents, and thus allow the emergence of a disease which might otherwise have been resisted (Selye, 1973; King, Stanley & Burrows, 1987).

Type A Behaviour.

The importance of type A behaviour grew out of its proposed link with coronary heart disease (Rosenman et al. 1966; Bortner, 1969). Since that time type A behaviour has also been linked with a plethora of other physical illnesses including gastrointestinal, and respiratory disorders (Woods & Burns, 1984). Therefore, the fact that high Type A Behaviour was found here to be associated with Physical Health is consistent with the prevailing research (Jamal, 1990).

Social Support.

Like Type A Behaviour and the link between Social Support and Psychological indicators of stress, the finding that Social Support was a predictor of Physical Health is consistent with current literature. Cassel (1974, 1976), Lin, Simeone, Ensel and Kuo (1979) and Sarason, Sarason, Potter and Antoni (1985) all indicating that the presence of social support reduces the effect of stress as measured by physical health.

Inter-relationship among the predictor variables.

The inter-relationships among the predictor variables of Physical Health (Neuroticism, Life Events, Type A Behaviour and Social Support) are shown in Tables 16-19. However, the predictors of Physical Health are the same as those predictors involved in predicting Psychological Stress, all these inter-relationships have been discussed previously and

therefore will not be discussed here.

The following section however, presents the results and discussion of the effects of Commitment, Self Esteem and Role Conflict on the criterion measure of Wanting to Leave the Job.

Wanting to Leave.

Phase I indicated that the predictors of Wanting to Leave produced a combined R^2 of .17, the major predictors being low Commitment, low Self Esteem, and high Role Conflict. Table 22 shows the results of the re-testing of this model on Phase II data. Unlike the stability found across Psychological Stress and Physical Health, Wanting to Leave shows a drop to 13.6% at time 3. This variation could be due to the fact that measures were taken in the final term of the school year within two weeks of term breaking up. It is possible that teachers were looking forward towards a holiday and therefore the wish to leave decreased. Moreover at the time of data collection the Western Australian Ministry of Education required that teachers return to school following the holidays for them to collect their holiday pay. It is also possible that this requirement even in the presence of stress resulted in this drop in variance. Each of the three predictors will now be discussed.

Table 22

Multiple Regressions Retest of the Want to Leave Model, Cross-Sectionally, for Three Time Periods.

Dependent Variable	Independent Variable	Total R	Total R ²
Want to Leave	Commitment		
	Self Esteem		
	Role Conflict		
Time 1		0.402	0.162
Time 2		0.498	0.248
Time 3		0.369	0.136

Commitment.

The importance of Commitment is consistent with the work of Jamal (1990) who indicates that it would be normal for people with lower organizational commitment to have a high desire to leave an organization when confronted with job stressors for which they do not care. These results are consistent with the work of other researchers who have found that commitment is a predictor of employee turnover (Koch & Steers, 1978; Pierce & Dunham 1987; Porter, Steers, Mowday & Boulain, 1974). Reasons behind this are varied;

however, Wright (1990) indicated that individuals who have high commitment identify with the work of the organization as a whole, internalize the goals of the organization and have a strong desire to stay within the organization. These findings are also similar to those of Mobley, Griffeth, Hand and Meglino (1979) and Bluedorn (1979).

Self Esteem.

The present results indicated that individuals with low self esteem were more inclined to wish to leave the organization. Reasons behind this are not clear; however, one possible explanation relates to the common linkage self esteem has with depression and depressive ideation. People suffering from slight depression or decreased self esteem frequently have negative thoughts surrounding their usefulness. Thoughts about leaving a job or occupation could be considered depressive, it follows that people with low self esteem would be more likely to hold such thoughts. Particularly, these thoughts may often surround their contribution to work. If persons perceive themselves as less than useful, they may wish to leave an organization.

An alternative explanation was advanced by Benokraitis (1987) who indicated that people low in self esteem experienced greater difficulty acquiring job skills. Individuals with low self esteem could therefore be expected to find a job harder, and thoughts about leaving an organization would possibly follow.

Role Conflict.

The finding that Role Conflict was positively correlated with Wanting to Leave was also consistent with the work of Jamal (1990), and Bedian and Armenakis (1981) who indicated that Role Conflict increased the likelihood that a person would leave by first increasing job induced tension, which in turn increased the likelihood of leaving. In their research on nurses at a large medical centre Bedeian, Mossholder and Armenakis (1983) also found that Role Conflict and propensity to leave were correlated. Role Conflict was found to have a correlation of .34 with propensity to leave.

Inter-relationship among the predictor variables.

Tables 16-19 show the inter-correlations of the three predictor variables of Self Esteem, Role Conflict and Commitment. As can be seen from the tables, Self Esteem and Role Conflict, held a constant negative association. As Role Conflict or work stress increased a person's self esteem decreased. This is consistent with Howell et al. (1987) who found that self esteem lessened the extent of role stress as measured by role conflict.

Commitment and Self Esteem had significant positive correlations, associations ranging between $r = .26$ $p < .001$ to $r = .57$ $p < .001$. That is, as Self Esteem increased so did Commitment to the organization. The result is also consistent with that of Buchanan (1974), who indicated that self esteem is often considered to reflect perceived self worth. Individual's who believe that they are making a significant contribution and who sense that

their contributions are appreciated are likely, according to Buchanan (1974), to develop organizational commitment. Such reinforcement might result from either the individual's observation that his/her efforts have made a direct impact, or it may result from the assurance of significant others. This view was consistent with Buchanan's experimental findings, which showed a positive correlation of .34 between self image and organizational commitment for 279 business and government managers.

Commitment and Role Conflict also demonstrated a relationship, associations ranging from $r = -.25$ $p < .001$ to $r = -.42$ $p < .001$. This result indicated that as Role Conflict experienced by the teachers decreased, the overall Commitment to the organization increased. This relationship has been found by a number of other researchers but with few indications as to why the relationship occurs (Jackson & Schuler, 1985; Mowday, Porter & Steers, 1982). It is possible that the effect is a result of a third variable such as job satisfaction or stress. However, Jackson and Schuler (1985) indicated that organizationally committed persons could be less likely to question the values and goals of the organization; therefore, there will be less chance that the individuals would experience role conflict.

Commitment was also found to be an integral variable in the prediction of Job Satisfaction, for both primary school and high school teachers. The first of the following two sections examines the inter-relationships between and with Job Satisfaction for primary school teachers and Commitment and Type A Behaviour. The second section examines the inter-relationships among Job Satisfaction for high school teachers, Commitment, Role Ambiguity and Self Esteem.

Job Satisfaction: Primary School Teachers.

Phase I indicated that the predictors for Job Satisfaction among primary school teachers were high Commitment and Type A Behaviour. Replication of this model on Phase II data, see Table 23, revealed an inconsistency in the stability of the model. The

Table 23

Multiple Regressions Retest of the Model of Job Satisfaction for Primary School Teachers, Cross-Sectionally, for Three Time Periods.

Dependent Variable	Independent Variable	Total R	Total R ²
Job Satisfaction			
Primary School	Commitment		
	Type A Behaviour		
Time 1		0.282	0.079
Time 2		0.525	0.276
Time 3		0.427	0.182

variance accounted for by the predictors at time 1 (the first data collection period) is lower than either time 2 or 3. It is possible that Job Satisfaction among primary school teachers

was affected by an industrial dispute that was current during that data collection period, although the same did not occur for high school teachers.

Type A Behaviour.

The finding that individuals low in Type A Behaviour would have associated feelings of greater Job Satisfaction is reminiscent of that found in the previous section of people high in Type A Behaviour showing Psychological Stress. It is assumed that people demonstrating Psychological Stress would have less perceived Job Satisfaction. Indeed examination of the correlations in Tables 16-19 indicate that Job Satisfaction and Psychological Stress have a constant negative association. Moreover the characteristics of Type A Behaviour (rushism, aggression, and feeling pressed for time), are similar to those characteristics of people demonstrating job stress. The associated decrease in Job Satisfaction would, therefore, be expected.

These results were also similar to those of Robertson, Cooper and Williams (1990) who found low Type A Behaviour was a predictor of Job Satisfaction. In high stress jobs the link between Type A Behaviour and Job Satisfaction was found to be weaker. This may account for why Type A Behaviour is a predictor of Job Satisfaction for primary school teachers and not for high school teachers since in the present study results indicated that primary school teachers suffered significantly less stress as measured by Job Satisfaction than high school teachers.

Commitment.

The contribution of Commitment is consistent with the results of Jamal (1990), who found, from a survey of 215 nurses in a Canadian hospital, that Job Satisfaction and Commitment were positively related. Welsch and LeVan (1981) also found that Job Satisfaction was related to organizational commitment, but only in a transitory way, suggesting, as did Mowday et al. (1982), that while day to day events in the work place may affect an employee's level of job satisfaction, such events would not cause a serious re-evaluation of attachment to the overall organization.

Inter-relationship among predictor variables.

Table 24 shows the inter correlations among the predictor variables for primary school teacher's Job Satisfaction, for all four data collection periods. As can be determined from the table, Commitment and Type A Behaviour were negatively correlated ($r = -.249$, $p < .001$). That is, as the Type A Behaviour increased commitment to the job decreased. Type A Behaviour, as previously indicated, reflects feeling pressured for time, and rushism; if a person feels pressured and this pressure seems continual then perhaps it would lead to a decrease in commitment to their occupation.

Job Satisfaction: High School Teachers.

For high school teachers the predictors of Job Satisfaction were Commitment, Role

Ambiguity and Self Esteem. Re-testing of this model for each time period accounted for a consistently high proportion of the variance, see Table 25.

Table 24

Correlation Among Predictor Variables of Job Satisfaction for Primary School Teachers.

	Job Satisfaction	Commitment	Type A Behaviour
Phase I			
Job Satisfaction	1		
Commitment	.398***	1	
Type A Behaviour	-.158**	-.249***	1
Phase II, Time One n=117			
Job Satisfaction	1		
Commitment	.282***	1	
Type A Behaviour	-.059	-.193*	1
Phase II, Time Two n=67			
Job Satisfaction	1		
Commitment	.518***	1	
Type A Behaviour	-.036	-.229*	1
Phase II, Time Three n=40			
Job Satisfaction	1		
Commitment	.409***	1	
Type A Behaviour	.021	-.241	1

Note: *p<.05, **p<.01, ***p<.001

Table 25

**Multiple Regressions Retest of the Model of Job Satisfaction for High School Teachers,
Cross-Sectionally, for Three Time Periods.**

Dependent Variable	Independent Variable	Total R	Total R ²
Job Satisfaction			
High School			
	Commitment		
	Role Ambiguity		
	Self Esteem		
Time 1		0.601	0.362
Time 2		0.665	0.442
Time 3		0.562	0.316

Role Ambiguity.

That low Role Ambiguity was associated with Job Satisfaction was consistent with much of the prevailing literature. Schwab and Iwanicki (1982) and Crane and Iwanicki (1986) both found that Role Ambiguity was related to burnout, the associated negative cognitions, and Job Satisfaction. More directly, House and Rizzo (1972) demonstrated that Role Ambiguity served as an important variable in an investigation of the relationship between job environment and job satisfaction. Those higher in Role Ambiguity reported less Job Satisfaction. Similarly, Bedian and Armenakis (1981), Kernery, Bedeian, Mossholder

and Touliatos (1985), Kleke-Hamel and Mathieu (1990) and Oliver and Brief (1977) indicated that Role Ambiguity acted to decrease Job Satisfaction. This was achieved as Szilagyi (1977) noted by increasing a subjective feeling of job tension or anxiety by the presence of conflicting roles and, therefore, the likelihood that a person would be dissatisfied with his or her job.

