

**A Meta-analytic Investigation of Occupational Stress
and Related Organisational Factors:
Is Nursing Really a Uniquely Stressful Profession?**

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I declare that this dissertation, and the ideas, analyses, results, and conclusions reported herein are my own original work, and that the contributions of others have been duly acknowledged. I also certify that this work has not been previously submitted for any other award.

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ABSTRACT

These studies investigated relationships between occupational stressors and strain through the application of meta-analysis. In Study I, the meta-analytic procedure specified by Hunter and Schmidt (1990) was applied to 53 studies that utilised 54 independent samples of nurses (N = 14, 524) and presented 143 correlations between occupational stressors and strain. This study showed that patient care demands, workload, conflict with co-workers, lack of co-worker and supervisor support, poor leadership, role uncertainty, lack of role confidence and competence, responsibility, lack of job control, job complexity, poor physical environment, shift work, home/work conflict, lack of career prospects, and lack of professional esteem were all significantly correlated with strain. Some of the strongest effect sizes were found for workload, home/work conflict, leadership, co-worker conflict. Nursing specialisation moderated the effect sizes of professional esteem and patient care demands, such that professional esteem was more strongly related to strain in paediatric nurses than in other nurses, and the relationship between patient care demands and strain was stronger in mental health nurses than in general nurses. In Study II, archival data from various administrations of the Queensland Public Agency Staff Survey (QPASS) among nurses and public servants employed by the Queensland Government (N = 4,509) was meta-analysed. This study showed that all organisational climate variables, positive and negative work events measured by the QPASS were significantly related to individual distress at work. Organisational issues such as staff relationships, leadership, role clarity, goal congruence, and workplace morale and workplace distress were amongst those most strongly associated with distress. Employment status did not moderate any of the relationships, but the relationship between personality clashes and distress was moderated by occupation, whereby the

effect size was stronger in nurses than in public servants. It was suggested that generic interventions used to improve organisational climate and decrease stress will also be of value in the nursing profession. Several avenues for further meta-analytic research in the organisational health domain were identified.

CHAPTER 1: GENERAL INTRODUCTION

Since the latter part of the twentieth century, the terms ‘work stress’ and ‘job strain’ have become common parlance, reflecting a proliferation of enquiry and rapid advancement of knowledge in the field of occupational stress. While a common endeavour, as in any sphere of research, is the development of a comprehensive understanding of what causes and contributes to occupational stress, the research is multifarious, encompassing a wide range of approaches to the conceptualisation and measurement of stress in numerous organisational settings. As a result, there appears to be some confusion about which factors are most strongly associated with occupational stress. Much of the research focuses on stress in particular contexts, operating from the widespread assumption that some jobs are inherently more stressful than others.

The present research has a dual purpose: a) to conduct a systematic review of the literature by applying the emerging statistical procedure of meta-analysis, highlighting a context in which occupational stress is thought to have a particularly severe impact – that of the nursing profession; and b) to extend the use of the meta-analytic technique to examination of archival data, in order to investigate the notion that the nature of occupational stress in nursing is unlike that in other professional contexts.

Approaches to Defining Stress

Response- and Stimulus-based Definitions

In the 1930s and 1940s, Hans Selye approached the conceptualisation of stress from the response end, viewing stress “as a dependent variable... a response to disturbing or threatening stimuli” (Cooper, Dewe & O’Driscoll, 2001, p. 4).

Conversely, stimulus-based definitions of stress consider stress to be an independent

variable (generally environmental) that causes an individual to respond. Modern definitions of stress take into account both the individual and the environment, and a stimulus and a response.

Stressors and Strain Approach

In the occupational stress literature, the environmental stimulus-individual response definition underlies what is known as the stressors and strain approach. Accordingly, a *stressor* is regarded as any work-related characteristic, situation or event that might initiate stress, while *strain* refers to the worker's psychological or physiological reaction to stress (Fogarty et al., 1999). The relationship between stressors and strain is thought to be causal. Hence, much of the research focuses on detecting and assessing various occupational and organisational stressors and examining their relationship to different indices of strain, including measuring individual and organizational factors that might moderate this relationship (Hart & Cooper, 2001).

Cooper et al. (2001) note that stressors may be categorised into six broad domains: intrinsic job characteristics; organisational roles; work relationships (e.g., with supervisors, subordinates and colleagues); career growth issues; organisational factors, including climate, structure and culture; and the home-work interface. Frese (1999) considers a variable related to the third stressor identified above – social support. Social support is one variable thought to mediate the relationship between stressors and strain.

By providing affective support in the form of loving, liking, or respect; confirmation of the appropriateness of one's statements and actions; and instrumental support, co-workers and supervisors endorse one's sense of belonging in the work group. Moreover, such social support (not only from fellow employees, but also from

friends and family outside the work environment) is thought to serve as a buffer between occupational stressors and adverse effects on health (e.g., cardiovascular and immune functioning). Frese (1999) provided evidence for the 'buffer hypothesis'. He found that the relationship between occupational stressors and dysfunction (both psychological and psychosomatic) changes as a function of variation in social support – when social support is high, the correlation is lower; when social support is low, the correlation between stressors and strain increases.

Transactional Models

The traditional causal model of stressors and strain has been expanded from a unidirectional conceptualisation to a transactional explanation, whereby stress is “embedded in an ongoing process that involves individuals transacting with their environments, making appraisals of those encounters, and attempting to cope with the issues that arise” (Cooper et al., 2001, p. 12). At the transactional level of analysis, strain occurs because of a perception that environmental demands exceed personal resources (Lazarus & Folkman, 1984). Moreover, causation can be reciprocal, whereby the level of strain experienced by an individual may engender a tendency to encounter stressors (or construe work-related characteristics, events or situations as stressors). The transactional approach thus introduces the mediating influence of appraisal and coping on the relationship between stressors and strain (Hart & Cooper, 2001).

According to Folkman and Lazarus (1991), appraisal comprises the consecutive processes of *primary appraisal* – continuous monitoring of environmental conditions with a focus on whether there are likely to be consequences for the individual's well-being, and *secondary appraisal* – what can be done should such consequences occur, that is, the identification of a possible *coping* strategy.

Coping refers to any effortful attempt (be it cognitive or behavioural) to alter environmental conditions (known as problem-focused or instrumental coping) or manage emotions (emotion-focused coping), regardless of outcome (Lazarus & Folkman, 1991). Subsequent to the deployment of a coping strategy, *reappraisal* of the situation, and of the ultimate effects of the coping response, occurs. The cognitive nature of the appraisal process and the inevitability of its influence on the success of coping makes evaluation of coping outcomes largely subjective and, therefore, very difficult to measure (Hart & Cooper, 2001).

Dynamic Equilibrium Theory

The transactional approach to stress has been built upon even further by dynamic equilibrium theory (e.g., Hart, 1999; Headey & Wearing, 1989). Along with coping processes, dynamic equilibrium theory adds life events (in occupational terms, positive and negative work events) and personality variables (e.g., positive and negative affectivity), to its explanation of stress. Negative affectivity is a tendency to concentrate on negative elements of one's self or environment, and to feel negative emotions (Mak & Mueller, 2001). Research suggests negative affectivity may influence self-report of stressors and the perception of strain and job satisfaction (P. J. Decker & Borgen, 1993). Positive affectivity, in contrast, involves an inclination to perceive things optimistically and experience positive emotions. Dynamic equilibrium theory thus suggests "stress can only be understood by assessing a complex system of variables, and establishing how these variables relate to one another over time" (Hart & Cooper, 2001, p. 98).

Organisational Health

Stress that occurs in an occupational context affects not only the health and well-being of the individual; it can also have adverse consequences for the organization for which the individual works, through reduced productivity, absenteeism and turnover, among other variables. The notion of organisational health goes beyond the individual's experience of occupational stress, concurrently attending to the ability of an organisation to realize its financial, social and environmental goals and responsibilities and thus remain viable (Hart & Cooper, 2001). From the perspective of organisational health, then, the well-being of employees *and* the functioning of the organisation are influenced by various individual and organisational features.

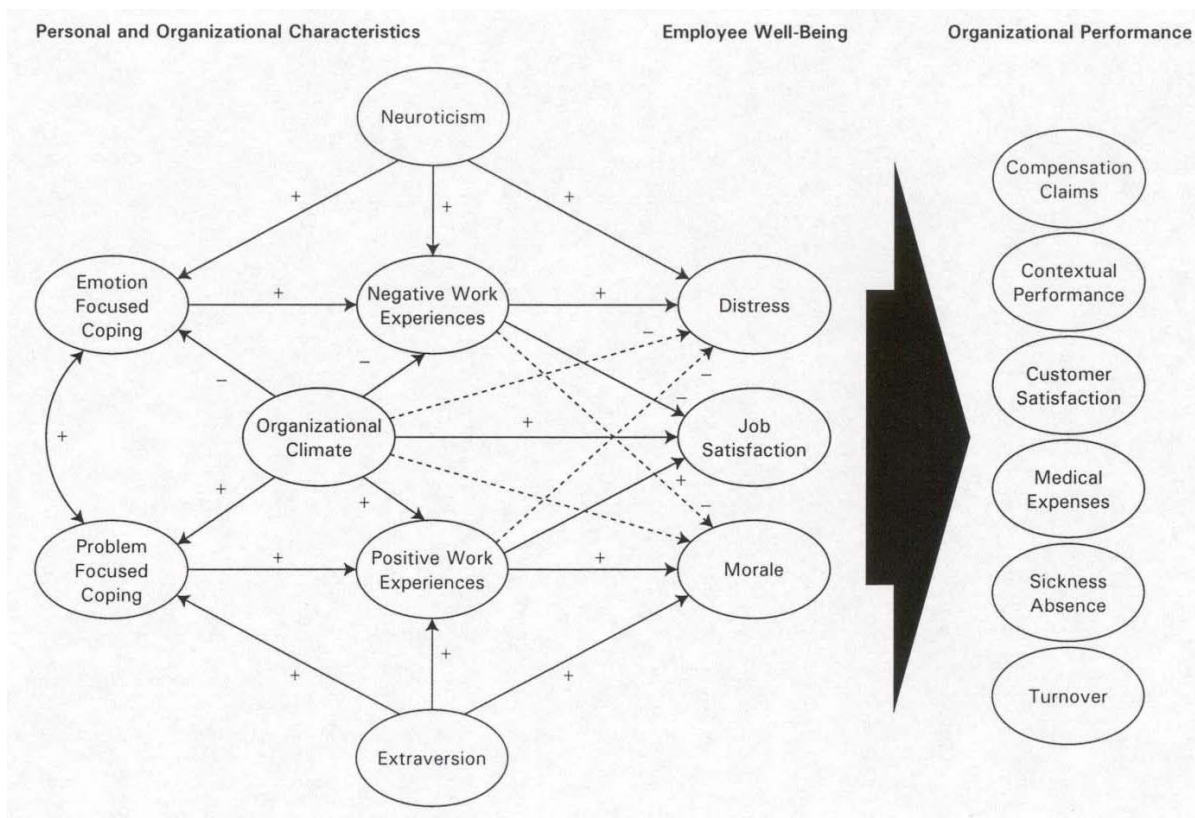


Figure 1. Organisational health model (Hart & Cooper, 2001, p. 107).