Commitment.

The reasons behind high job Commitment producing increased Job Satisfaction have already been explored in the section outlining the Job Satisfaction for primary school teachers.

Self Esteem.

The current research found that individuals high in Self Esteem also displayed increased Job Satisfaction. Burns (1980) and Krause (1987) indicate that a person's self esteem or self worth is often a result of a person's work. It follows then that people experiencing high Job Satisfaction would likely receive greater self worth. This could be achieved as indicated by Buchanan (1974) through reinforcement from colleagues and superiors or the individual's direct observations that his/her efforts have made a difference.

Inter-relationship among the predictor variables.

Table 26 shows the correlations between the variables of Self Esteem, Commitment

Table 26

Correlation Among Predictor Variables of Job Satisfaction for High School Teachers.

	Job Satisfaction	Commitment	Role Ambiguity	Self Esteem
Phase I	n=111			
Job Satisfaction	1			
Commitment	-.398***	1		
Role Ambiguity	-.246***	-.241***	1	
Self Esteem	.191***	.255***	-.164**	1
Phase II, Time One	n=111			
Job Satisfaction	1			
Commitment	.574***	1		
Role Ambiguity	-.418***	-.449***	1	
Self Esteem	.291***	.489***	-.409***	1
Phase II, Time Two	n=66			
Job Satisfaction	1			
Commitment	.553***	1		
Role Ambiguity	-.551***	-.386***	1	
Self Esteem	.274*	.519***	-.444***	1
Phase II, Time Three	n=51			
Job Satisfaction	1			
Commitment	.412***	1		
Role Ambiguity	-.492***	-.399**	1	
Self Esteem	.180	.584***	-.356**	1

Note:

*p<.05, **p<.01, ***p<.001

and Role Ambiguity for each of the four data collection periods for high school teachers only. As can be seen from the table all relationships were found to be significant, Self Esteem and Commitment having positive correlations ranging between $r=.255, p<.001$ and $r=.584, p<.001$. Thus, as commitment increased self esteem also increased. This is reminiscent of the relationship identified by Burns (1980), that self worth was related to self esteem and that people obtain self esteem from their performance at work. People with high commitment to their jobs could therefore be expected to work hard and receive a substantial proportion of their self esteem from their job.

Self Esteem was also significantly related to Role Ambiguity associations ranging between $r=-.16, p<.01$ and $r=-.44, p<.001$, indicating that as the stressor of Role Ambiguity increased Self Esteem decreased. This result is similar to the findings of Howell et al. (1987) who found that high self esteem lessened the extent of role stress as measured by role ambiguity and role conflict in a group of managers.

The relationships between Role Ambiguity and Commitment were also significant ranging from $r=-.449, p<.001$ to $r=-.241, p<.001$. This again indicated that as a stressor increased in this case role ambiguity, the commitment to the job decreased, the results being consistent with the work of Jamal (1990). It seems that it would be difficult to be committed to a job, whose limits and roles were ill-defined and as a result increasing job tension.

Inter-Relationship Among the Criterion Variables (Research Issue 10).

Research issue 10 wished to examine the relationship between the criterion measures of stress (Psychological Stress, Physical Health, Wanting to Leave and Job Satisfaction). Table 27 presents the correlations for each of the four data collection periods.

As can be seen from the table, results were consistent, relationships ranging from a low of $r = -.13$ $p < .05$ between Physical Health and Job Satisfaction (for phase I) to a high of $r = -.56$ $p < .001$ between Wanting to Leave and Job Satisfaction, at the second data collection period in Phase II. These results were consistent with the findings of Landsbergis (1988) who has previously demonstrated that measures of stress were related to each other.

Further examination indicated that the correlations between Psychological Stress and Physical Health ranged between $r = .34$, $p < .001$ and $r = .41$ $p < .001$. These relationships were similar to those found by Andrews et al (1977) who indicated a high association between reports of psychological difficulties and reports of physical ill health. This trend was also found by Lipowski (1975) and Shepherd, Cooper, Brown, and Kalton, (1966).

For the relationship between Wanting to Leave and Job Satisfaction correlations ranged from $r = .40$, $p < .001$ to $r = .56$ $p < .001$. Positive correlations are consistently reported in the

Table 27

Inter-Relationship Between the Stress Outcome Variables.

	Psychological Stress	Physical Health	Wanting to Leave	Job Satisfaction
Phase I				
Psychological Stress	1			
Physical Health	.34***	1		
Wanting to Leave	.29***	.26***	1	
Job Satisfaction	-.25***	-.13*	-.40***	1
Phase II, Time One				
Psychological Stress	1			
Physical Health	.41***	1		
Wanting to Leave	.42***	.23***	1	
Job Satisfaction	-.35***	-.26***	-.55***	1
Phase II, Time Two				
Psychological Stress	1			
Physical Health	.37***	1		
Wanting to Leave	.32***	.19*	1	
Job Satisfaction	-.34***	-.31***	-.56***	1
Phase II, Time Three				
Psychological Stress	1			
Physical Health	.36***	1		
Wanting to Leave	.34***	.12	1	
Job Satisfaction	-.12	-.14	-.44***	1

Note:

*p<.05, **p<.01, ***p<.001

literature (Jamal, 1990; Good, Sisler & Gentry, 1988; Hulin, 1966; Welsch & LaVan 1981), indicating as the present results did, that the dissatisfied worker is more likely to want to leave his or her job than a satisfied worker. As indicated by Hulin, this finding is theoretically appealing since one could expect that the characteristics which led a worker to like his or her job should be the same as those which cause him or her to remain in the job.

Is Type A Behaviour a Work Stressor?

A re-examination of the Type A construct and its action in the current research, leads to the postulation that type A behaviour may act as a work stressor. Sorensen et al. (1987) and Howard et al. (1986) indicate that type A behaviour may in part be a function of the job experience and that the environment elicits the behaviour. This is also suggested by Gray (1979), who observed a number of teachers suffering from what he called "rushism," suggesting it occurs with teachers under stress.

Examination of the questions used to elicit type A responses, Appendix XV, indicates that they are behavioural in nature and ask questions such as "are you feeling pushed for time?" Obviously someone who is experiencing a great deal of environmental stressors such as work commitments and time commitments may well answer the affirmative, yet, 6 weeks later when those environmental stressors have ameliorated the answer may be in the negative. Howard et al. (1986) indicated that such job conditions as heavy workloads and role difficulties would elicit type A behavioural responses. Both role difficulties and heavy

work loads as stressors would vary across time and as a consequence so would the presence of type A behaviour. Likewise, Sorenson et al. (1987) indicated that type A behaviour is a reflection of the environment and is not a trait at all.

This may provide a solution to the mixed set of outcomes found regarding the Type A construct in the literature. That is, rather than being a personality trait it is a behavioural trait that varies according to the environment. As a consequence its presence will also vary over time as a result of the environmental stressors, particularly work demands acting at anyone time. If this is the case, then it is possible that all people could experience type A or B behaviour across time depending on the environment.

Research Question 8. The Generalization of Cross-Sectional Models to Longitudinal Models.

Research question 8 sought to examine whether models developed cross-sectionally would generalize to a longitudinal situation. Three sets of Regressions were therefore calculated for each of the stress outcome variables. Thus for each model, the appropriate stressors and psycho-social variables at time one, were regressed against the outcome variables at time two, for the first three months (time 1-2), the second three months (time 2-3) and across the whole six months (1-3). Results are displayed in Table 28.

As can be seen from Table 28, little or no additional variance in stress outcome is

Table 27

Inter-Relationship Between the Stress Outcome Variables.

	Psychological Stress	Physical Health	Wanting to Leave	Job Satisfaction
Phase I				
Psychological Stress	1			
Physical Health	.34***	1		
Wanting to Leave	.29***	.26***	1	
Job Satisfaction	-.25***	-.13*	-.40***	1
Phase II, Time One				
Psychological Stress	1			
Physical Health	.41***	1		
Wanting to Leave	.42***	.23***	1	
Job Satisfaction	-.35***	-.26***	-.55***	1
Phase II, Time Two				
Psychological Stress	1			
Physical Health	.37***	1		
Wanting to Leave	.32***	.19*	1	
Job Satisfaction	-.34***	-.31***	-.56***	1
Phase II, Time Three				
Psychological Stress	1			
Physical Health	.36***	1		
Wanting to Leave	.34***	.12	1	
Job Satisfaction	-.12	-.14	-.44***	1

Note:

*p<.05, **p<.01, ***p<.001

accounted for by the longitudinal models compared to cross-sectional models see (Tables 15, 20, 21, 22 and 23). Further examination of the results indicated that, overall, the percentage of variance of the outcome variable accounted for by using longitudinal models, actually decreased. Explained variance among the longitudinal models ranged from a low of 2% for time 1 to 3 for Job Satisfaction among Primary School teachers to a high of 42% for Job Satisfaction among high school teachers across the second three month period. Although each model remained significant, the results highlight the difficulties of generalizing cross-sectional research to longitudinal research. This is particularly so for Physical Health and Job Satisfaction among primary school teachers, where the proportion of variance accounted for on average stayed at the 9% mark. There is some generalizability from the cross-sectional to the longitudinal for Psychological Stress, Wanting to Leave and Job Satisfaction among high school teachers, however, in no case did the percentage of variance accounted for longitudinally equal that accounted for cross-sectionally. Such a result emphasises the importance of using both longitudinal and cross-sectional models in research to obtain an accurate picture of the stress process. This is especially so when results of cross-sectional research can not be taken to represent the findings of longitudinal research.

The Importance of Feedback Loops in Predicting Stress (Research Question 9).

Research question 9 sought to determine the importance of stress outcome at time 1 in the prediction of stress outcome at time 2. Multiple Regression was again used for this

procedure. In this case stress outcome at time 1, the stressors, and psycho-social variables at time 1, were the independent variables and stress outcome at time 2 was the dependent variable see Figure 13. Results are displayed in Table 29. As can be seen from the table in comparison to the cross-sectional research Tables 15, 20, 21, 22, and 23, in all cases there was a rise in the proportion of variance accounted for by this addition. There were, however, definite differences in the percentage of variance accounted for and the usefulness of this 'feedback'. For Psychological Stress outcome, total variance accounted for ranged between 25% and 33%, on average, still lower than that accounted for cross-sectionally. This would indicate that perhaps Psychological Stress outcome is more transitory, and as a consequence may be measured better by cross-sectional research than longitudinal research. For Physical Health, Job Satisfaction and Wanting to Leave the percentage of variance accounted for increased dramatically, average explained variance for Physical Health is 46%, average explained variance for Wanting to Leave is 53.6%, average explained variance for Job Satisfaction among primary school teachers is 52% and for high school teachers is 61.3%.

The importance of stress measurement at time 1 as indicated by the current research, is also demonstrated in the literature that has looked at prior levels of clinical symptomatology in predicting future levels of clinical symptoms. For example, Warheit (1979) indicated that over a period of two years 25% of variability in depressive symptomatology could be accounted for by depressive rating at time 1 and only 3% of the current life stressors accounting for the depression. Likewise Grant et al. (1987) in a three year prospective study of psychiatric patients found that symptoms at time 1 were the major

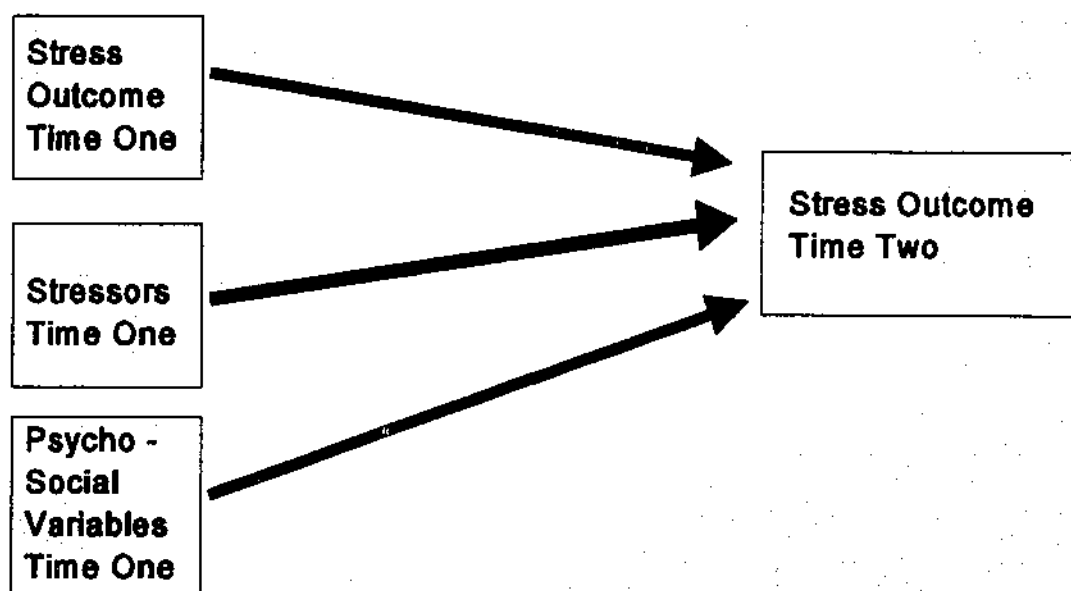


Figure 13. Longitudinal Model of Stress

Table 29
Results of Multiple Regressions Using Cross Sectional
Models Longitudinally, with the Addition of Prior Stress Level

Criterion Variable	Predictors		R	R ²
Psychological Stress Time 3	Neuroticism	Time 2	0.52	0.28
	Life Events	Time 2		
	Social Support	Time 2		
	Self Esteem	Time 2		
	Type A Behaviour	Time 2		
	Psychological Stress	Time 2		
Psychological Stress Time 3	Neuroticism	Time 1	0.50	0.25
	Life Events	Time 1		
	Social Support	Time 1		
	Self Esteem	Time 1		
	Type A Behaviour	Time 1		
	Psychological Stress	Time 1		
Psychological Stress Time 2	Neuroticism	Time 1	0.57	0.33
	Life Events	Time 1		
	Social Support	Time 1		
	Self Esteem	Time 1		
	Type A Behaviour	Time 1		
	Psychological Stress	Time 1		
Physical Health Time 3	Neuroticism	Time 2	0.75	0.56
	Life Events	Time 2		
	Social Support	Time 2		
	Type A Behaviour	Time 2		
	Physical Health	Time 2		
Physical Health Time 3	Neuroticism	Time 1	0.67	0.44
	Life Events	Time 1		
	Social Support	Time 1		
	Type A Behaviour	Time 1		
	Physical Health	Time 1		
Physical Health Time 2	Neuroticism	Time 1	0.62	0.38
	Life Events	Time 1		
	Social Support	Time 1		
	Type A Behaviour	Time 1		
	Physical Health	Time 1		
Want to Leave Time 3	Commitment	Time 2	0.77	0.60
	Self Esteem	Time 2		
	Role Conflict	Time 2		
	Want to Leave	Time 2		
Want to Leave Time 3	Commitment	Time 1	0.66	0.43
	Self Esteem	Time 1		
	Role Conflict	Time 1		
	Want to Leave	Time 1		
Want to Leave Time 2	Commitment	Time 1	0.76	0.58
	Self Esteem	Time 1		
	Role Conflict	Time 1		
	Want to Leave	Time 1		
Job Satisfaction Primary School Time 3	Commitment	Time 2	0.73	0.53
	Type A Behaviour	Time 2		
	Job Satisfaction	Time 2		
Job Satisfaction Primary School Time 3	Commitment	Time 1	0.68	0.47
	Type A Behaviour	Time 1		
	Job Satisfaction	Time 1		
Job Satisfaction Primary School Time 2	Commitment	Time 1	0.75	0.56
	Type A Behaviour	Time 1		
	Job Satisfaction	Time 1		
Job Satisfaction High School Time 3	Commitment	Time 2	0.82	0.67
	Role Ambiguity	Time 2		
	Self Esteem	Time 2		
	Job Satisfaction	Time 2		
Job Satisfaction High School Time 3	Commitment	Time 1	0.77	0.59
	Role Ambiguity	Time 1		
	Self Esteem	Time 1		
	Job Satisfaction	Time 1		
Job Satisfaction High School Time 2	Commitment	Time 1	0.76	0.58
	Role Ambiguity	Time 1		
	Self Esteem	Time 1		
	Job Satisfaction	Time 1		

predictors of symptoms at time 2.

This does not, however, explain the findings of Psychological Stress, therefore following Warheit's findings (1979) a combination of longitudinal and cross-sectional predictors was used. That is, stress outcome at time two was regressed against stress outcome at time one, stressors time two, and psycho-social variables time two, See Figure 14.

These results are shown in Table 30. As can be seen from the results this combination resulted in a greater proportion of the variance accounted for, on average 35% of Psychological Stress as measured by the General Health Questionnaire accounted for compared to 28.6% for just cross-sectional input. Thus, the combination model appears to be the best predictor of stress at time two, for Psychological Stress. This adds further weight to the importance of cross-sectional input in predicting Psychological Stress.

Further evidence for the transitory nature of Psychological Stress comes from the test re-test correlation coefficients of Psychological Stress, compared with Physical Health, Wanting to Leave or Job Satisfaction see Tables 31, 32, and 33. These tables show smaller test re-test correlations than the other three outcome variables.

Long-Term Follow-up

As indicated in the procedure, long term follow up of subjects three years later was

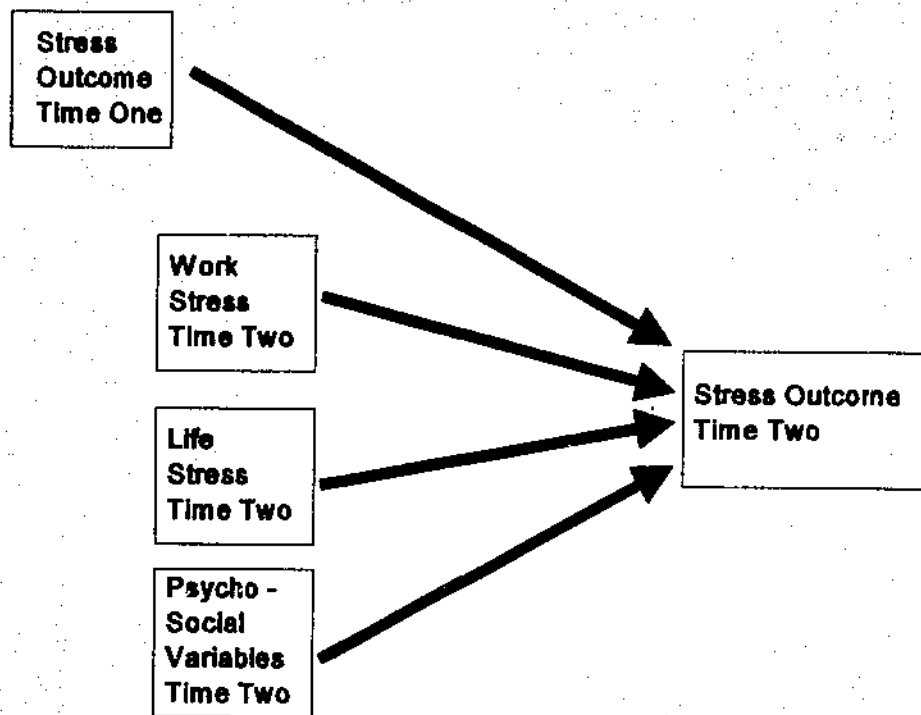


Figure 14. Combined Longitudinal and Cross-sectional Model of Stress

Table 30
Results of Multiple Regression Using a
Combination of Stress Outcome Added
Longitudinally and Predictors Added Cross Sectionally.

Criterion Variable	Predictors		R	R ²
Psychological Stress Time 3	Neuroticism Life Events Social Support Self Esteem Type A Behaviour Psychological Stress	Time 3 Time 3 Time 3 Time 3 Time 3 Time 2	0.58	0.34
Psychological Stress Time 3	Neuroticism Life Events Social Support Self Esteem Type A Behaviour Psychological Stress	Time 3 Time 3 Time 3 Time 3 Time 3 Time 1	0.59	0.35
Psychological Stress Time 2	Neuroticism Life Events Social Support Self Esteem Type A Behaviour Psychological Stress	Time 2 Time 2 Time 2 Time 2 Time 2 Time 1	0.64	0.41
Physical Health Time 3	Neuroticism Life Events Social Support Type A Behaviour Physical Health	Time 3 Time 3 Time 3 Time 3 Time 2	0.76	0.57
Physical Health Time 3	Neuroticism Life Events Social Support Type A Behaviour Physical Health	Time 3 Time 3 Time 3 Time 3 Time 1	0.70	0.49
Physical Health Time 2	Neuroticism Life Events Social Support Type A Behaviour Physical Health	Time 2 Time 2 Time 2 Time 2 Time 1	0.66	0.43
Want to Leave Time 3	Commitment Self Esteem Role Conflict Want to Leave	Time 3 Time 3 Time 3 Time 2	0.78	0.60
Want to Leave Time 3	Commitment Self Esteem Role Conflict Want to Leave	Time 3 Time 3 Time 3 Time 1	0.66	0.43
Want to Leave Time 2	Commitment Self Esteem Role Conflict Want to Leave	Time 2 Time 2 Time 2 Time 1	0.76	0.58
Job Satisfaction Primary School Time 3	Commitment Type A Behaviour Job Satisfaction	Time 3 Time 3 Time 2	0.78	0.56
Job Satisfaction Primary School Time 3	Commitment Type A Behaviour Job Satisfaction	Time 3 Time 3 Time 1	0.75	0.56
Job Satisfaction Primary School Time 2	Commitment Type A Behaviour Job Satisfaction	Time 2 Time 2 Time 1	0.78	0.60
Job Satisfaction High School Time 3	Commitment Role Ambiguity Self Esteem Job Satisfaction	Time 3 Time 3 Time 3 Time 2	0.78	0.61
Job Satisfaction High School Time 3	Commitment Role Ambiguity Self Esteem Job Satisfaction	Time 3 Time 3 Time 3 Time 1	0.76	0.58
Job Satisfaction High School Time 2	Commitment Role Ambiguity Self Esteem Job Satisfaction	Time 2 Time 2 Time 2 Time 1	0.77	0.58

Table 31

Correlational Data between Sampling Times one and two.