In addition to the individual factors of neuroticism, extraversion, emotion-focused and problem-focused coping, and the individual's positive and negative experiences in the workplace, the organisational health model adds the environmental component of *organisational climate*. Organisational climate plays an integral role in the organisational health framework, having a direct influence on coping responses; positive and negative work experiences; and employee well-being. It is operational both at an individual level and at work-group level. Organisational climate may be defined as the perspectives of employees on the functioning of their organisation (Hart & Cooper, 2001). Thus, the variable has two components: the structures and processes of the organisation, and the individual's perception of these – a perception that is cognitively oriented and not influenced by emotional overtone. Dimensions of organisational climate include work pressure, role clarity, goal congruence, supervisory support, appraisal/recognition, participative decision-making, peer cohesion, professional interaction, and professional growth. In essence, organisational climate encompasses the characteristic way in which things are accomplished in an organisation (Hart, Griffin, Wearing, & Cooper, 1996).

In terms of outcomes, the organisational health model reframes strain as employee well-being, in order to include the constructs morale and job satisfaction as well as psychological distress, with which the term 'stress' has traditionally been associated (Hart & Cotton, 2002). This avoids placing the individual on a single bi-directional continuum, and captures the cognitive-affective nature of the psychological product of the interaction between individual and environmental variables in an organization. In other words, the framework acknowledges that stress does not necessarily eventuate to the detriment of pleasant emotions (Hart & Cotton). According to the organisational health model, negative work experiences have a direct

effect on psychological distress, as do positive work experiences and organisational climate (though the latter two effects are purported to be weaker).

Morale, as the pleasurable emotional state experienced by people as a product of their work (Hart & Cooper, 2001), contrasts with distress. It is the employee's sense of camaraderie, dedication, energy, and pride in their work. Whereas subjective appraisals of distress are more strongly influenced by negative work experiences, individual morale includes the stronger contribution of positive work experiences (Hart, 1994). Yet, distress and morale are not two opposite ends of a continuum. Rather, they are independent constructs – it is possible to have high levels of both, or low levels of both, and the levels of morale in an organisation cannot necessarily be predicted from the levels of psychological distress present (Hart et al., 1996).

Job satisfaction may be defined as the positive affective outcome of the individual's appraisal that the occupational situation experienced meets his/her needs and expectations (P. J. Decker & Borgen, 1993). In the organisational health model, it is also conceptualised as an overall judgment resulting from positive and negative feelings attached to one's work (Hart & Cooper, 2001). Hart (1994; 1999) demonstrated that, to some extent, individuals judge their global level of job satisfaction on a comparison of their positive and negative experiences.

Hart and Cooper (2001) suggest that another benefit of integrating distress, morale and job satisfaction as psychological outcomes in the model of organisational health is the opportunity it provides researchers to demonstrate a link between occupational stress and organisational performance. According to the model, features of organisational performance that play a role in organisational health include not only withdrawal behaviours such as absenteeism and turnover, but also customer satisfaction and contextual performance (e.g., organisational citizenship, extra-role

and pro-social organisational behaviour). As Hart and Cotton (2002) outline, such an approach has distinct advantages. Recognizing the contribution of organisational characteristics to occupational stress allows interventions to target the conditions or circumstances underlying the stress, rather than changing the employee.

Consideration of the broader organizational context also permits a link between occupational stress and outcomes for the organisation, such as the cost of decreased productivity, absenteeism, and customer complaints.

Organisational Health in Nursing

Health care is a demanding field, with a high level of responsibility (involving high workloads and the potentially disastrous effects of errors) for professionals, and exposure to emotional danger, through contact with human pain, suffering, and death, as well as the physical danger of infectious disease and injury (Spector, 1999). It has been suggested that nurses are at a high risk of occupational stress-related problems due to the distinctiveness of stressors experienced (Lu & Shiau, 1997). In a study using the Occupational Stress Indicator (OSI), qualified nurses reported levels of job pressure that were significantly higher than the normative sample of the OSI in the areas of work relationships, organisational climate and structure, and the home/work interface (Blair & Littlewood, 1995b). In terms of the organisation health model, nursing is one profession in which a link between employee well-being and organisational performance has been consistently demonstrated.

Consequences of Employee Well-being in Nursing

Burnout

In the 1970s, Christina Maslach and colleagues (e.g., Maslach, 1976; Maslach & Pines, 1977; Pines & Maslach, 1978) pioneered research into the psychological phenomenon of burnout, a syndrome which results from chronic occupational stress in the human service professions. Those experiencing burnout have diminished or drained their physical and emotional resources in attempting to cope with the stressors present in the work environment (R. B. Harris, 1989). Maslach (1978) noted that burnout was inextricably linked with social and situational factors, particularly the staff-client interactions integral to the nature of work in human services. She described three distinct dimensions of the burnout experience: emotional exhaustion, depersonalisation and a lack of personal accomplishment (Maslach & Jackson, 1982).

Emotional exhaustion denotes the depletion of emotional resources, and the sentiment that one has nothing left to offer others psychologically, or “compassion fatigue” (Cordes & Dougherty, 1993). Depersonalisation refers to the development of cynical and insensitive attitudes towards one’s clients, co-workers, and the organisation, which can result in judgements of people as deserving of their difficulties. Diminished personal accomplishment involves negative self-evaluation of one’s ability to meet one’s own expectations. Schaufeli (1999) maintains that the numerous symptoms that have been linked with burnout fall into the following categories: affective (e.g., depression); cognitive (e.g., reduced attention and concentration); physical (e.g., sleep disturbances and headaches); behavioural (e.g., reduced job performance); motivational (e.g., diminished idealism); interpersonal (e.g., irritability and indifference); and organisational (e.g., job turnover).

Turnover and absenteeism

Kushnir, Rabin, and Azulai (1997) assert that occupational stress is a causal factor in behavioural problems such as absenteeism. Hemingway and Smith's (1999) review of the research on withdrawal behaviours in nurses noted that the prevalence of stress-related disorders in nursing is one of the highest, and that occupational stress is a causal factor not only in absenteeism, but also in turnover, health claims and injuries at work.

Fagin, Brown, Bartlett, Leary and Carson (1995) conducted a study of stress levels among 250 community psychiatric nurses. They found a higher likelihood of sickness absence in those experiencing greater stress. A longitudinal study of nursing staff working in long-stay settings was conducted by Firth and Britton (1989 #60). The Maslach Burnout Inventory (MBI) was administered to 200 staff, and turnover and sickness absence over the following two years were examined. A significant positive correlation was found between emotional exhaustion and total number of days off sick in the first twelve months. Furthermore, depersonalisation emerged as a significant predictor of job turnover during the two-year period.

Jamal and Baba (1992) found a statistically significant, positive correlation between turnover intention and job stress in their study of 1,148 Canadian hospital nurses. In a study of 283 nurses, occupational stress was measured by the Nursing Stress Index (NSI), along with intention to leave the nursing profession in the near future. Sources and manifestation of stress were consistently significantly higher in those who had indicated turnover intentions (Fimian, 1988). Janssen, de Jonge and Bakker (1999) used the Dutch version of the MBI and measured turnover intention in a sample of 156 Dutch general hospital nurses. They found a significant positive relationship between emotional exhaustion and turnover intention, suggesting that the

greater the feelings of burnout, the greater the intent to leave the organisation within one year. MacRobert, Schmele, and Henson (1993) demonstrated that other employee outcomes, such as morale, are also an issue in turnover, in their study of 217 community health nurses.

Patient satisfaction and care outcomes

S. Taylor, White and Muncer (1999) suggest that occupational stress impacts not only on nurses' individual well-being and satisfaction, but also on care outcomes and the quality of care. Feeling stressed and unfulfilled can affect nurses' relationships with their patients, if they attempt (consciously or unconsciously) to distance themselves from patient-related sources of stress (Fagin et al., 1995). Cronin-Stubbs and Rooks (1985) describe the relationship between employee well-being and care outcomes most succinctly: "Quality care can be delivered by nurses who are physically and psychologically equipped to give that kind of care, but not by those who are exhausted, unmotivated, and apathetic" (p. 31).

Motowidlo, Packard and Manning (1986) measured subjective stress among 206 nurses. They also asked supervisors and co-workers to complete ratings of these nurses' job performance on the following dimensions: composure; quality of patient care; tolerance with patients; warmth toward other nurses; tolerance with nurses and doctors; interpersonal effectiveness (e.g., personal warmth, morale, caring, teamwork, co-operation and sensitivity); and cognitive/motivational effectiveness (e.g., concentration, perseverance and adaptability). With the exception of cognitive/motivational effectiveness, all of these dimensions had statistically significant negative correlations with subjective stress; that is, as subjective stress increased, performance rated by co-workers and supervisors deteriorated.

Fox, Dwyer and Ganster (1993) also obtained a measure of nurses' job performance from supervisors. Assessors (mainly the head nurse) appraised each of the sample's 151 nurses performance in various areas of responsibility, such as patient assessment and development of care plans. Nurses themselves were asked to complete a 17-item scale measuring illness and somatic complaints, as an index of levels of occupational stress. A similar finding to that of Motowidlo et al. (1986) emerged, with a significant negative correlation between subjective stress and job performance demonstrated.

Kipping (2000) notes the indirect effect that stress can have on patient care, through sickness absence and turnover impinging on continuity of care. Moreover, other individual outcomes, such as job satisfaction, have been shown to influence patient outcomes. Tzeng and Ketefian (2002) conducted a study of 59 service consumers (i.e., patients, their relatives and friends) across six inpatient units in a Taiwanese hospital, using the Patient Satisfaction with Quality of Nursing Care Questionnaire. They also surveyed 103 nurses working on the six inpatient units with the Nurses' Job Satisfaction Questionnaire. It was found that general job satisfaction and nurses' general happiness were positively related to patient satisfaction with management of pain and discomfort. Nurses' general happiness was also related to patient satisfaction with the explanation of care, art of care, and home care and follow-up arrangements.

Tzeng, Ketefian, and Redman (2002) administered the Nurse Assessment Survey to 520 American nurses, and the Nursing Services Inpatient Satisfaction Survey to 345 individuals who had been inpatients in the care of the nurses surveyed. They demonstrated that the nurses' job satisfaction had a significant direct effect on

patients' satisfaction with information given regarding home care and follow-up, and an indirect effect on patients' general satisfaction with nursing care.

Different areas of nursing

Given the notion that nursing is a particularly stressful occupation due to the human contact involved, it is not surprising that many researchers assert that different levels and sources of occupational stress occur in different areas of nursing. For example, mental health nurses are routinely subjected to stressors that are less common in other areas of nursing, such as unpredictable and dangerous behaviour from patients (Carson et al., 1993; Kipping, 2000; Sullivan, 1993). McLeod (1997) presented evidence that levels of stress vary according to the client group. He surveyed 60 community psychiatric nurses, who were divided into three groups on the basis of the characteristics of their caseloads. The group who worked with the long-term mentally ill had a higher proportion of individuals experiencing strain as measured by the GHQ.

Mental health nursing is not the only area of nursing that involves unique stressors. Nurses working in paediatric intensive care units (PICUs) not only have to meet the complex needs of sick children, but also have to provide support to their families. Bratt, Broome, Kelber and Lostocco (2000) suggest that in addition to these factors, a number of other features of the PICU make nursing in this area particularly stressful: facing the pain, suffering and death of children; and advances in technology. In addition to the above factors, nurses caring for newborn infants have to deal with the problem of assessing the pain of patients who cannot communicate through language.

Nagy (1998) conducted a qualitative study of nurses working in burns units and found that they experienced a heightened feeling of personal vulnerability due to their continuous contact with victims of serious trauma. Quantitative measures demonstrated that these nurses suffered a higher degree of mutilation anxiety than other nurses. Foxall, Zimmerman, Standley and Captain (1990) compared hospice, medical-surgical and intensive care unit (ICU) nurses, and found differences in stress from a number of sources, including death and dying (which was more stressful for ICU and hospice nurses), and work overload/staffing (which caused greater stress for medical-surgical nurses).

This introduction has presented a number of conceptualisations of occupational stress, and an in-depth examination of a model that reaches beyond the individual's experience of occupational stress to the broader perspective of organisational health. The organisational health model has been contextualised through a discussion of some of the consequences of individual outcomes, such as turnover, absenteeism and patient satisfaction. A number of antecedents of occupational stress that are specific to a range of nursing specialisations have also been described. A detailed exploration of the literature on nurses' experience of occupational stress will now follow.

CHAPTER 2: INTRODUCTION – STUDY I

Stressors in nursing

While the organisational health model serves as an excellent framework for conceptualising occupational stress, it is not a paradigm that has been widely utilised in the literature on occupational stress in the nursing profession. Much of the research literature employs an approach that accepts the stressors and strain definition of occupational stress, specifying occupational stress as an outcome variable and measuring one or more “stressors” present in the work environment. One of the more frequent pursuits in the research is the quest to identify which stressors represent the strongest determinants of occupational stress for nurses. The following discussion seeks to elucidate the relationships between various stressors prevalent in the nursing profession and occupational stress experienced by nurses, and to identify which stressors have the strongest association with occupational strain.

Nursing-specific stressors

It has been suggested that “patients experiencing pain, disability and death with all the consequent psychological trauma involved make the work [of nurses] more harrowing than if it was some other line of business” (S. Taylor et al., 1999, p. 980). This assertion corresponds with the traditional understanding that nursing is an especially stressful occupation, owing to daily contact with suffering patients and their families, and the attendant emotional difficulties associated with care of the infirm and dying. Apart from death and dying, there are a number of other patient-related stressors investigated in the literature, including patient aggression and violence, and difficult or demanding patients and relatives. For example, research by S. Taylor et al. (1999), in which 70 nurses were required to keep a week-long diary of stressful work events, revealed a common theme of the nature of nursing work as a

stressful aspect of the profession. It was found that stress was particularly due to frustration and guilt over patient suffering that is perceived to be a result of inability to give a desired quality of care; the psychological trauma associated with witnessing death and dying; patients suffering pain and disability; and the demands and expectation of patients and their relatives. In a study by Kalichman, Gueritault-Chalvin and Demi (2000), 414 nurses provided a description of one of the most stressful situations encountered in their work in HIV/AIDS care. Approximately two thirds of the sample identified a situation involving an aspect of patient care (e.g., treatment dilemmas, biohazards, challenging patients, deaths, families and informing patients) as their most stressful experience.

Patient and family suffering

Patient death and the grief and loss suffered by patients' relatives is widely accepted as an aspect of nursing work that has a negative impact on nurses' well-being. Various research supports this notion. Kennedy and Grey (1997) carried out semi-structured interviews with 80 nursing staff across rehabilitation, intensive care, accident and emergency, and orthopaedic wards in a UK National Health Service trust. Dealing with death emerged as a negative aspect of nursing work. Foxall, Zimmerman, Standley and Captain (1990) used the Nursing Stress Scale (NSS) to compare the frequency and sources of job stress among 138 American intensive care unit (ICU), hospice and medical-surgical nurses. 'Death and dying' was the subscale that yielded the highest mean score for both hospice and ICU nurses. Tyler and Ellison (1994) also used the NSS in a group of 60 English acute-care nurses. 'Death and dying' was second only to 'Workload' as the subscale with the highest mean score. In the same study, the NSI was also administered. In this case, the subscale

measuring patient care demands ('Dealing with patients and relatives') ranked as the third highest stressor.

Michie, Ridout and Johnston (1996) also administered the NSI in their study of 34 medical nurses. However, in this study, in which NSI subscale scores were correlated with scores on the State Trait Anxiety Inventory (STAI), dealing with patients and relatives only had a weak correlation with distress. Furthermore, Fox, Dwyer and Ganster (1993) found no correlation between strain and the number of deaths witnessed in their study of 151 hospital nurses. Both these studies were conducted with samples who are not as likely to come into contact with death. In contrast, the studies that demonstrate an important relationship between death and strain are mainly conducted among specific populations that are more likely to be faced with death and dying on a regular basis (e.g., hospice and ICU nurses). This inconsistency suggests that the area of nursing may influence the relationship between death and dying and occupational stress.

In a qualitative study of 1,241 PICU nurses, Bratt and colleagues (2000) asked nurses to state what was uniquely stressful about their work environment. Family issues were reported as stressful by over half the sample. These issues included dealing with strained, demanding or difficult parents, and having family members present at patients' bedsides around the clock, preventing nurses from getting their work done. One fifth of respondents commented on death and dying experienced by patients and their families, describing difficulties such as facing the death of a child to whom they have become attached; dealing with families who are grieving; and prolonging the lives of children when there is no hope of recovery.

White and Tonkin (1991) conducted a study involving 53 Australian ICU nurses, in which participants were required to rate the degree of stress caused by elements of their role, relationships and work environment. The sample was divided into three groups on the basis of the specificity of their qualifications. In terms of the work environment, prolongation of the lives of critically ill patients was identified as the greatest source of stress for two of the groups, and was second only to inadequate staff/patient ratios in the third group. Having to nurse 'heavy' long-term patients also represented one of the more stressful aspects of the work environment.

Hinds et al. (1998) surveyed 126 paediatric oncology nurses. Scores on the Stressor Scale for Paediatric Oncology Nurses revealed that some of the highest role-related stressors were associated with the circumstances of patients' deaths. Patient and family suffering was also one of the most frequently identified dissatisfying aspects of the paediatric oncology nurse's role according to the Role Satisfaction Scale.

Difficult patients

In a study conducted in a Canadian nursing home, Goodridge, Johnston and Thomson (1996) found that a nursing assistant could expect to be physically assaulted by a resident nine times per month, and verbally assaulted 11 times per month. Difficulties with patients such as these constitute another source of stress in nursing that is often identified in the literature. Goodridge et al. found statistically significant correlations between burnout and reports of resident-staff conflict, and between burnout and aggression towards staff, in their study of 126 nursing assistants in a Canadian aged care facility. While these correlations were somewhat weak, physical and verbal abuse from residents was a stressor frequently mentioned in response to an open-ended question asking about factors causing stress on the job.

Kipping (2000) conducted a qualitative study of 447 newly qualified psychiatric nurses. Participants were asked to describe stressful aspects of their psychiatric training, and to speculate on what they might find stressful about their immediate future work as a psychiatric nurse. Kipping developed categories from the themes that emerged from the responses, and then coded responses into the categories. Over half of the respondents mentioned aspects of patient care as past stressors. The largest number of comments about patient care concerned violent and aggressive behaviour from patients. Suicidal patients and those who self harm were also mentioned by a number of respondents as past stressors. However, when it came to the data on anticipated stressors, less than 20% of respondents made comments about patient care.

Sullivan (1993) also focused on a psychiatric context in his study of 78 nurses working in acute mental health facilities. Sullivan utilised a semi-structured interview; the MBI; and the Psychiatric Nursing Stress Inventory, which provides scores on subscales concerning patient care, support, interpersonal relationships, work environment and organisational issues. A strong, positive correlation was found between patient care demands and emotional exhaustion. Of the patient care items; violent incidents and having to deal with suicidal patients were the most common stressors. Interview data suggested that the predictability of violent incidents and the availability of other staff to deal with such incidents influenced the intensity of stress that eventuated for nurses.