Time 1	Time 2												
	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Commitment	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events
Want to Leave	.737 ***	-.083	.257 **	-.242 **	-.490 ***	.030	-.346 ***	-.157 *	.194 **	-.122	.252 ***	.336 ***	.055
Physical Health	.196 **	.598 ***	.180 ***	-.236 ***	-.307 ***	-.025	-.284 ***	-.338 ***	.194 **	.158 *	.282 ***	.302 ***	.106
Psychological Stress	.294 ***	.253 ***	.494 ***	-.420 ***	-.344 ***	-.168 *	-.497 ***	-.508 ***	.238 **	.276 ***	.291 ***	.440 ***	.225 **
Hardiness	-.197 **	-.188 *	-.262 ***	.629 ***	.201 **	.143 *	.584 ***	.333 ***	-.213 **	.093	.260 ***	.198 **	-.081
Job Satisfaction	-.470 ***	-.180 *	-.143 *	.320 ***	.751 ***	-.014	.509 ***	.271 ***	-.225 **	.003	.265 ***	.386 ***	-.131
Social Support	.065	-.323 ***	-.324 ***	.391 ***	.319 ***	.379 ***	.404 ***	.570 ***	-.227 **	.090	.250 ***	.372 ***	-.118
Commitment	.174 *	-.234 **	-.292 ***	.373 ***	.210 **	.119	.359 ***	.707 ***	-.313 ***	.120	.190 *	.194 **	-.114
Self Esteem	.135 ***	.250 ***	.114	-.224 **	-.216 **	-.168 *	-.291 ***	-.388 ***	.602 ***	.068	.096	.120	.224 **
Neuroticism	.162 *	.133 *	.346 ***	-.177 *	-.088	.052	-.210 **	-.173 *	.264 ***	.541 ***	.253 ***	.293 ***	.166 *
Type A Behaviour	.374 ***	.199 **	.251 ***	-.317 ***	-.366 ***	-.045	-.368 ***	-.251 ***	.155 *	.310 ***	.786 ***	.407 ***	.215 **
Role Conflict	.182 *	.113 ***	.149 *	-.280 ***	-.247 ***	-.011	-.337 ***	-.361 ***	.130	.195 **	.225 **	.566 ***	.097
Role Ambiguity	.028	.096	.020	-.092	-.067	.045	-.078	-.103	.051	.082	.124	.011	.689 ***
Life Events	.293 ***	-.104	-.230 **	.599 ***	.315 ***	.096	.621 ***	.325 ***	-.195 **	.082	.220 ***	.278 ***	-.126

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 32

Correlational Data between Sampling Times one and three.

Time 1	Time 3												
	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Commitment	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events
Want to Leave	.619 ***	-.023	.026	-.084	-.375 ***	.025	-.214 *	-.164	.078	.184 *	.205 *	.255 **	-.031
Physical Health	.202 *	.657 ***	.228 *	-.128	-.205 *	-.051	-.233 *	-.252 **	.258 **	.220 *	.215 *	.298 ***	.094
Psychological Stress	.316 ***	.241 **	.393 ***	-.340 ***	-.192 *	-.243 **	-.441 ***	-.520 ***	.304 ***	.188 *	.326 ***	.386 ***	.125
Hardiness	-.139	-.149	-.290 **	.460 ***	.231 *	.249 **	.492 ***	.312 ***	-.269 **	-.222 *	-.339 ***	-.373 ***	-.091
Job Satisfaction	-.415 ***	-.051	-.048	.203 *	.736 ***	-.052	.316 ***	.170 *	-.074	-.104	-.317 ***	-.408 ***	-.012
Social Support	-.127	-.233 *	-.246 **	.305 ***	.152	.514 ***	.388 ***	.583 ***	-.228 *	-.136	-.297 **	-.316 ***	.016
Commitment	-.353 ***	-.135	-.235 **	.301 ***	.090	.300 ***	.406 ***	.730 ***	-.298 **	-.178 *	-.220 *	-.271 **	-.139
Self Esteem	.159	.147	.044	-.222 *	-.123	-.098	-.244 **	-.426 ***	.622 ***	.097	.045	.184 *	.250 **
Neuroticism	.070	.120	.327 ***	-.255 **	-.148	.021	-.286 **	-.240 **	.412 ***	.523 ***	.188	.197 *	.137
Type A Behaviour	.250 **	.165	.139	-.245 **	-.397 ***	-.209 *	-.337 ***	-.321 ***	.182 *	.250 **	.701 ***	.504 ***	.142
Role Conflict	.008	-.020	.116	-.194 *	-.080	-.216 *	-.245 **	-.370 ***	.221 *	.131	.235 **	.513 ***	.123
Role Ambiguity	-.008	.147	.086	-.136	-.039	.032	-.164	-.108	.123	.071	.034	.078	.737 ***
Life Events	-.279 **	-.083	-.218 *	.415 ***	.306 ***	.198 *	.506 ***	.353 ***	-.290 **	-.191 *	-.349 ***	-.421 ***	-.121

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 33

Correlational Data between Sampling Times two and three.

Time 2	Time 3												
	Want to Leave	Physical Health	Psychological Stress	Hardiness	Job Satisfaction	Social Support	Commitment	Self Esteem	Neuroticism	Type A Behaviour	Role Conflict	Role Ambiguity	Life Events
Want to Leave	.765 ***	-.027	.245 **	-.206 *	-.477 ***	-.128	-.340 ***	-.180 *	.196 *	.186 *	.271 **	.344 ***	.002
Physical Health	.055	.739 ***	.249 **	-.170 *	-.137	-.210 *	-.222 *	-.344 ***	.305 ***	.373 ***	.119	.114	.067
Psychological Stress	.225 *	.244 **	.390 ***	-.310 ***	-.224 *	-.234 *	-.390 ***	-.361 ***	.233 **	.308 ***	.350 ***	.283 **	-.040
Hardiness	-.187 *	-.198 *	-.293 **	.596 ***	.323 ***	.292 **	.658 ***	.484 ***	-.212 *	-.108	-.347 ***	-.352 ***	-.147
Job Satisfaction	-.525 ***	-.113	-.094	.238 **	.757 ***	.048	.376 ***	.218 *	-.105	-.161	-.347 ***	-.404 ***	-.083
Social Support	.090	-.080	-.146	.159	.067	.492 ***	.147	.338 ***	-.038	-.256 **	-.135	-.136	-.057
Commitment	-.280 **	-.308 ***	-.366 ***	.464 ***	.240 **	.388 ***	.536 ***	.855 ***	-.358 ***	-.298 **	-.313 ***	-.365 ***	-.197 *
Self Esteem	.263 **	.092	.154	-.221 *	-.215 *	-.078	-.265 **	-.369 ***	.631 ***	.250 **	-.028	.186 *	.153
Neuroticism	.243 **	.252 **	.393 ***	-.208 *	-.121	-.101	-.257 **	-.270 **	.163	.581 ***	.327 ***	.155	.138
Type A Behaviour	.276 **	.233 *	.223 *	-.216 *	-.345 ***	-.196 *	-.333 ***	-.333 ***	.112	.347 ***	.778 ***	.423 ***	.044
Role Conflict	.265 **	.234 *	.339 ***	-.174 *	-.288 **	-.193 *	-.302 ***	-.297 **	.161	.341 ***	.494 ***	.514 ***	.040
Role Ambiguity	.087	.041	.116	-.119	-.134	.084	-.138	-.189 *	.254 **	.125	.028	.161	.765 ***
Life Events	-.350 ***	-.212 *	-.318 ***	.579 ***	.505 ***	.299 **	.756 ***	.528 ***	-.249 **	-.176 *	-.425 ***	-.414 ***	-.137

Note

* $p < .05$, ** $p < .01$, *** $p < .001$

conducted, however, due to available data, for each stress outcome variable subject numbers varied. Using mean split for each outcome variable, that is, grouping those subjects scoring above the mean and those subjects scoring below the mean, a comparison using chi square across those subjects who had left and those subjects who were still teaching in the ministry was made for each of the four stress outcome measures. Results are displayed in Tables, 34-37.

As can be seen from the results there were two significant effects. There were higher actual leaving rates among those teachers who indicated high Want to Leave $p < .05$ (Yates correction). There were also higher leaving rates among those teachers who scored higher levels of Psychological Stress $p < .05$ (Yates correction). Of note, there was a trend for Physical Health, ($p > .05$) but no significant result for Job Satisfaction.

This pattern of results is confusing, that Job Satisfaction did not produce significant results in actual leaving rates, could well be due to the economic climate. That is, during a recession, people who are low in Job Satisfaction are still not likely to leave. This was consistent with Henne and Locke (1985) who indicated that Job Satisfaction alone was not the sole reason a person left their job, rather the ability to obtain another job was also a relevant variable.

That people who indicated that they wanted to leave and actually left gives added validity to the measure used and also suggests that people who indicate that they wish to leave are indeed more likely to do so. This was, however, in contrast to Fimian, Fastenau

Table 34

Leaving Rates Among Teachers Displaying Low and High Psychological Stress

Chi-Square (1,229)=3.987, $p < .05$.

Psychological Stress	Teachers who stayed	Teachers who left	Total
Low Psychological Stress	112	32	144 (62.9)
High Psychological Stress	55	30	85 (37.1)
Total	167 (72.9)	62 (27.1)	229 (100)

Table 35

Leaving Rates Among Teachers Displaying Low and High Physical Health.

Chi-Square (1,230)= 3.34 $p < .068$ (not significant)

Physical Health	Teachers who stayed	Teachers who left	Total
Low Physical Health	103	29	132 (57.4)
High Physical Health	65	33	98 (42.6)
Total	168 (73.0)	62 (27.0)	230 (100)

Table 36

Leaving Rates Among Teachers Displaying Low and High Job Satisfaction

Chi-Square (1,229) =0.014 p<.91 (not significant) .

Job satisfaction	Teachers who stayed	Teachers who left	Total
Low Job Satisfaction	82	31	113 (49.3)
High Job Satisfaction	86	30	116 (50.7)
Total	168 (73.4)	61 (26.6)	229 (100)

Table 37

Leaving Rates Among Teachers Displaying Low and High Intentions to Leave

Chi-Square (1,227) =3.92 p<.048 (significant).

Intention to leave	Teachers who stayed	Teachers who left	Total
Low Want to Leave	105	29	134 (59.0)
High Want to Leave	61	32	93 (41.0)
Total	166 (73.1)	61 (26.9)	227 (100)

and Thomas (1988) who suggested that evidence linking employee turnover with intention to leave was weak.

That higher levels of Psychological Stress resulted in higher leaving rates was consistent with the general theory underlying stress research and turnover rates. It was also consistent with Sutherland and Cooper (1990) who suggested that high levels of emotional insecurity and anxiety were associated with employee turnover.

Summary

Results from the second phase of the research produced a number of pertinent points:-

Firstly, that consistency in the relationships of the variables was found across Phase I and II.

Secondly, that the cross sectional models formulated in the initial phase of the research were re-tested and found to hold for a second sample of teachers.

Thirdly, that initial or prior stress outcome levels of people acted as an important predictor in their future stress levels.

Fourthly, that those teachers who indicated a high preference for Wanting to Leave the organization and those teachers demonstrating higher mean levels of Psychological Stress were more likely to leave teaching three years later.

Fifthly, Type A Behaviour was identified as a possible result of occupational stress and not an occupational stressor.

The next chapter, Chapter Eight, is the general discussion and discusses the above pertinent points as well as the important results arising out of phase one research. Chapter Eight also discusses the implication of the current research, methodological considerations and future research.