Farrington (1997) interviewed ten post-registration nursing students about events at work they perceived as stressful. It was found that verbal abuse, sexual harassment, and physical aggression from patients and their relatives were common aspects of the distressing incidents described. McNeely (1995) compiled a list of 24

potential stressors in nursing, and asked a group of palliative, psychiatric and general nurses to rate how stressful each item was on a scale of one to five. Difficult or violent patients constituted one of five top stressors for the 308 nurses surveyed. In the qualitative research conducted by Kennedy and Grey (1997), abusive patients were seen as a negative aspect of nursing work in a variety of nursing settings.

Elovainio and Kivimäki (1996) studied a sample of 433 registered nurses, head nurses, and assistant directors of nursing. They used the Occupational Stress Questionnaire and an eight-item scale that asked respondents to rate how often they had been disturbed, worried or bothered by troublesome patients over the past six months. While the correlation between troublesome patients and occupational stress was statistically significant, it was quite weak. This may be explained by the fact that part of the population sampled (i.e., those in administrative roles) are less likely to come into contact with patients, and thus less likely to experience difficult patients as a significant stressor.

In summary, there are many aspects of patient care that pose a challenge to the psychological well-being of nurses. From the above discussion, it is difficult to conclusively assert the magnitude of the relationships between patient and family suffering and occupational stress, and between patient aggression and occupational stress. Nevertheless, from the research presented, it is obvious that in areas where nurses are frequently subjected to such stressors, the demands of patient care are related to an increase in occupational stress.

Lack of patient contact

While the above research demonstrates that, in most cases, contact with patients that threatens a nurse's physical and emotional well-being is clearly associated with an increase in occupational stress, the care of patients is central to the

role of nurses. Thus, it can be assumed that most people attracted to the nursing profession are drawn to spending time with people who need their help. It follows that when nurses are prevented from engaging in such a fundamental task of the professional experience, they may suffer an increase in occupational stress, and vice versa. A number of researchers have addressed this assumption.

As well as conducting semi-structured interviews, Kennedy and Grey (1997) administered a range of instruments, including the General Health Questionnaire (GHQ), MBI and Work Environment Scale (WES) to 82 nurses in rehabilitation, intensive care, accident and emergency, and orthopaedic units in a UK National Health Service trust. They found a negative association between patient contact and burnout, such that the greater the amount of time spent with patients, the lesser the risk of emotional exhaustion.

Motowidlo, Packard and Manning (1986) asked 104 nurses to provide brief written descriptions of stressful work situations. The 608 descriptions offered were grouped into sets, which were reflected in an 82-item questionnaire subsequently compiled by the researchers. The questionnaire was then administered to 96 nurses, along with measures of negative affect, somatic complaints and subjective stress (which formed a composite stress index). The impact of excessive workload on the quality of patient care was reflected in an item that had one of the strongest correlations with the composite stress index ('You are so busy you have to pass up a chance to talk to a patient and give him or her some emotional support').

In addition to questionnaire data, McNeely (1995) gathered qualitative data from a proportion of the sample via interviews and diary entries. This qualitative data provided a coherent explanation of the relationship between a lack of patient contact and occupational stress:

Working in a situation where it is very difficult to meet demands is a source of great stress for people in many areas of work, but for nurses in this situation, the very ethos of nursing is, they believe, threatened. The workload...[and] smaller staff numbers...[leaves] less and less time for the emotional and psychological caring aspects of nursing. The result is that nurses are finding it increasingly stressful to try and maintain their high nursing standards and often finish a shift feeling guilty about their inability to meet what they perceive as the patients' needs...Nurses feel that they have let their patients down. (p. 11)

This account demonstrates that not only do the demands of patient care create a source of stress for nurses, but also that resource issues are implicated in the relationship between occupational stress and nursing-specific stressors.

Resource Issues

Time pressure, workload and administration

The link between time pressure and distress in nursing has been well documented in the literature. Wheeler's (1997a; 1997b; 1997c; 1997d; 1998) review of the literature on occupational stress in nurses established that work overload appeared to be one of the most important sources of stress in nursing. A study of 80 Welsh and English forensic community mental health nurses (Coffey & Coleman, 2001) distinguished those who were experiencing a degree of psychiatric distress from those who were not, according to scores on the GHQ, and found that caseload was related to distress. The sample was also differentiated on the basis of level of emotional exhaustion (as identified by the MBI), and caseload size was found to be significantly higher in those demonstrating high emotional exhaustion. Similarly,

Wheeler and Riding (1994) found that stress related to workload was higher for those nurses with a higher number of clients.

Healy and McKay (2000) administered the NSS and the Profile of Mood States to 129 Australian registered nurses. NSS results showed that 'Workload' (encompassing actual workload, staff levels, and time pressure) was perceived to be the chief stressor. The data also indicated that workload was the only significant predictor of mood disturbance. A 35-item inventory measuring sources of stress, and a single-item measure of subjective stress were administered to 77 general nurses and midwives by Wheeler and Riding (1994). A factor analysis of the sources of stress inventory yielded four factors: work overload and time pressure; organisational and management issues; poor relationships; and poor working conditions and facilities. The first of these represented the greatest stress factor, and contained three of the four items with the highest mean scores (staff shortage, not enough time to complete tasks, and excessive paperwork).

Evans (2002) administered a survey combining open-ended questions with the Community Health Nurses' Perception of Work-Related Stressors Questionnaire to 38 community nurses. 'Inability to complete work during scheduled hours' was ranked as the highest stressor. Foxall et al. (1990) also found that workload was the greatest stressor in a sample of 73 medical-surgical nurses; as did Michie et al. (1996), who used the NSI with a sample of 34 general medical nurses. Similarly, Tyler and Ellison (1994) administered the NSI in a study involving 60 English nurses working in four high-dependency settings, which also revealed difficulties with workload to be one of the most significant stressors. Moreover, the quantitative component of McNeely's (1995) research with palliative, psychiatric, and general nurses demonstrated that the top source of stress was 'too much work in too little time'.

Landeweerd and Boumans (1994) measured health complaints (anxiety, depression, irritability, general health and heart complaints) and a number of job characteristics among 561 Dutch nurses, and found that work pressure was the strongest correlate of health complaints among the work dimensions assessed. Similarly, Janssen, de Jonge et al. (1999) found that mental work overload was the strongest correlate of burnout in their study of 156 Dutch nurses. In a study conducted by Jamal and Baba (1992), in which 1,148 Canadian hospital nurses were surveyed, role overload was by far the strongest correlate of job stress.

Kennedy and Grey's (1997) quantitative research demonstrated a positive correlation between work pressure and distress. This was corroborated by the qualitative portion of their study, in which workload emerged as a negative aspect of work for the nurses interviewed. Boswell (1992) surveyed 51 community health nurses, using the Nurse Job Satisfaction Scale (NJS) and the Job Stress Scale (JSS). The data showed an inverse relationship between time available to complete job requirements and perceived stress.

Jansen, Kerkstra, Abu-Saad and van der Zee (1996) found that time pressure increased feelings of burnout in 402 Dutch community nurses. Elovainio and Kivimäki (1996) demonstrated significant positive associations between time pressure and occupational stress and between workload and occupational stress in their study of 433 registered and administrative nurses. Demerouti, Bakker, Nachreiner and Schaufeli (2000) measured demanding elements of the work environment, and utilised the Oldenburg Burnout Inventory to measure exhaustion among 185 German nurses working in aged care, surgery, oncology, intensive care, cardiology and neonatal care. They found that physical workload, cognitive workload and time pressure were all significantly and positively related to exhaustion. Various other researchers have also

demonstrated a strong positive correlation between workload and psychological distress in nurses (e.g., Greenglass & Burke, 2001).

As well as overall workload, the amount of administration required in the work of the nurse can be a stressful aspect of the job. Prosser et al. (1997) developed an inventory of perceived sources of stress at work. 121 mental health workers (the majority of whom were nurses) rated each item in terms of its importance. 'Too much administration' was one of most important stressors for the sample. Paperwork was one of the most notable features of the work environment resulting in stress for the 78 psychiatric nurses surveyed by Sullivan (1993). A Welsh study carried out by Edwards, Burnard, Coyle, Fothergill and Hannigan (2000b) measured a number of stressors in 301 community mental health nurses. One of the top five stressors (according to mean stress score) was 'having to keep detailed records/notes on clients'.

Staffing

A factor often mentioned in the literature in relation to nurses' distress is that of inadequate staff resources. 'Insufficient people resources' was the most important stressor in the survey of 121 mental health workers conducted by Prosser and colleagues (1997). Deficient staffing levels also emerged as a negative aspect of nursing in the work of Kennedy and Grey (1997). For one of the groups of ICU nurses participating in the study conducted by White and Tonkin (1991), inadequate staffing levels was one of the most stressful components of the work environment. Similarly, McNeely (1995) found that inadequate staffing was the second most stressful aspect of nursing in a sample of palliative, psychiatric, and general nurses. In a qualitative study of 1,241 PICU nurses, staffing concerns were the second most commonly cited stressor (Bratt et al., 2000).

Seventy nurses participating in a post-registration degree program at an English university were involved in a study that utilised both network and qualitative approaches to the examination of relationships between stressors in nursing (S. Taylor et al., 1999). Participants were initially required to keep a diary of stressful work events for one week, in which they were asked to name the sources of stress. A number of core categories were derived from the diaries, and participants were then asked to rate the extent to which they thought each of the variables caused stress. Overall, staffing levels was seen as the greatest cause of stress. Muncer, S. Taylor, Green and McManus (2001) built on the work of S. Taylor et al., and used a network drawing approach in their study of 48 registered nurses. Participants were required to draw a diagram modelling weighted causal linkages between a number of variables and stress. The majority of these subjective constructions of stress revealed a perception of staffing levels as a key contributor to stress.

Evans' (2002) survey of 38 district nurses found that 'inadequate number of staff leading to extra work' was a key stressor in the profession. This outcome raises an important point: the links between workload and occupational stress and between staffing levels and occupational stress do not operate independently. Rather, insufficient staff numbers are likely influence occupational stress because of the increase in workload brought about when there are not enough nurses available to get the work done. Alternatively, as suggested by Gillespie and Melby (2003), the use of agency nurses during staff shortages burdens other staff with the additional time-consuming tasks of helping them operate equipment and locate resources.