CHAPTER EIGHT

GENERAL DISCUSSION

Introduction and Overview

The examination of the stress concept is fraught with difficulties. This is necessarily a result of the difficulties in conceptualisation, definition and models available in the area. As a consequence, research on stress has often relied heavily on epidemiological styles of research to determine the presence of stress among different samples. The results of such research have generated taxonomies of variables that could be classed as stressors and further lists of variables that could be classed as indicating stress. Forays into model building on the basis of these lists have resulted in a plethora of different models with some commonality in the variable structure, that is, they use one or a combination of the following:- personality, psycho-social mediators and stressors. However, the models in general are not tested and are most often the result of cross-sectional research, moreover, they do not examine the importance of existing levels of stress.

The aim of the current research was to generate a data-driven model of the occupational stress process and develop hypotheses regarding those relationships to be tested in a longitudinal fashion. From the longitudinal research the elucidation of the importance of pre-existing levels of stress were assessed.

This chapter discusses the major findings of the two phases of the research project.

The implications of the major research conclusions are then considered, followed by methodological considerations and presentations of areas for future research.

Major Findings

Research from Phase I produced a number of interesting findings, the first of which was that the different stress outcome variables had a range of different predictors. That is, in general, differences existed in the variables that predicted Physical Health, Psychological Stress, Job Satisfaction and Wanting to Leave the job.

Results also indicated that Psychological Stress and Physical Health shared common predictors, that is, Social Support, Life Events, Type A Behaviour and Neuroticism were involved in the prediction of both of these variables, while Wanting to Leave was predicted by Self Esteem, Role Conflict and Type A Behaviour. Job Satisfaction among primary school teachers was predicted by Commitment and Type A Behaviour whilst Job Satisfaction among high school teachers was predicted by Role Ambiguity, Commitment and Self Esteem. It is worth noting that these stress outcome variables had significant inter correlations, with particularly high correlations between Psychological Stress and Physical Health, and Job Satisfaction and Wanting to Leave. An examination of the predictors indicated that these correlations were likely to be a product of the communality among the predictors. However, it is possible that certain variables are more predisposed towards producing different stress outcomes, and as a result account for some of the confusion present in the stress literature in terms of what variables predict stress. For example, any

review of the literature finds continuing variation in predictor variables for stress outcome. As a result, the differences in percentage of variance accounted for by these predictors could depend on the outcome variable used. Moreover, even if the outcome variable was the same across studies e.g., Psychological Stress, then the means of measuring the outcome variable could well be different. For example, one study using the General Health Questionnaire and another using the Middlesex Hospital Questionnaire as a measure of psychological stress, could possibly come up with different results. As a consequence, the standardisation of both outcome and predictor variables would seem to be necessary within the stress literature.

Further evidence for the need to standardise the stressor variables used in research comes from the finding that among work stressors there appear to be redundancies in variables. This was the second significant finding from phase one of the research. It will be recalled that the twelve occupational stressors originally examined (Underutilization of Skill, Hours Worked, Extra Work/Overtime, Work Load, Participation in Decision Making, Job Responsibility, Job Future Ambiguity, Pay Inequity, Role Conflict, Role Ambiguity, Administrative Support, Peer Conflict) were factor analysed and three factors emerged named, Role Conflict, Role Ambiguity and Extra Work/Overtime. These results were consistent with prior research, however, it underscores that there may be some redundancy between these measures. This redundancy may be contributing to the variation in results found in the stress literature. A consistent approach using recognised and standardised stressor measures for future research is warranted.

If this standardization is not possible then perhaps researchers, instead of using

ambiguous concepts like stress, should indicate how the stress is measured or what sort of stress was being measured, e.g., psychological stress, or stress as measured by job satisfaction.

Thirdly, Phase I research highlighted the importance of continuing research using all of the four categories of predictor variables (work stressors, life stressors, personality variables and psycho-social moderators). It was evident from the introduction that the percentage of variance accounted for in stress research was in the region of 10%. Through the addition of further variables, as in the present research, further variance, approximately 30%, was accounted for. That is, life stressors, work stressors, personality, and psycho-social variables, used in combination, produced an increase in the percentage of variance accounted for in a stress variable. In keeping with the previous discussion, however, it does appear that the pattern or relative importance of these variables in the prediction of stress will be dictated by the outcome measure used.

The fourth significant finding was concerned with the style of the models produced in the current work. Phase I investigated which style of model, direct, mediating or buffering accounted for the greatest proportion of variance of the criterion variables of Psychological Stress, Physical Health, Job Satisfaction and Wanting to Leave. Results found that the most suitable model for all criterion variables was the direct effect model and as a result additive. This is consistent with the research presented in chapter two where complex direct effects models were used to explain the importance of psycho-social and personality factors in the stress process (Figure 2) and supports the work of Andrews et al. (1978).

The additive nature of the models is also consistent with the conceptualisation of stress by King et al. (1987), whereby stress is considered a burden, that each individual stressor adds and subtracts from each other until they exceed an individual's ability to view themselves as coping. As a result stress is the outcome.

The significant inter-correlations among the variables in each of the five models generated leads to the suggestion that although the models were direct in nature, there could be a substantial amount of influence between the variables that would be described as interactive. However, due to the statistical techniques used, the most salient effect detected was direct, this was consistent with the findings of Israel et al. (1986) and Edwards et al. (1990).

From Phase II research a further significant finding was the importance of stress at time one in predicting the presence of stress at a later date. It will be recalled from chapter six that pre-existing levels of stress were regressed along with other predictor variables established from research in phase one against stress outcome variables at a future time period. Results found that for all four criterion variables (Psychological Stress, Physical Health, Job Satisfaction and Wanting to Leave) the addition of pre-existing levels of stress resulted in a greater percentage of the variance being accounted for.

In general, literature has not dealt with the presence of stress at time one in the prediction of stress at time two. The literature appears to treat the pre-existing level of stress as a confounding variable. An illustration of this point is Warheit's (1979) research

where he found that 25% of variability in depressive symptoms were accounted for by pre-existing levels of depression, however, Warheit chose to focus on the importance of social support and life events on depression.

On the basis of the current research, pre-existing stress levels are crucial to the development of an understanding of the stress process. If we return to the original definition of stress using Lazarus's formulations and King's et al. (1987) definition which suggests that stress "is a negative emotional experience which results from a person's negative thoughts about an inability to cope in his or her environment," it follows, therefore, that if a person is already experiencing stress, then further stressors would tax the person's resources further and he or she would have fewer resources to bear against the new stressors and would feel less able to cope with this new onslaught. The importance of pre-existing levels of stress fits well with the individuality of King's et al. (1987) definition. This also adds to the importance of conducting longitudinal as well as cross-sectional research. The importance of the finding can not be elucidated from purely cross-sectional research since an investigator can not examine the pre-existing levels of stress.

One may criticise this postulation on the basis of suggesting it is nothing more than test re-test reliability. This may well be the case, however, all measures used in the current research, were considered to be a valid predictor of their construct. Nevertheless, test re-test reliability could still be considered as a plausible hypothesis. As a result, future longitudinal research should out of caution use two separate valid predictors of Job Satisfaction, Psychological Stress, etc., using both at initial testing and both at the final data collection

phase, then cross referencing the results. This would certainly remove the concern about test-retest influences.

The models generated, however, still failed to account for a majority of the variance in stress outcome measures, especially within the more global measures of Psychological Stress and Physical Health. Stress research in general has failed to take into account the importance of the biological component, this research being no exception. The biological component be it genetic or some other factors are often erroneously mistaken for personality traits and are measured in this way believing that traits are stable across time. It is possible, however, that these traits are not measuring a biological preparedness to react to stresses in certain ways. For example, Type A Behaviour has been considered a trait where, as in the present research (Chapter Seven), it is possible that it is an outcome variable or a behaviour emanating from an already stressful environment. Certainly Seligman (1975) in his thesis on biological preparedness towards phobic stimuli such as spiders and snakes, suggested some of these animals were more easily conditioned to than others. There is no reason to suspect that the same may be said for stressors and also that there would be large variation among humans' biological preparedness to react to stress. The presence of a genetic or biological component has more credence in light of Arvey, Bouchard, Segal and Abraham's (1989) findings. In their investigation into job satisfaction using monozygotic twins raised apart, results indicated that 30% of observed variance in job satisfaction was due to genetic factors. This biological component could possibly account for a further percentage of the variance in stress and should be investigated further.

A further significant finding in the current research was that stress produced an increase in actual job turnover. It will be recalled from chapter seven that Psychological Stress and Wanting to Leave resulted in higher leaving rates among teachers three years later. This is consistent with research outlined in the introduction such as Porter and Steers (1973), who indicated that high anxiety results in an increased tendency to leave an organisation. The employee turnover for an organisation has quite dramatic implications for an organisation especially when such costs as training and induction are taken into account. Moreover constant change disrupts the work routine and morale of the work group (Sutherland & Cooper, 1990).

The broader implications of stress and the current research are set out below.

Implications

The current research has broad implications that fall under two headings, the first is practical and has to do with the involvement of stress in the teaching profession and organisations as a whole. The second has to do with stress research.

Teachers and Stress

The current research support the results obtained from previous large scale studies on teacher stress in Western Australia including Punch & Tuettemann (1991), and Loudon (1987), that indicate teachers are under stress. This study shows that teachers appear to

exhibit stress in four areas, these are, Physical Health, Psychological Stress, Job Satisfaction and Wanting to Leave their Job. Any intervention strategy designed at reducing stress should therefore cater for all four stress outcomes. Stress management programmes are very popular within organisations, and are mostly designed to provide the individual with skills that the person will use for the future onset of stressors. One indication based on the current research is that the intervention should not always be at the level of the individual. In many cases the stress outcome variable had involved in its predictors stressors that could only be regarded as external and a result of the organisation. If an organisation were to reduce stress in its employees, it must therefore analyse and change the conditions which generate stress, e.g., Role Ambiguity, which may be reduced by making explicit to the employees their duties and boundaries.

Secondly since the current research demonstrated the importance of stress at time one in the prediction of stress at time two, any stress management programme should, therefore, include a means to reduce current stress symptoms not just stressors or future stressors. This in itself may be enough to reduce the occupational stress of the individual, since according to the King et al. (1987) definition of stress, a reduction in the feeling of failure to cope, should result in a perceived decrease in stress.

Moreover, stress management programmes often only consider occupational stressors. The current research lends support to the effects the non work environment could have on stress at work. As a consequence, stress management programmes should also provide a means of reducing those stressors present in the home, or at the very least teach people how

to deal with those stressors in the external world.

As indicated earlier, stress management programmes should as a matter of course, not only teach people how to deal with new stressors, but, because of the importance of pre-existing stress levels, should include techniques to reduce those. Consequently any stress management programme should look at such topics as:-

Education:- An essential feature of any stress management programme should involve information and education about such topics as the stress process, peoples' reactions to stress and nutrition.

Relaxation:- The use of relaxation in health management in its various forms stretches from antiquity to modern day, and has appeared under various labels such as autogenic training (Schultz & Luthe, 1959), progressive muscle relaxation (Jacobsen, 1957) and more recently Neuro-muscular relaxation (Nucho, 1988). Other less formal techniques include deep breathing, Imagery, Meditation, Tai Chi, and Auto Hypnosis. It is generally agreed that the use of such techniques reduces the physiological arousal associated with the stress response.

Exercise:- Physical exercise may be conceptualised as both a long and short term stress management technique. It has been associated with accomplishing three aims in the stress coping campaign. Firstly it helps reduce the stress hormones produced by the automatic fight flight response, and secondly it generates stamina to cope with on going

stressors, by supplying emotional coping mechanisms (Billings & Moos, 1981). Thirdly, it helps change a person's self image and beliefs, which provides further stamina to cope with on going stressors (Long & Flood, 1993). Lindenmuth, (1981) has also documented the psychological benefits of exercise in reducing the presence of depression.

Self Nurturant Activities:- Engaging in pleasant activities or taking time away from the classroom/work place to replenish the emotional exhaustion that the classroom/work place produce, may also form part of any stress management programme. This forms an essential part of the education concerning stress and would involve teaching participants that the use of a stress management programme without examining the inequity in energy in, versus energy out, of the individual, would make the stress management programme a band aid treatment only.

Communication and Social Networks:- At an organisational level, team building exercises to make the school/organisation unit less isolating would also enhance any stress management programme. The aim of such team building would be to make peers aware of the stressors upon the individuals and how these stressors influence the team as a whole. Of necessity it would also increase the social support made available to the individual from colleagues. The debate about social support and stress is not undivided, the general agreement, however, is that it does help reduce the impact of stress. Enhancing communication between staff would also decrease the problems associated with role difficulties, by allowing staff to communicate and discuss role uncertainty and thereby obtain an appropriate definition.

Cognitive Restructuring:- Beck (1991) and Ellis and Harper (1961) both indicate the importance of changing the dysfunctional beliefs, values, ideals and expectations that a person brings into the occupational environment. For example, if a person's self esteem was low, due to a basic belief they held regarding their overall worth as a person, then, as in the current research, the person's psychological stress, tendency to want to leave the organisation, and job dissatisfaction would increase. Cognitive restructuring is an effective method by which such dysfunctional beliefs can be changed, the result of which is an enhancement of the person's self esteem, This would therefore obviously reduce the persons ongoing stress and future stress.

Within the Organisation:- It is however, important for teachers to realise, as stated earlier, that not all stress lies with the individual. Therefore coping strategies which individuals use to overcome their own difficulties will not be enough. Teachers need to address the stressors within the organisation. This can be achieved by having meetings in which the staff as a whole identify the sources of stress for their micro and macro organisation. Then generate ideas and strategies for coping with the stress.

Modelling

If modelling is to continue in its current trend then it is conceivable that in the future research will be able to predict with accuracy a person's reaction to stressors. In the current research, the wish to leave an organisation three years previously was able to distinguish to some extent those people who left the organisation three years later. It is therefore possible

that future research should be able to predict with some accuracy whether a person will react favourably or unfavourably to the stressors of the organisation. This is, of course, a continuation of the research that grew out of the army's search for the ultimate soldier during the Korean War (Berkun, Bialek, Kearn, and Yagi, 1962).

The current research also has implications for the prediction of stress on a longitudinal basis. Phase II research demonstrated that the pre-existing levels of stress were an important component in the prediction of stress outcome for Psychological Stress, Physical Health, Wanting to Leave and Job Satisfaction. Therefore, if a researcher wishes to predict stress then it seems prudent to measure the stress levels of the moment as well as what the researcher perceives as causal factors. Out of necessity then, future attempts at causal modelling for stress research should have a longitudinal component that examines the importance of pre-existing stress levels.

Methodological Considerations

There were a number of methodological considerations in the present research. One of the most obvious relates to the long term follow up in Phase II of the research.

Some of the subjects may not have been traceable due to name changes, although the author did manage to track down some subjects with name changes. It is still possible however, that marriages did occur and the investigator was unable to be certain that all subjects were traced. As a consequence some subjects may have been listed as having left

the organisation even though they had not.

In any longitudinal study there is also an attrition rate, subjects deciding for various reasons not to respond to the questionnaire. It is often thought, therefore, that those subjects who respond are different from those subjects who choose not to return their questionnaire. Although not discussed in chapter seven, those subjects who returned their questionnaires across all three time periods were compared to those subjects who returned the questionnaire on only one occasion. Results indicated that the subjects did not differ on any attribute that was assessed in the current research. Thus, although one can not state with certainty that the sample was representative, one may say the current sample appears representative. As is the case in all research, however, a larger sample size would have been desirable.

That the results of the current research which highlighted the importance of pre-existing stress levels in stress research indicate the importance of maintaining longitudinal research. Obviously that stress is a chronic condition, requires that it be viewed across time and therefore is necessarily longitudinal in nature. Test re-test problems among the measures have already been highlighted and solutions discussed.

The current research, by virtue of the instruments used, was unfortunately subjective in nature, which is a problem for stress research in general. Although its very subjectivity suits the definition used in the current research, no doubt the use of blood or urine tests to test for the presence of catecholamines or adrenaline would be useful, more objective and

perhaps enlighten researchers as to the presence of a biological component of stress.

Future Investigations

The current research used a descriptive and correlational approach, a number of models were developed based upon a priori and temporal sequence of events. While this design allowed for the development of models about the stress process and a description of the variables associated with stress outcome, the strength of direct causal affects can only be best derived from an experimental manipulation of variables as in a true experimental design, which was not possible in the present study. The current study and conceptualizations do, however, provide a model of variables which could be studied further using both cross sectional and longitudinal designs which allow for more detailed examination of the variables. It is suggested perhaps that the artificial modification of some variables to examine this process take place. It is realised the complexities involved in such a manipulation and therefore perhaps large scale studies where changes in such variables over time would occur naturally would be the best solution. Examples of these studies include the Framingham research or Busselton in Western Australia.

As also indicated earlier, the importance of stress at time one in the prediction of later stress needs further examination. The present results could only be taken to be exploratory at most and are confounded by the question of test re-test reliability. As suggested earlier

longitudinal experimentation where there are two criterion variables which are measuring a similar construct need to take place. In the current research the importance of outcome variables in predicting stress at time two holds added weight with the results of the three year follow up, which indicated that many teachers who indicated high Wanting to Leave were no longer teaching at a three year follow up. This was also the case for those teachers indicating Psychological Stress.

The current research did not examine all possible variables that could be involved in the stress process, just a selection based on the most important variables discussed in the literature. The addition of further variables may well elucidate further proportions of the stress outcome accounted for by the stressors. Such variables would include lack of equipment or facilities (Coates & Thoresen, 1976; McGuire, 1979; Needle et al. 1981; Otto, 1983), or whether a person engages in stress management or exercise. Moreover it appears to be important to continue using the multivariate approach that has been used in the current thesis.

The current research generated causal models regarding the stress process. The sample used to generate these models was limited to teachers in Western Australia, consequently the generalisability of the models and results remains questionable. It is recommended that the current research be replicated on different population groups, different sample sizes and cross culturally too ensure generalisability of the results.

Phase I research also highlighted the communality among the stressors, it would seem

both desirable and sensible to pursue research that could lead to a standardisation of both stress and stressor measures in the stress literature. This would also possibly lead to the alleviation of some of the inconsistencies in the stress literature. If this is not possible then stress should only be discussed in terms of the variables underlying the test measures.

The current research examined subjective stress, that is, stress as determined by the subject on the basis of their appraisal or decision that an event or happening has become a stressor. In relation to Folkman and Lazarus's model research needs to examine further the application of appraisal and how a potential stressor moves from potential to actual in nature.

Summary

In summary the current research used both longitudinal and cross-sectional techniques to develop a model of the stress process. The longitudinal research spanned 6 months with a three year follow up. There were a number of pertinent findings, the most significant being the importance of pre-existing stress levels in the prediction of future stress levels. With this result in mind the need to standardise measures of stress and the need for further research into the questions raised in this research were suggested.

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APPENDIX I
BIOGRAPHICAL INFORMATION

Gender_____

Age_____

Education level:

Diploma_____

Degree_____

Post Graduate_____

Where did you gain qualifications?

University_____

College_____

Other (specify)_____

Present Teaching Position_____

Location of Job (district)_____

How many hours per week do you spend in direct contact with students?_____

How many hours do you spend in administration and other non teaching duties per week?_____

What grade do you teach?_____

Name and location of city that you call home_____

Birth Order_____

Number of Siblings_____

Where were you born? (town and country)_____

Where did you spend early childhood? City_____

Country Town_____

Country_____

What preference do you have for your present position?

high_____

medium_____

low_____

Marital status _____

What is your religion? _____

Do you share a house with anyone? _____

APPENDIX II
ROLE AMBIGUITY AND CONFLICT

**THE FOLLOWING SET OF QUESTIONS ASKS ABOUT YOUR ROLE
IN THE JOB YOU DO.**

I have to do things that should be done differently.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I have to work on unnecessary things.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I receive a task without the proper manpower to complete it.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I receive a task without the adequate resources and materials to execute it.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I work with two or more groups who operate quite differently.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I have to buck a rule or policy in order to carry out a task.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I receive incompatible requests from two or more people.

Definitely not true		Extremely true				
1	2	3	4	5	6	7

I do things that are apt to be accepted by one person and not accepted by others.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

I know exactly what is expected of me.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

I feel certain about how much authority I have.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

Clear planned goals exist for my job.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

I know that I have divided my time properly.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

I know what my responsibilities are.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

Explanation is clear as to what has to be done.

Definitely not true	Extremely true
1	7
2	6
3	5
4	4

APPENDIX III

WORKLOAD

These questions deal with different aspects of you work. Please indicate how often these aspects appear in your job.

How often does your work require you to work very hard?

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How often does your job require you to work very fast

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How often does you job leave you with little time to get things done?

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How often is there a great deal to be done?

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How much slow down in the work do you experience?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

How much time do you have to think and contemplate?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

How much work load do you have.

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

What quantity of work do others expect you to do?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

How much time do you have to do all you work?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

How many projects, assignments, or tasks do you have?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

How many lulls between heavy work load periods do you have?

A Great Deal	A Lot	Some	A Little	Hardly Any
1-----	2-----	3-----	4-----	5

Now indicate how often you experience each of the following changes on your job.

A marked increase in the work load?

Hardly or Never	A little of the time	Some of the time	Very often
1-----	2-----	3-----	4

A marked increase in the amount of concentration required on your job?

Hardly or Never	A little of the time	Some of the time	Very often
1-----	2-----	3-----	4

A marked increase in how fast you have to think?

Hardly or Never	A little of the time	Some of the time	Very often
1-----	2-----	3-----	4

APPENDIX IV
JOB RESPONSIBILITY

How much responsibility do you have for the future of others?

Very Little	A Little	Some	A Lot	A Great Deal
1	2	3	4	5

How much responsibility do you have for the job security of others

Very Little	A Little	Some	A Lot	A Great Deal
1	2	3	4	5

How much responsibility do you have for the morale of others?

Very Little	A Little	Some	A Lot	A Great Deal
1	2	3	4	5

How much responsibility do you have for the welfare and lives of others?

Very Little	A Little	Some	A Lot	A Great Deal
1	2	3	4	5

APPENDIX V
JOB FUTURE AMBIGUITY

In the future some jobs will be changing while others will be staying the same. Here are some questions which deal with this topic?

How certain are you about what your future career picture looks like?

Somewhat Uncertain	A little Uncertain	Somewhat Certain	Fairly Certain	Very Certain
1-----	2-----	3-----	4-----	5

How certain are you of the opportunities for promotion and advancement which will exist in the next few years?

Somewhat Uncertain	A little Uncertain	Somewhat Certain	Fairly Certain	Very Certain
1-----	2-----	3-----	4-----	5

How certain are you about whether your job skills will be of use and value five years from now?

Somewhat Uncertain	A little Uncertain	Somewhat Certain	Fairly Certain	Very Certain
1-----	2-----	3-----	4-----	5

How certain are you about what your responsibilities will be six months from now?