While the sheer volume of findings substantiating a strong relationship between resource factors and occupational stress implies an obvious conclusion, some research has suggested that workload is not as important as other factors in predicting

distress. White and Tonkin (1991) found that, in their sample of ICU nurses, the pressure of finishing tasks in the time permitted was not a major stressor. Furthermore, in their study of 276 Irish nurses from a range of units, Kirkcaldy and Martin (2000) reported that, according to scores on the NSI and Occupational Stress Indicator, aspects of managing the workload appeared to have weaker relationships with strain than a lack of job role competence and confidence, dealing with patients and relatives, and home/work conflict. Fox and colleagues (1993) assessed occupational stress by measuring illness and somatic complaints in 151 nurses, and found that there was not a statistically significant correlation with subjective quantitative workload. While almost a third of the newly qualified psychiatric nurses surveyed by Kipping (2000) mentioned resource issues as an aspect of past stress, a slightly higher proportion commented on staff attitudes and behaviour, and many more respondents mentioned patient care issues. Furthermore, the vast majority of responses about resources related to staffing levels, rather than time pressure.

There is some evidence to suggest that, as with the relationship between patient care demands and occupational stress, the relationship between workload and occupational stress is also influenced by the area of nursing. Parry-Jones et al. (1998) surveyed 65 community nurses and 62 community psychiatric nurses working in British National Health Service trusts. Participants were asked to rate the amount of change they had experienced in their levels of stress and in other practice elements since reforms had been implemented in 1993. While the correlation between change in workload and change in stress was statistically significant for both groups, the relationship was much stronger in the community nurses than the community psychiatric nurses. Similarly, the relationship between the change in amount of

administration and change in stress was much stronger in the community nurses, and in fact was not statistically significant for the community psychiatric nurses.

In summary, the research on the relationship between resource issues and occupational stress is somewhat equivocal. It may be the case that in workplaces where workload is not excessive and staff-patient ratios are acceptable, resource issues are not a significant stressor for nurses. However, many studies have shown that factors such as staffing, excessive administration, workload and time pressure are amongst the strongest correlates of occupational stress in nurses.

Roles and Responsibilities

Role ambiguity and role conflict

Stordeur, D'hoore and Vandenberghe (2001) define role ambiguity as a "lack of clarity about tasks and goals and unpredictability about the consequences of role performance" (p. 535). They describe role conflict as a mismatch of expectations between and within work roles, and they suggest that both role ambiguity and role conflict can be key determinants of occupational stress.

Role ambiguity was found to have a moderate and statistically significant relationship with job stress in a study of 1,148 Canadian nurses (Jamal & Baba, 1992). Fielding and Weaver (1994) administered the WES, the GHQ and the MBI in a study of 67 hospital nurses and 55 community nurses. Clarity (i.e., knowing what to expect in one's daily routine and explicit communication of policies and rules) had a significant inverse relationship with strain in both groups, and had significant negative correlations with depersonalisation and emotional exhaustion in the community nurses.

However, when they measured emotional exhaustion, role ambiguity and role conflict among 625 Belgian ward nurses, Stordeur and colleagues (2001) found that while role ambiguity had a moderate, positive correlation with emotional exhaustion, role conflict and emotional exhaustion were not significantly related. In contrast, the work of Prosser and colleagues (1997), in which 121 mental health staff were asked to rate recent sources of stress, revealed that the item reflecting role conflict ('receiving requests from two or more people/groups that are incompatible') was rated among the five most important stressors. In contrast, the stressor item measuring role ambiguity ('not knowing what your role/job is and what you are supposed to be doing') had one of the lowest mean ratings of importance.

In their study of 433 registered and administrative nurses, Elovainio and Kivimäki (1996) utilised a three-item measure of goal clarity (i.e., knowledge of the goals of the job, the work unit, and the organisation). They found that lack of goal clarity was only weakly (though significantly) related to increased occupational stress, and was in fact the weakest of the correlates of stress measured in the study.

Given the discrepancies in research findings regarding the relationships between role conflict, role ambiguity and occupational stress, it is difficult to make any firm conclusions about the strength of these associations. Nonetheless, it is reasonably apparent that when goals are uncertain and roles are not well defined, nurses may experience an increase in occupational stress.

Role feedback

In their study of 561 Dutch nurses, Landeweerd and Boumans (1994) found that a 9-item measure of feedback and clarity was significantly correlated with a measure of health complaints used as an index of occupational stress, suggesting that nurses' health complaints relating to occupational stress increase when there is a

paucity of feedback and clarity. Feedback and clarity was one of the strongest correlates of stress among the work dimensions measured in this study. Demerouti et al. (2000) measured performance feedback and burnout in 185 nurses, and found that feedback was significantly correlated with both physical/emotional exhaustion and psychological disengagement from work.

Confidence and competence in role

Michie et al. (1996) measured lack of confidence and competence in role with the NSS, among 34 general medical nurses, and found that it had a strong positive correlation with distress (as measured by the STAI). In fact, the relationship was equally as strong as those between distress and home/work conflict, and between distress and work overload.

Not surprisingly, a number of the newly qualified psychiatric nurses surveyed by Kipping (2000) noted that self doubt and lack of confidence had been a source of stress during their training. Interestingly, of those who indicated that their own expectations and fears were an anticipated source of stress, the most commonly cited fear was that of making an error with medication. Having to administer medication is only one of the many tasks performed by a nurse that involves risks to lives of patients.

Responsibility

Indeed, the job of the nurse entails a high level of responsibility for peoples' lives. The accountability involved in PICU nursing emerged as a stressor in the study conducted by Bratt et al. (2000), with one respondent stating: "Having responsibility for someone's child is the greatest stress of all" (p. 310). Elovainio and Kivimäki (1996) found a moderate, statistically significant correlation between occupational

stress and high levels of responsibility in their study of 433 registered and administrative nurses.

It has been suggested that improvements in health care technology create a new set of responsibilities for nurses, particularly for those working in critical and intensive care units. They frequently face legal and ethical dilemmas and decisions about life sustaining treatment related to the role of technology in patient care, which create added sources of stress (Erlen & Sereika, 1997). In an Australian study, White and Tonkin (1991) found that the increasing legal implications of their role was the most stressful aspect of the ICU nurse's role, followed by responsibility for the lives of patients.

Being responsible for supervising the activities of auxiliary staff is another source of stress for nurses. Burke and Greenglass (2001) suggest that the de-skilling of the nursing profession – that is, the replacement of registered nurses with nursing assistants and personal care attendants and other such less well-trained staff – constitutes an additional stressor for the nurses who are charged with supervising their work.

The research presented above suggests that the issue of responsibility is a significant one for nurses, and clarifies the nature of the relationship between responsibility and occupational stress as positive, such that the greater the responsibility for peoples' lives, the greater the strain felt by nurses.

Job Control and Complexity

A number of researchers have found that nurses experience higher levels of occupational stress when they have less control over how they perform their work. In addition, the level of difficulty of tasks performed has also been found to contribute to occupational stress, such that the more intricate and complex the job, the greater the

strain experienced by nurses. Landeweerd and Boumans found that the relationship between job complexity and health complaints associated with occupational stress, though positive, was weak and not statistically significant, in their study of 561 Dutch nurses. Norbeck (1985) also found a weak relationship between job complexity (having to make many rapid decisions) and occupational stress (as measured by the Brief Symptom Inventory) in her study of 180 critical care nurses.

Fox and colleagues (1993) measured illness and somatic complaints, as an index of strain, and subjective job control over a number of work domains (e.g., control over task variety, pacing, scheduling of breaks, and layout the physical environment) in 151 nurses. They found a moderate, statistically significant negative correlation between strain and job control. There was a somewhat weaker, yet statistically significant negative correlation between autonomy and health complaints in the study of 561 Dutch nurses, conducted by Landeweerd and Boumans (1999).

In a study of 162 nurses, Glass, McKnight and Valdimarsdottir (1993) administered the MBI and a 13-item questionnaire measuring the degree to which certain job characteristics are perceived to be under the respondent's control. Perceived job control was significantly correlated with all three dimensions of burnout. Lack of perceived job control was moderately and positively associated with emotional exhaustion, moderately and negatively related to personal accomplishment, and positively associated with depersonalisation.

In their study of 433 registered and administrative nurses, Elovainio and Kivimäki (1996) assessed experienced control with a 10-item scale of perceived influence over work task variety, work procedures and workload. They found a somewhat weak, but statistically significant, negative relationship between experienced control and strain. Similarly, Fielding and Weaver (1994) found a

statistically significant, negative relationship between autonomy and strain in a sample of 67 hospital nurses.

However, the research literature is far from conclusive when it comes to the relationship between job control and occupational stress. In contrast to the above-mentioned studies, Demerouti et al. (2000) did not find a significant correlation between job control and burnout in their study of 185 German nurses. Similarly, the correlation between job control and strain was not significant in a study of 60 psychiatric nurses (Munro, Rodwell, & Harding, 1998).

Physical Environment

Physical environment is another aspect of work that has been found to affect nurses' levels of occupational stress. Demerouti et al. (2000) measured burnout and unfavourable environmental conditions in 185 German nurses, and found that there was a significant positive relationship between the two, such that as environmental conditions worsened, nurses experienced greater exhaustion and disengagement. Fielding and Weaver (1994) looked at the relationship between physical comfort and burnout in a sample of 55 community nurses. They found that the physical environment was moderately and negatively correlated with both exhaustion and disengagement.

In an innovative study of the effects of physical environment on occupational stress in nurses, Tyson, Lambert and Beattie (2002) measured levels of burnout (using the MBI) in 37 nurses prior to the building of two new wards at a rural psychiatric institution. The MBI was administered a second time once the new wards were operational. Structured interviews were then conducted with 16 members of staff, during which the researchers gathered data on the perceived advantages and disadvantages of the new wards. While there were many advantages related to the

new wards, particularly for patients, burnout was actually greater after relocation to the new wards. This appeared to be due, in part, to some of the disadvantages identified by interviewees, namely the cramped facilities, crowded offices and difficulty observing patients due to the layout of the new wards.

Career Issues

Matters associated with career that have been shown to relate to occupational stress for nurses include job insecurity, a lack of career prospects, and insufficient opportunities for personal growth. In Kipping's (2000) research into past and anticipated stressors for newly qualified psychiatric nurses, 12% of respondents commented on career issues that had been stressful in the past, such as finding initial employment, job insecurity and a lack of enduring career prospects. Job insecurity also featured as an anticipated stressor for a number of respondents.

Job insecurity

Job insecurity has been shown to have an inverse relationship with emotional exhaustion in nurses working in a variety of settings. Increasing casualisation of the workforce adds to the strain experienced as a result of the multitude of other stressors present in the nursing environment (B. Taylor & Barling, 2004). Coffey and Coleman (2001) found that those forensic community mental health nurses who perceived that their job was secure had lower levels of occupational stress (as measured by the Community Psychiatric Nurse Stress Questionnaire – revised) and emotional exhaustion (assessed by the MBI) than those who did not. Likewise, Edwards and colleagues (2000b) found that those community mental health nurses who had job security scored significantly lower on the GHQ (indicating lower levels of stress) than those who did not have job security. Greenglass and Burke (2000) measured job deterioration (including the perceived likelihood of job loss) and utilised the Hopkins

Symptom Checklist to assess depression, anxiety and somatization among 1,363 Canadian hospital nurses. They found significant positive correlations between job deterioration and all three indices of strain.

Career prospects and professional growth

Concerns about opportunities for study and training was identified by Kipping (2000) as a common source of stress in the mental health nursing literature. However, opportunities for promotion and growth were not found to be significantly related to mental/physical health complaints, in the study of 561 Dutch nurses conducted by Landeweerd and Boumans (1994). In contrast, there was a significant positive relationship between burnout and unmet career expectations regarding salary, responsibility, job security and opportunities for growth, in a study of 156 Dutch nurses (Janssen, de Jonge et al., 1999). However, while significant, this correlation was fairly weak.

The research on career issues suggests that while job insecurity and lack of career prospects are associated with an increase in occupational stress, they may not be as important as more immediate factors, such as the daily hassles experienced by nurses on the job – for example, difficulties in staff relationships.

Relationships and Leadership

Problems with co-workers, managers and physicians are often associated with distress in nursing. Such problems can be as diverse as incompetence or insensitivity in co-workers (Hinds et al., 1998), poor communication with doctors (Kennedy & Grey, 1997), or a lack of involvement or support from supervisors (Evans, 2002; Hinds et al.; S. Taylor et al., 1999; Wheeler, 1997a, 1997b, 1997c, 1997d, 1998). In Kipping's (2000) study of newly qualified mental health nurses, staff attitudes and behaviour were mentioned by over a third of respondents as a source of stress in the

past. Many of these comments concerned staff relationships, revealing that lack of communication and personality clashes were components of staff behaviour and attitudes that were associated with distress. In addition, 14% of respondents acknowledged a lack of supervision and support as stressful.

Support from co-workers and supervisors

Satisfaction with social support and supervisor support has been shown to have an inverse relationship with distress (Kennedy & Grey, 1997). Jansen and colleagues found that peer and supervisor social support reduced feelings of burnout in a sample of 402 Dutch community nurses (1996). Similarly, Janssen, de Jonge et al. (1999) found a statistically significant negative correlation between social support from colleagues and burnout in their study of 156 Dutch nurses. In a study utilising the same sample, Janssen, Schaufeli and Houkes (1999) found that workplace social support from one's supervisor was moderately correlated with emotional exhaustion, and more weakly (yet significantly) correlated with depersonalisation.

Fielding and Weaver (1994) found significant negative correlations between supervisor support (as measured by the WES) and emotional exhaustion and depersonalisation subscales of the MBI in a sample of 67 hospital nurses. V. Lee and Henderson (1996) measured burnout and social support in 78 American nurse administrators, and found that nurse administrators who reported fewer chances to meet regularly with peers experienced reduced personal accomplishment and higher emotional exhaustion (two dimensions of burnout) compared with those who had higher organisational social support. Nurses saw lack of support as a major contributor to stress in a qualitative study conducted by Muncer and colleagues (2001). The 'Lack of organisational support/involvement' scale yielded one of the highest mean scores on the NSI in a study involving English acute-care nurses (P. A.

Tyler & Ellison, 1994). A lack of support and understanding from senior staff was identified as one of the most stressful aspect of nursing in a group of palliative, psychiatric and general nurses (McNeely, 1995). Kirkcaldy and Martin (2000) also found that, of the NSI subscales, lack of organisational support and involvement had the strongest relationship with both physical and cognitive aspects of strain (as measured by the Occupational Stress Indicator), when they surveyed 276 Irish nurses.

In contrast, the study conducted by Edwards and colleagues (2000b) found that a lack of co-worker support and communication problems with colleagues were not considered significant stressors for Welsh community mental health nurses. Moreover, in the study of mental health workers conducted by Prosser and colleagues (1999), items measuring stress related to relationships with colleagues ('not getting on with colleagues from different professions' and 'not getting on with colleagues from the same profession') were among those with the lowest mean ratings of importance. However, nurses comprised only 59% of the sample in this particular study, which may partly explain its differing outcome. While these two studies do not substantiate the relationship between a lack of support and increased occupational stress, the majority of the literature provides convincing support for a strong association between these two variables.

Conflict with physicians

In the study conducted by Motowidlo et al. (1986), circumstances involving conflict with physicians (e.g., verbal abuse from doctors) were amongst the strongest correlates of stress. In his semi-structured interviews with ten post-registration nursing students, Farrington (1997) found that conflict in the multidisciplinary teams over the delivery of care was an important factor in distressing incidents described. Tyler and Cushway (1995) administered the NSS and GHQ to 245 general hospital

nurses, and found that the correlation between conflict with doctors and strain was in fact stronger than that between conflict with other nurses and strain. Bratt and colleagues (2000) administered the Group Judgement Scale (a measure of group cohesion), the Collaboration and Satisfaction About Care Decision (an assessment of nurse-physician collaboration), and the JSS to 1,973 RNs working in paediatric acute care hospitals. Group cohesion was negatively and strongly correlated with job stress, and nurse-physician collaboration had a moderate negative correlation with job stress.

Conflict with other nurses

A feeling of being underappreciated, and conflict with other nurses were two of the most frequently mentioned stressors in a qualitative assessment of stress in nursing assistants (Goodridge et al., 1996). Staff conflict was one of the most frequently mentioned specific stressors in descriptions of stressful work events from a group of HIV/AIDS care nurses (Kalichman et al., 2000). In their study of 433 registered and administrative nurses, Elovainio and Kivimäki (1996) found that conflict in collaboration and co-operation at work was the strongest correlate of occupational stress of those measured.

When in conflict with co-workers, nurses may experience communication difficulties, which may subsequently impact their emotional well-being further. Coffey and Coleman's (2001) study of 80 Welsh and English forensic community mental health nurses revealed that those nurses who felt unable to discuss difficulties with co-workers were more likely to demonstrate emotional exhaustion and experience stress. They also found that the attitude of managers was perceived to be less supportive by a higher proportion of those experiencing distress than those not classified as distressed. Parry-Jones et al. (1998) found that, in a sample of 62

community nurses, there was a significant inverse relationship between the quality of communication with managers and occupational stress.

Leadership style and leader behaviour

Providing support to staff is only one of the many aspects of the role of a head nurse/nurse manager. The style and specific behaviours exhibited by those in positions of leadership can also influence the degree of occupational stress in nurses. For example, leadership that is tyrannical and has an overemphasis on control can increase stress (Stordeur et al., 2001). In their study of 625 ward nurses in a Belgian hospital, Stordeur and colleagues administered the emotional exhaustion of the MBI along with the Multifactor Leadership Questionnaire, which measures transactional and transformational leadership behaviours. Transformational leaders are charismatic, inspirational, intellectually stimulating, and consider the individual. In contrast, transactional leadership is characterised by contingent reward and management-by-exception (i.e., management focused on correcting mistakes). It was found that nurses reported less emotional exhaustion when they perceived their superiors as transformational leaders. Contingent reward was also negatively correlated with emotional exhaustion, while management-by-exception was positively associated with emotional exhaustion.

Landeweerd and Boumans (1994) used the Leadership Behaviour Questionnaire to measure two leadership dimensions in their study of 561 Dutch nurses. They found that while both dimensions were significantly correlated with occupational stress demonstrated through health complaints, social-emotional leadership (e.g., providing opportunities to express emotions about work) was more strongly correlated with physical/mental health than was instrumental leadership (e.g., providing structure and directing tasks).

Along with job stress, Bratt et al. (2000) measured empowering leader behaviours such as enhancing the meaningfulness of work, fostering participation in decision-making, facilitating achievement of goals, and recognising high performance. They found that such nursing management behaviours that enable staff to find meaning in their work were strongly related to reduced stress. The correlation between nursing leadership behaviours and job stress was stronger than that between job stress and group cohesion, and than that between job stress and nurse-physician collaboration.

Bakker, Killmer, Siegrist and Schaufeli (2000) focused on the role of leaders in rewarding nurses. They measured burnout and effort-reward imbalance in a sample of 204 German nurses, and found that those who experienced an imbalance of effort and extrinsic reward had higher levels of emotional exhaustion and depersonalisation than those who did not experience such an imbalance.

The above discussion indicates that there is certainly a relationship between occupational stress in nurses and the styles and behaviours of their leaders that reward performance, inspire involvement, and create a supportive environment in which ideas and emotions can be expressed.

Home/Work Conflict

Conflict between work and home can manifest in a multitude of ways, for example, irritability resulting from exhaustion at work directed at family members (Gillespie & Melby, 2003; B. Taylor & Barling, 2004). Given that the majority of employees in the nursing profession are women, it is not surprising that the psychological consequences of the dual responsibilities of raising a family and paid employment have received attention in the research literature. The conflict between work and home life has a double effect, in that the strain experienced in the workplace

can spill over into family life, and the pressures of raising a family and other aspects of home life can cause difficulties at work. While not strictly an occupational stressor arising from the work environment, home/work conflict is nevertheless an important construct to consider in an examination of what makes nursing a stressful profession.

Burke and Greenglass (1999) studied psychological well-being, and conflict between work and family, in 686 Canadian hospital nurses. They found that nursing staff who reported less work/family conflict had greater psychological well-being. In their study of 276 Irish nurses, Kirkcaldy and Martin (2000) found that home/work conflict significantly predicted both job dissatisfaction and psychological ill health. They concluded that nurses experiencing problems with the home/work interface are particularly vulnerable to the adverse effects of stress. Kirkcaldy and Martin discovered differences among age groups, with the oldest nurses (over 34 years) in their research sample perceiving the most stress. They suggested that this might be due, in part, to the family and domestic commitments that older nurses are likely to have in addition to their work responsibilities.