Somewhat Uncertain	A little Uncertain	Somewhat Certain	Fairly Certain	Very Certain
1-----	2-----	3-----	4-----	5

APPENDIX VI
UNDERUTILIZATION OF ABILITIES

This next set of items deals with the use of your skills and abilities. Indicate how often you see each type.

How often does your job let you use the skills and knowledge you learned in school?

Hardly, Rarely	Occasi- onally	Some- times	Fairly Often	Very Often
1-----	2-----	3-----	4-----	5-----

How often are you given the chance to do things you do best?

Hardly, Rarely	Occasi- onally	Some- times	Fairly Often	Very Often
1-----	2-----	3-----	4-----	5-----

How often can you use the skills from your previous experience and training?

Hardly, Rarely	Occasi- onally	Some- times	Fairly Often	Very Often
1-----	2-----	3-----	4-----	5-----

APPENDIX VII
INEQUITY OF PAY

Compared to other people where you work who do a good job similar to yours, how fair is your pay?

Very Much Less Than I Ought To Get	Somewhat Less Than I Ought To Get	A Little Less Than I Ought To Get	About The Same As I Ought To Get	More Than I Ought To Get
1-----	2-----	3-----	4-----	5

Compared to other people where you work who do a good job different from yours, how fair is your pay?

Very Much Less Than I Ought To Get	Somewhat Less Than I Ought To Get	A Little Less Than I Ought To Get	About The Same As I Ought To Get	More Than I Ought To Get
1-----	2-----	3-----	4-----	5

Compared to other people who do not work where you work but who have similar skills to yours how fair is your pay?

Very Much Less Than I Ought To Get	Somewhat Less Than I Ought To Get	A Little Less Than I Ought To Get	About The Same As I Ought To Get	More Than I Ought To Get
1-----	2-----	3-----	4-----	5

APPENDIX VIII
DECISION MAKING

The following items deal with different aspects of work. Indicate how much of each aspect you have on your job.

How much do you take part with others in making decisions that affect you?

Very	A		A	A Great
Little	Little	Some	Lot	Deal
1	2	3	4	5

How much do you participate with others in helping set the way things are done on your job.

Very	A		A	A Great
Little	Little	Some	Lot	Deal
1	2	3	4	5

How much do you decide with others what part or task you will do?

Very	A		A	A Great
Little	Little	Some	Lot	Deal
1	2	3	4	5

APPENDIX IX
HOURS WORKED

The forty hour week is a very common term. However when people count up the hours the work they sometimes find they work somewhat more or somewhat less than forty hours.

During the AVERAGE week, how many hours do you work, not counting the time you take off for meals.

_____ HOURS PER WEEK.

APPENDIX X

EXTRA WORK

In the last month how many hours of what you consider overtime did you put in.

-----HOURS PER WEEK.

APPENDIX XI
ADMINISTRATIVE SUPPORT

The following set of questions examines the relationship with your peers and boss.

I feel that there is a lack of administrative support in my job

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that my boss lacks insight into my work problems

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that my opinion is not valued by my superior

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that my superiors give me too little authority to carry out the responsibilities assigned to me

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

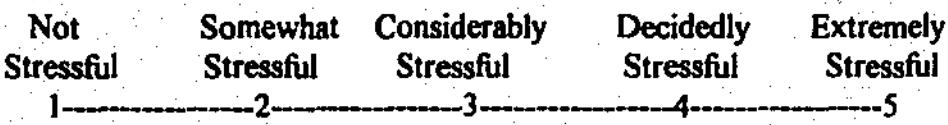
I feel that there is a lack of recognition for good work in my job

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that I can not inform my superior in an open way of how I feel about work related matters.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that my supervisor/boss is too aloof and detached from my position.



APPENDIX XII
RELATIONSHIP WITH COLLEAGUES

I work in an atmosphere of conflict among the employees.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that some of my fellow workers are incompetent

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that there is competition among my peers rather than a team spirit of cooperation

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that there is a poor peer/peer relationship in my work.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

There are a few people in my work who do not carry their share of the load.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that cliques exist among my work mates.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

I feel that poor communication exists among my work mates.

Not Stressful	Somewhat Stressful	Considerably Stressful	Decidedly Stressful	Extremely Stressful
1-----	2-----	3-----	4-----	5

APPENDIX XIII

LIFE STRESS

READ EACH OF THE EVENTS LISTED BELOW, AND CIRCLE THE NUMBER NEXT TO ANY EVENT WHICH HAS OCCURRED IN YOUR LIFE IN THE LAST 12 MONTHS.

THERE IS NO RIGHT OR WRONG ANSWER.

- 1) Death of spouse
- 2) Divorce
- 3) Marital separation
- 4) Death of close family member
- 5) Personal injury or illness
- 6) Marriage
- 7) Marital reconciliation
- 8) Change in health of family member
- 9) Pregnancy
- 10) Sex difficulties
- 11) Gain of new family member
- 12) Business readjustment
- 13) Change in financial state
- 14) Death of close friend
- 15) Change in number of arguments with spouse
- 16) Mortgage over \$10,000
- 17) Foreclosure of mortgage or loan
- 18) Change in responsibilities at work
- 19) Son or daughter leaving home
- 20) Trouble with in-laws
- 21) Outstanding personal achievement
- 22) Wife or husband begins or stops work
- 23) Begin or end school
- 24) Change in living conditions
- 25) Revision of personal habits
- 26) Trouble with principal
- 27) Change in work hours or conditions
- 28) Change in residence
- 29) Change in schools
- 30) Change in recreation
- 31) Change in church activities
- 32) Change in social activities
- 33) Mortgage or loan less than \$10,000
- 34) Change in sleeping habits
- 35) Change in number of family get-togethers
- 36) Change in eating habits
- 37) Vacation
- 38) Minor violation of the law

APPENDIX XIV
HARDINESS AND LOCUS OF CONTROL

BELOW ARE SOME ITEMS WITH WHICH YOU MAY AGREE OR DISAGREE. PLEASE INDICATE HOW YOU FEEL ABOUT EACH ONE BY CIRCLING A NUMBER FROM 0 TO 3 IN THE PLACE PROVIDED. 0 INDICATES THAT YOU FEEL THE ITEM IS NOT AT ALL TRUE, WHILE 3 MEANS THAT YOU FEEL THE ITEM IS COMPLETELY TRUE.

AS YOU WILL SEE, MANY OF THE ITEMS ARE WORDED VERY STRONGLY. THIS IS TO HELP YOU DECIDE THE EXTENT TO WHICH YOU AGREE OR DISAGREE.

PLEASE READ ALL THE ITEMS CAREFULLY. BE SURE TO ANSWER ALL ITEMS ON THE BASIS OF THE WAY YOU FEEL NOW. DON'T SPEND TOO MUCH TIME ON ANY ONE ITEM.

I often wake up eager to take up my
life where it left off the day before. 0 1 2 3

I like a lot of variety in my work. 0 1 2 3

Most of the time, my bosses or superiors
listen to what I have to say. 0 1 2 3

Planning ahead can avoid most future problems. 0 1 2 3

I usually feel that I can change what
might happen tomorrow, by what I do today. 0 1 2 3

I feel uncomfortable if I have to make
any changes in my every-day schedule. 0 1 2 3

No matter how hard I try, my efforts
will accomplish nothing. 0 1 2 3

I find it difficult to imagine getting
excited about working. 0 1 2 3

No matter what you do, the "tried and true"
ways are always the best. 0 1 2 3

I feel that it is almost impossible
to change my partner's mind about something.
(ignore if you have no partner). 0 1 2 3

Most people who work for a living
are just manipulated by their bosses. 0 1 2 3

New laws should not be made if they hurt a person's income.	0	1	2	3
When you marry and have children you have lost your freedom of choice.	0	1	2	3
No matter how hard you work, you never really seem to reach your goals.	0	1	2	3
A person whose mind never changes can usually be depended upon to have reliable judgement.	0	1	2	3
I believe most of what happens in life is just meant to happen.	0	1	2	3
It does not matter how hard you work at your job, since only the bosses profit by it anyway.	0	1	2	3
I don't like conversations when others are confused about what they mean to say.	0	1	2	3
Most of the time it doesn't pay to try hard, since things never turn out right anyway.	0	1	2	3
The most exciting things for me are my own fantasies.	0	1	2	3
I won't answer a person's questions until I am very clear as to what he is asking.	0	1	2	3
When I make plans I am certain I can make them work.	0	1	2	3
I really look forward to my work.	0	1	2	3
It does not bother me to step aside for a while from something I'm involved in if I'm asked to do something else.	0	1	2	3
When I am at work performing a difficult task I know when I need to ask for help.	0	1	2	3
It's exciting for me to learn something about myself.	0	1	2	3

I enjoy being with people who are unpredictable.	0	1	2	3
I find it usually very hard to change a friend's mind about something.	0	1	2	3
Thinking of yourself as a free person just makes you feel frustrated and unhappy.	0	1	2	3
It bothers me when something unexpected interrupts my daily routine.	0	1	2	3
When I make a mistake, there's very little I can do to make things right again.	0	1	2	3
I feel no need to try my best at work, since it makes no difference anyway.	0	1	2	3
I respect rules because they guide me.	0	1	2	3
One of the best ways to handle most problems is just not to think about them.	0	1	2	3
I believe that most athletes are just born good at sports.	0	1	2	3
I don't like things to be uncertain or unpredictable.	0	1	2	3
People who do their best should get full financial support from society.	0	1	2	3
Most of my life gets wasted doing things that don't mean anything.	0	1	2	3
Lots of times I don't really know my own mind.	0	1	2	3
I have no use for theories that are not closely tied to the facts.	0	1	2	3
Ordinary work is just too boring to be worth doing.	0	1	2	3
When other people get angry at me, it's usually for no good reason.	0	1	2	3

Change in routine bothers me.

0 1 2 3

**I find it hard to believe people who
tell me that the work they do
is of value to society.**

0 1 2 3

**I feel that if someone tries to hurt me,
there's usually not much I can
do to try and stop him.**

0 1 2 3

**Most days, life just isn't very exciting
for me.**

0 1 2 3

**I think people believe in individuality
only to impress others.**

0 1 2 3

**When I'm reprimanded at work, it usually
seems to be unjustified.**

0 1 2 3

**I want to be sure someone will take
care of me when I get old.**

0 1 2 3

Politicians run our lives.

0 1 2 3

APPENDIX XV
TYPE A BEHAVIOUR

TO WHAT EXTENT DO THE FOLLOWING TRAITS AND QUALITIES DESCRIBE YOU?

	Very well	Fairly well	Somewhat	Not at all
Being hard-driving and competitive.	1	2	3	4
Usually pressed for time.	1	2	3	4
Being bossy or dominating.	1	2	3	4
Having a strong need to excel in most things.	1	2	3	4
Eating too quickly.	1	2	3	4

HOW DO YOU FEEL AT THE END OF AN AVERAGE DAY OF WORK?.

Often feel very pressed for time? Yes _____ No _____

Work stays with you so you are thinking about it after working hours? Yes _____ No _____

Work often stretches you to the very limits of your energy and capacity? Yes _____ No _____

Often feel uncertain, uncomfortable, or dissatisfied with how well you are doing? Yes _____ No _____

Do you get upset when you have to wait for anything? Yes _____ No _____

APPENDIX XVI
NEUROTICISM AND EXTROVERSION

LISTED BELOW ARE A NUMBER OF STATEMENTS CONCERNING PERSONAL ATTRIBUTES AND TRAITS. READ EACH ITEM AND DECIDE WHETHER THE STATEMENT IS ON THE WHOLE, TRUE, OR ON THE WHOLE, FALSE, AS IT APPLIED TO YOU PERSONALLY.