F. H. Decker (1997) administered measures of psychological distress and job/non-job conflict to 376 hospital nurses. Job/non-job conflict was found to be a significant predictor of distress. Blair and Littlewood (1995a, 1995b, 1995c) used the sources of pressure scale from the Occupational Stress Indicator (OSI) with 42 district nursing staff. Symptoms of stress were significantly associated with all aspects of job pressure, the strongest relationship being with pressure from the home/work interface. Similarly, Michie et al. (1996) found that home/work conflict had a strong, positive correlation with distress.

The research presented above demonstrates that while the strength of the relationship between home/work conflict and occupational stress in nurses is not entirely clear, nurses are undoubtedly likely to experience an increase in occupational stress when the dual responsibilities of work and home are at odds.

Shift Work

The previous discussion of the consequences of attempting to balance work and home life in the nursing profession may in part be explained by the fact that many nurses engage in shift work. Shift work was found to one of the more stressful components of the work environment for Australian ICU nurses, in the study conducted by White and Tonkin (1991). In a study of 185 German nurses, an unfavourable shiftwork schedule was significantly related to exhaustion and disengagement. In contrast, less than ten per cent of respondents mentioned aspects of working hours (night duty, poor rotas and early shifts, as well as shift work) as a source of past stress in Kipping's (2000) qualitative study of newly qualified psychiatric nurses. In the research of S. Taylor and colleagues (1999), the intensity of shift rotation had the lowest rated causal link with participants' feelings of stress. Moreover, shift work was not significantly correlated with job stress (as measured by the NSI) in a study of 287 correctional nurses (Flanagan & Flanagan, 2002).

Other Individual Outcome Variables

Along with the focus on relationships between stressors and strain in the literature, much attention has also been paid to the relationship between occupational stress and other individual outcome variables, such as commitment to the organisation and job satisfaction. Such research is of interest if the relationships between variables in the work environment and occupational stress are to be considered within a model of organisational health.

Organisational commitment

Organisational commitment refers to an employee's attachment to, and involvement in, their organisation. V. Lee and Henderson (1996) examined the relationship between organisational commitment and burnout in 78 nurse administrators, using the Organizational Commitment Questionnaire and the MBI, and found that commitment was significantly and negatively correlated with all three dimensions of burnout. Likewise, Jamal and Baba (1992) found a significant, negative correlation with job stress when they assessed organisational commitment in 1,148 Canadian nurses.

Job satisfaction

Burke and Greenglass (2001) measured job satisfaction and psychosomatic symptoms (as an index of psychological well-being) among 686 hospital nurses in Canada. They found a moderate, statistically significant relationship between these two variables, such that as job satisfaction increased, there was a decrease in psychosomatic symptoms such as headaches, lack of appetite, lower back pain, and faintness. Healy and McKay (1999) found a correlation of a similar magnitude between occupational stress as measured by the NSS and job satisfaction, in their study of 129 Australian nurses. Carson et al. (1999) administered the MBI and Minnesota Job Satisfaction Scale to 648 ward-based mental health nurses, and found that those nurses who reported low burnout experienced greater job satisfaction from both extrinsic and intrinsic factors than those who reported high burnout.

Jain, Lall, McLaughlin and W. B. Johnson (1996) found a strong negative correlation between occupational stress and job satisfaction in a sample of 50 Hawaiian hospital nurses. In their sample of 1,973 PICU nurses, Bratt et al. (2000) observed strong negative correlations between job stress and job satisfaction, which

was assessed by both the Work Satisfaction Scale and the NJS. Various other researchers have also demonstrated a strong negative correlation between job satisfaction and psychological distress in nurses (e.g., F. H. Decker, 1997; Flanagan & Flanagan, 2002).

Summary

This review of the research literature on occupational stressors in nursing has examined a number of variables present in the work environment that variously impact on nurses' experiences of occupational strain. The demands of patient care, such as death and dying, patient and family suffering, and patient aggression; resource issues; dimensions of staff relationships; and conflict between work and home life have all been found by numerous researchers to impact significantly on the psychological well-being of nurses. Individual outcome variables such as organisational climate and job satisfaction have also been shown to have close associations with occupational stress. The research on the effects of role variables, responsibility, job control, career issues, physical environment and shift work is less substantial, though much of it indicates that such factors may be related to occupational stress.

While many studies show clear evidence of a relationship between the above stressors and strain, there is also research that "muddies the waters", and makes firm conclusions on the existence and strength of relationships problematical. Moreover, in the process of this narrative review of the occupational stressors affecting nurses, it has become clear that there are widely differing views on the rank ordering of these stressors. This divergence in opinion is likely due to a number of factors. For instance, the different variables have been operationalised and measured in a variety of ways among the studies. Moreover, most studies look only at a small number of variables,

which impedes general conclusions about the relative importance of a large number of variables. Many of the studies cited have used small samples, and the samples have been drawn from a broad range of nursing populations, which makes generalisation difficult.

One solution to the lack of clarity surrounding the rank ordering of occupational stressors in nursing would be to conduct a large scale study, measuring a large number of variables, using sizeable samples drawn from many different areas of nursing. However, such an enterprise is well beyond the scope of this dissertation. A second possibility is to employ emerging statistical procedures that are perfectly suited to the issue under consideration. Such an alternative can be found in meta-analysis.

Introduction to Meta-analysis

Over the past 20 years, the technique of meta-analysis has become more widely used as a tool for integrating psychological research. However, there remains a considerable lack of awareness with regard to the benefits and complexities of this technique. A discussion of the sophistication of meta-analysis and the advantages of the technique is therefore warranted.

Advantages of Meta-analysis

Contributing to theory development

In order to develop and improve theories of psychological phenomena, relationships between variables must be clarified. As becomes apparent in any examination of a body of psychological research (including the review presented above), contradictory results are common. Such inconsistency hinders the growth of theoretical knowledge, and creates problems for those using research as the basis for

intervention decisions (R. Rosenthal & DiMatteo, 2001). Through pooling research findings to produce a distribution of correlations between two variables, and applying quantitative procedures to such data, meta-analysis provides a concise description of the observed relationships, elucidating the consistency and strength of these associations (Blegen, 1993). The technique also helps explain inconsistencies, and can identify moderating variables, in research findings. In doing so, meta-analysis offers researchers the opportunity to make firmer and more realistic conclusions than can be inferred from a primary study or qualitative narrative review (R. Rosenthal & DiMatteo). Meta-analysis is a useful tool for directing decisions about future research (Reynolds, Timmerman, Anderson, & Stevenson, 1992), and it provides a solid foundation for the evolution of psychological theory. In addition, the clarity that can be achieved through meta-analysis can contribute to sound rationales for intervention strategies.

In the current study, it is hoped that the meta-analytic technique will enable augmentation of the organisational health model through increased understanding of the status of the relationships between occupational stressors and strain in the nursing profession. Applying meta-analysis to the identified research problem will also facilitate the development of broad intervention objectives.

Developing an overall picture and intimacy with the data

Apart from helping overcome the problem of equivocal research findings by combining results, meta-analysis is a valuable tool for a number of other reasons. It requires the researcher to be extremely meticulous in the search for appropriate research reports, and necessitates thorough appraisal and analysis of all the available, relevant data. Meta-analysis allows the researcher to develop an overall picture of the “landscape” of results in the research literature. Furthermore, the intricate procedures

involved in the meta-analytic technique force the researcher to be intimate with the data. That is, the process goes far beyond simply gathering research articles: The meta-analyst must scrutinize the methodology used; and pay particular attention to the operationalisation of variables, and the psychometric properties of the instruments used to measure them (R. Rosenthal & DiMatteo, 2001).

Addressing the overemphasis on significance testing

The frequent occurrence of apparently conflicting results in the psychological research literature is partly due to the convention of relying exclusively on statistical significance testing to determine whether relationships between variables actually exist. This dependence on significance testing is a problem because of the widespread incorrect interpretation that an observed relationship that does not reach statistical significance almost certainly occurs by chance. In fact, the significance level indicates the Type I error rate. If, in the population sampled by a study, a relationship truly exists, a Type I error (i.e., *falsely* concluding that there is a relationship) is not possible. In such a case, the significance test is therefore inadequate (Schmidt & Hunter, 2003). Meta-analysis deals with this problem by combining studies to form a distribution of observed relationships (which includes both statistically significant and non-significant results), from which a sample-size weighted average is computed.

For example, in the narrative review presented above, statistical significance was heavily relied upon to make sense of research results. Meta-analysis will allow the researcher to move beyond the constraints and pitfalls of statistical significance, and utilise research finding non-significant results to help develop a picture of the relationships between occupational stressors and strain in the nursing profession.

Attending to sources of error in the data

The correlations determined by meta-analysis can be considered more accurate than those produced by individual studies, as the population is better represented by the larger, combined sample than by individual samples (Blegen, 1993). Moreover, in averaging correlations across studies, meta-analysis deals with the issue of sampling error, which causes random overestimation and underestimation of population correlations.

Another advantage of meta-analysis is its ability to address the psychometric deficiencies found in the vast majority of studies (Schmidt & Hunter, 2003). Apart from sampling error, there are a number of statistical artifacts that cause inconsistency in observed correlations. For example, differences in range restriction, dichotomization of measures and validity of measures used result in variation among estimates. Furthermore, artifacts such as measurement unreliability produce a downward bias in correlations (Hunter & Schmidt, 1990). Meta-analysis enables correction of mean correlations for such estimates, and thus generates estimates that more accurately reflect the true magnitude of relationships between variables.

In the present case, it is envisaged that meta-analysis will allow the clarification of the relative importance of different occupational stressors for nurses, unobstructed by issues such as sample size and measurement unreliability.

Discovering moderator variables

The process of meta-analysis also involves the estimation of the true variability of associations across studies. Calculating variability not only allows the meta-analyst to assess the accuracy of estimations, but also enables the detection of confounding variables, or *moderators*, which further contribute to variation among observed relationships (Schmidt & Hunter, 2003). When moderators are revealed, and

the extent of their impact on relationships can be assessed, meta-analysis can facilitate further theoretical advances. In the narrative review presented above, nursing specialisation was identified as a potential moderator in the relationships between a number of occupational stressors and strain. Applying meta-analysis in the present study will permit further investigation of the impact of nursing specialty on the strength of some stressors.