Do you sometimes feel happy, sometimes depressed, without any apparent reason?

True _____ False _____

Do you prefer action to planning for action?

True _____ False _____

Do you have frequent ups and downs in mood, either with or without apparent cause?

True _____ False _____

Are you happiest when you get involved in some project that calls for rapid action?

True _____ False _____

Are you inclined to be moody?

True _____ False _____

Does your mind often wander while you are trying to concentrate?

True _____ False _____

Do you usually take the initiative in making new friends?

True _____ False _____

Are you inclined to be quick and sure in your actions?

True _____ False _____

Are you frequently "lost in thought" even when supposed to be taking part in a conversation?

True _____ False _____

Would you rate yourself as a lively individual?

True _____ False _____

Are you sometimes bubbling over with energy and sometimes very sluggish?

True _____ False _____

Would you be very unhappy if you were prevented from making numerous social contacts?

True _____ False _____

APPENDIX XVII
SOCIAL SUPPORT

THE FOLLOWING QUESTIONS ASK ABOUT PEOPLE IN YOUR ENVIRONMENT WHO PROVIDE YOU WITH HELP OR SUPPORT.

	Very Strongly Disagree							Very Strongly Agree
	1	2	3	4	5	6	7	
There is a special person who is around when I am in need.	1	2	3	4	5	6	7	
There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7	
My family really tries to help me.	1	2	3	4	5	6	7	
I get the emotional help and support I need from my family.	1	2	3	4	5	6	7	
I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7	
My friends really try to help me.	1	2	3	4	5	6	7	
I can count on my friends when things go wrong.	1	2	3	4	5	6	7	
I can talk about my problems with my family.	1	2	3	4	5	6	7	
I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7	
There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7	
My family is willing to help me make decisions.	1	2	3	4	5	6	7	
I can talk about my problems with my friends.	1	2	3	4	5	6	7	

APPENDIX XVIII
COPING BEHAVIOUR

IN THE FOLLOWING SECTION, YOU ARE ASKED TO THINK OF A RECENT PERSONAL CRISIS OR STRESSFUL LIFE EVENT AND THEN ANSWER YES OR NO TO A SERIES OF STATEMENTS ABOUT HOW YOU FELT WITH THE EVENT.

- Tried to see positive side yes no.
- Tried to step back from the situation and be more objective yes no.
- Prayed for guidance or strength yes no.
- Took things one step at a time yes no.
- Considered several alternatives for handling the problem yes no.
- Drew on my past experience: I was in a similar situation before yes no.
- Tried to find out more about the situation yes no.
- Talked with professional person (e.g.,, doctor, clergy lawyer) about the situation yes no.
- Took some positive action.. . . . yes no.
- Talked with spouse or other relative about the problem yes no.
- Talked with friend about the situation. yes no.
- Exercised more. yes no.
- Prepared for the worst yes no.
- Sometimes took it out on other people when I felt angry or depressed yes no.
- Tried to reduce the tension by eating more. yes no.
- Tried to reduce the tension by smoking more yes no.
- Kept my feelings to myself yes no.

Got busy with other things in order to
keep my mind off the problem yes no.

Didn't worry about it: Figured everything would
probably work out fine yes no.

APPENDIX XIX
PHYSICAL HEALTH

Here is a list of activities that people sometimes have trouble with:

- Trouble feeding themselves
- Trouble dressing themselves
- Trouble moving around

Do you have trouble doing any of these things? Yes No

Here are two more activities that people sometimes have trouble with: Trouble climbing stairs and trouble getting outdoors. Do you have trouble doing any of these things?

Yes No

Are you unable to work because of some illness or injury? _____

Have you had to change the kind of work you used to do, or had to cut down on the number of hours you used to work because of some illness or injury? _____

Have you had to cut down or stop any other activity you used to do because of some illness or injury? _____

Here is a list of medical conditions that usually last for some time. Have you had any of these conditions during the past 12 months? High blood pressure, heart trouble, stroke, chronic bronchitis, asthma or rheumatism, epilepsy, diabetes, cancer, tuberculosis, stomach ulcer or duodenal ulcer, chronic gall bladder trouble, chronic liver trouble, hernia or rupture?

Yes _____ No _____

Here is a list of physical impairments. Do you have any of these? Missing hand, arm foot or leg. Trouble with seeing (even with glasses). Trouble with hearing (even with a hearing aid). Do you have any other medical conditions, ailment, or impairment that hasn't been listed so far? Describe _____

Here is a list of physical ailments. Have you had any of these in the last 12 months? Frequent cramps in the leg, pain in the heart or tightness or heaviness in the chest, trouble breathing or shortness of breath, swollen ankles, pains in the back or spine, repeated pains in the stomach, frequent headaches, constant coughing or frequent heavy chest colds, paralysis of any kind, stiffness, swelling or aching in any joint or muscle, getting tired in a short time? Yes _____ No _____

Would you say that you had more energy or less energy than most people your age? _____

How often do you have trouble getting to sleep or staying asleep? _____

When you have only 4 or 5 hours sleep during the night how tired do you feel the next day? _____

How often are you completely worn out at the end of the day? _____

APPENDIX XX
WANTING TO LEAVE

How many times have you thought about leaving your job during the last 6 months?

- 1) 0**
- 2) 1-2**
- 3) 2-5**
- 4) Once a week**
- 5) Twice a week**
- 6) Every day**

APPENDIX XXI
JOB SATISFACTION

**THESE QUESTIONS DEAL WITH DIFFERENT ASPECTS OF YOUR WORK.
PLEASE INDICATE HOW OFTEN THESE ASPECTS APPEAR IN YOUR JOB.**

**How often does your job let you use the skills and knowledge
you learned in school?**

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How often are you given the chance to do things you do best?

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

How often can you use the skills from your previous experience and training?

Very Often	Fairly Often	Some- times	Occasi- onally	Rarely
1-----	2-----	3-----	4-----	5

**THIS SET OF QUESTIONS CONCERNS THE EXTENT TO WHICH YOU ARE
SATISFIED WITH YOUR JOB.**

**Is there some other work either here or outside your job which you would like better
than what you are doing?**

- 1) I would rather have some other job.
- 2) I would rather have my present job.

**Not counting all the other things that make your particular job good or bad, how do you
like the kind of work that you do?**

- 1) I dislike it very much; would prefer almost any other kind of work.
- 2) I don't like it very much; would prefer some other kind of work.
- 3) It is alright, but there are other kinds of work I like better.
- 4) I like it very much but there are other kinds of work I like just as much.
- 5) It's exactly the kind of work I like best.

How do you feel about the progress you have made in the Ministry of Education?

- 1) I have made little or no progress.**
- 2) I have made some progress but it should have been much better**
- 3) I have made quite a lot of progress, but it should have been better.**
- 4) I have made a great deal of progress.**

How much does your job give you a chance to do the things you are best at?

- 1) No chance at all.**
- 2) Very little chance.**
- 3) Some chance.**
- 4) Fairly good chance.**
- 5) Very good chance.**

How do you like working for the Ministry of Education?

- 1) It's not a very good place to work.**
- 2) It's alright, but there are many things that should be changed.**
- 3) It's a fairly good place, but quite a few things should be changed.**
- 4) It's a good place but there are a few things that should be changed.**
- 5) It's a good place, wouldn't change anything.**

Would you advise a friend to come and work for the Ministry of Education?

- 1) I would not advise a friend to come and work for the Ministry of Education.**
- 2) I would advise a friend to come and work for the Ministry of Education.**

If you had a chance to do the same type of work for the same pay, but in another organisation, would you stay here?

- 1) I would prefer to go to another organisation.**
- 2) I would stay in this organisation.**

APPENDIX XXII

COVER PAGE

Dear Sir/Madam

This questionnaire contains questions that examine occupational stress within the teaching profession. As you can see, the questionnaire is quite long. For researchers to obtain an idea of the stress facing teachers, however, and how teachers cope with that stress it is necessary to obtain detailed information on a wide variety of possible variables. Once these have been identified research might determine how these sources interact to produce the stress felt by teachers, and suggestions for teacher stress reduction might be possible.

Please note that the University of Western Australia, The Ministry of Education and The Teachers Union have all given their permission for this research to take place.

I would like to thank you in anticipation for your co-operation in completing this questionnaire. I am aware that at this time of year teachers are under a tremendous amount of pressure. This maybe an advantage, however, since research on stress would be best completed during this period. I hope you will see the benefits this type of research has for your profession.

Please make sure you answer every question on each page.

If you have any questions you may leave a message at the University of Western Australia, Psychology Department, on 380 3247, or after hours on 401 3095.

Please complete and return this questionnaire as soon as possible.

Yours faithfully,

Nigel Jones BSc(Hons), MPsych(Clinical).

APPENDIX XXIII

COVER PAGE LONGITUDINAL STUDY TIME TWO

Dear Sir/Madam

Thank you for completing the first of my questionnaires on teacher stress. Attached please find the second questionnaire. This is also very long, but out of necessity, since we are looking at the effects of time on teacher stress. Consequently most of the questions will be similar to those you answered in the first questionnaire.

I would like to thank you in anticipation for your help in completing this questionnaire. I am aware that at this time of year teachers are under a tremendous amount of pressure. This may be an advantage, however, since research on stress would be best completed during this period. I hope you will see the benefits of this type of research for your profession.

Please make sure you answer every question on each page. Please complete and return the questionnaire as soon as possible. There will be one more questionnaire sent to you, in December of this year.

If you have any questions you may leave a message at the University of Western Australia, Psychology Department, on 380 3247, or after hours on 386 1140.

Thank you again,

Yours sincerely,

Nigel Jones.

APPENDIX XXIV

COVER PAGE LONGITUDINAL STUDY TIME THREE

Dear Sir/Madam

Thank you for completing the second of my questionnaires on teacher stress. Attached please find the third and final questionnaire. Many of the questions in this questionnaire are similar to the ones in the previous questionnaires. This is a necessary component of the study since we are looking at the effects of time and the teaching year cycle on the stress levels of teachers. Over a year perceptions and coping abilities change due to the events that occur, and this means that stress levels also change. Thus, because the experiences of the year may alter individual perceptions of stress, it is necessary to repeat questions asked before, or to ask very similar questions.

This type of research is quite difficult to conduct because many do not complete all questionnaires. For the research to become meaningful I would very much appreciate it if you would return this final questionnaire.

Please make sure you answer every question on each page. Please complete and return the questionnaire as soon as possible. There will be no more questionnaires sent to you by me. I wish to thank you most sincerely for all your help over this year in completing each of the questionnaires.

If you have any questions you may leave a message at the University of Western Australia, Psychology Department, on 380 3247, or call me after hours on 401 3095.

Thank you again,

Yours sincerely,

Nigel Jones.

APPENDIX XXV

FOLLOW UP LETTER

Dear Sir or Madam,

Recently I sent you a questionnaire concerning teacher occupational stress. If you have not already done so, I hope you will make time to complete the questionnaire. Data from responses should make it possible to recommend measures aimed at stress reduction, but reliability will be greatest if many teachers respond.

If you have already completed the questionnaire I thank you, and look forward to your continued participation in the study.

Yours faithfully,

Nigel Jones.