Limitations and Criticisms of Meta-analysis

Sampling biases

Of course, meta-analysis is not without its drawbacks. First, there is the problem of sampling biases – for example, availability bias (Hunter & Schmidt, 1990). That is, meta-analysis relies heavily on published studies, which are more likely to report statistically significant results. Though results that are not statistically significant are also of interest to meta-analysts (as outlined above), those that are unpublished are less readily available (Melchior, Bours, Schmitz, & Wittich, 1997). Additionally, selection bias transpires by virtue of the criteria specified for inclusion (e.g., articles must report specific information, such as correlations between the variables in question, to be considered for inclusion), and the methods used to access the literature (i.e., computer assisted searches are unlikely to identify every relevant journal article) (R. Rosenthal & DiMatteo, 2001). The latter problem can be partially addressed by using more than one method of retrieving relevant articles (e.g., supplementing database searches with an examination of the reference sections of articles already identified).

Availability and selection biases are relevant in the present study – for example, only published articles will be sought, though more than one search method will be utilised. Of course, some aspects of sampling bias are also inherent in non-quantitative narrative reviews, so this is not a limitation unique to meta-analysis.

Highlighting individual relationships

A second criticism of meta-analysis is its over-reliance on individual effects (e.g., zero-order correlations between variables) to the exclusion of the “bigger picture”. For instance, the current study is purely interested in the relationship that each individual occupational stressor has with strain, rather than the interrelationships between the stressors. However, as detailed previously, this is in fact one of strengths of the technique – its ability to refine the understanding of simple associations, which can provide a basis for the examination of more complex relationships through longitudinal studies (R. Rosenthal & DiMatteo, 2001).

Comparing apples and oranges

The third argument consistently levelled against meta-analysis is that known as the “apples and oranges” problem (Hunter & Schmidt, 1990). This concerns the idea that the technique involves combining studies that may vary markedly in terms of the measurement and operationalisation of the variables in question. An example in the present context is the use of a range of measures of occupational stress (e.g., MBI, OSI, GHQ, JSS, and single-item subjective measures) throughout the literature that will be subjected to the meta-analytic technique in the current study. However, as R. Rosenthal (2001) suggests: “It can be argued...that it is a good thing to mix apples and oranges, particularly if one wants to generalize about fruit, and that studies that are exactly the same in all respects are actually limited in generalizability” (p. 68). Moreover, Hunter and Schmidt argue that meta-analysis analyses not studies, but

study results – that is, numbers. A technique that combines and averages study results (or analyses them otherwise) is therefore quite reasonable.

Conclusion

From the above discussion, it is evident that while meta-analysis is a technique with a number of limitations, it is no more restricted than any other method of drawing together research findings. Furthermore, most of the criticisms traditionally directed at the technique are somewhat misguided. On the whole, the disadvantages of meta-analysis are far outweighed by its benefits. Its ability to provide an unambiguous account of the landscape of relationships between variables defined by a given research question, through intricate and systematic qualitative procedures, gives meta-analysis a legitimate task in contributing to the evolution of psychological theory and practice.

With regard to the literature on occupational stress in nurses, meta-analysis will enable the researcher to prevail over the presence of sampling and psychometric deficiencies, and the reliance on statistically significant results evident in the narrative review. It will also facilitate the examination of the influence of nursing specialisation as a moderator of the relationships between occupational stressors and strain. In this context, then, meta-analysis is entirely appropriate as a means for decisively establishing the status of the relationships between occupational stressors and strain in the nursing profession.

Aims and Hypotheses

In consideration of the literature discussed above, and the presentation of meta-analysis as a viable alternative to the narrative review, the aims of Study I are fourfold. Through the application of meta-analytic techniques, the study's initial intention is to establish the existence of relationships between nurses' occupational strain and the stressors in question. Second, the study will seek to determine the strength of the individual relationships between occupational strain and the various stressors present in a nursing context. The third objective is to ascertain whether nursing specialty moderates these relationships. Finally, the principal goal of the Study I is to establish which nursing stressors are most strongly correlated with occupational strain, that is, to rank stressors in order of the strength of their relationship with occupational strain.

Given that the purpose of Study I is the application of meta-analytic quantitative review in order to accomplish what the above qualitative narrative review has not achieved, specific hypotheses regarding the ranking of stressors will not be ventured. Yet it is possible to speculate in more general terms, on the existence and relative strength of relationships, and on the presence of moderators, according to the literature discussed above. It is hypothesised that patient care demands (e.g., death and dying, difficulties with patient and families, and patient aggression) will be associated with an increase in occupational stress. Issues resulting in an increased workload and time pressure (e.g., excessive administration, insufficient staff resources) are also expected to be related to heightened levels of strain, as are difficulties in staff relationships (e.g., conflict with physicians and other staff, and lack of staff support) and problems with leadership (e.g., lack of supervisor support, poor leadership style). Furthermore, it is predicted that role ambiguity and conflict; a

lack of role confidence and competence; subjective level of responsibility; a lack of job control or autonomy; job complexity; poor physical environment; shift work; home/work conflict; a lack of career prospects; and lack of professional esteem (e.g., job dissatisfaction) will all correlate positively with occupational stress in nurses.

Based on the research presented, it is anticipated that issues in staff relationships, dimensions of leadership, home/work conflict, and aspects of professional esteem such as job satisfaction, will have relatively strong associations with occupational stress in nurses. Somewhat weaker relationships are expected between occupational stress and role uncertainty (i.e., ambiguity and conflict), lack of job control, poor physical environment, lack of career prospects, and shift work, according to the research presented above. However, given the limited and equivocal nature of the research on these latter variables, these hypotheses are proposed tentatively.

It is expected that, overall, workload will be strongly related to occupational stress, as suggested by various researchers (e.g., Coffey & Coleman, 2001; Janssen, de Jonge et al., 1999; Landeweerd & Boumans, 1994). While research by Parry-Jones and colleagues (1998) points towards moderation of this relationship by nursing specialisation, it is not considered sufficient to form the basis of an hypothesis in the current study. Nevertheless, it is anticipated that a high degree of variance will be observed in the relationship between workload and occupational stress, due to the breadth of the research literature on this topic, and the diversity of findings within the literature.

Ryan (1999) suggests that it is unreasonable to assume equivalency among areas of nursing with regard to nurses' experience of occupational stress. A considerable proportion of the research presented above on stressors specific to

nursing supports this assertion. It is therefore hypothesised that nursing specialisation will moderate the relationship between patient care demands and occupational stress. According to findings such as those of Elovainio and Kivimäki (1996), Fox et al. (1993), and Michie et al. (1996), it is expected that for nurses who work in areas where the troublesome aspects of patient care do not feature highly, the relationship between patient care demands and occupational stress will be relatively weak. In contrast, it is anticipated that for those nurses employed in areas where issues such as patient aggression figures strongly, the demands of patient care will be more strongly associated with occupational stress, as suggested by research such as that conducted by Goodridge et al. (1996) and Sullivan (1993).

CHAPTER 3: METHOD – STUDY I

Study Selection

The initial phase of data collection involved identifying and selecting published studies. Literature searches were conducted using the databases PsychINFO and CINAHL (Cumulative Index to Nursing and Allied Health Literature), applying various combinations of the following search terms: stress/stressors/stresses, strain, distress, burnout, wellbeing, nurse/nurses/nursing, health care, health professionals. In addition, the reference lists of many articles located via database searches were examined for relevant studies not otherwise identified.

Studies (articles, books and book chapters) that were published in English were downloaded or photocopied and considered for inclusion in the meta-analysis. In order to be included in the meta-analysis, a study had to:

1. Report a quantitative analysis of empirical data, using a sample of nurses (including registered, enrolled and assistant nurses and their overseas counterparts).
2. Measure occupational stress/strain and at least one other independently evaluated variable representing an occupational stressor.
3. Report a bivariate correlation, or data that could be converted to a correlation coefficient.

Of the 210 articles considered for inclusion, 52 met the above criteria. Where studies did not report the requisite figures, but met the other criteria, one author from each study was contacted via email and asked to provide additional information. Five requests for further information were sent, and one author replied, supplying further data. This brought the total number of studies included in the meta-analysis to 53.

The 53 studies included in the meta-analysis comprised 54 independent samples, which ranged in size from 23 to 1,953 ($M = 268.96$, $SD = 358.13$). The total sample size was 14,524. The sample yielded 143 correlations across the variables specified below. Table 1 shows the main characteristics of the studies included in the meta-analysis

Table 1

Studies of the Relationships Between Occupational Stressors and Strain Among Nurses (in Alphabetical Order)

Authors	Sample	Variables
Bacharach, Bamberger and Conley (1991)	Nurses employed in a US north-eastern state (n = 215)	Workload Role uncertainty Low professional esteem Home/work conflict
Bakker, Killmer, Siegrist and Schaufeli (2000)	Nurses in Germany (n = 204)	Poor leadership behaviour
Blair and Littlewood (1995b)	District nursing staff in the UK (n = 42)	Home/work conflict
Boswell (1992)	Nurses in Texan public health agencies (n = 51)	Low professional esteem
Bratt, Broome, Kelber and Lostocco (2000)	RNs from 65 paediatric acute care facilities in the US and Canada (n = 1953)	Low professional esteem Poor leadership behaviour Lack of co-worker support
Burke and Greenglass (2001)	Nurses in Canadian hospitals (n = 686)	Workload Lack of career prospects Low professional esteem Home/work conflict
Carson et al. (1999)	Ward-based mental health nurses in the UK (n = 103)	Low professional esteem Patient care demands
Coffey and Coleman (2001)	Forensic community mental health nurses in England and Wales (n = 80)	Workload Lack of career prospects Lack of supervisor support Lack of co-worker support
F. H. Decker (1997)	Nurses in US hospitals (n = 376)	Low professional esteem Lack of co-worker support Home/work conflict

(Table 1 continues)

(Table 1 continued)

Demerouti, Bakker, Nachreiner and Schaufeli (2000)	Nurses in a German hospital and a German nursing home (n = 109)	Workload Job complexity Shift work Leadership
Duxbury, Armstrong, Drew and Henley (1984)	RNs in staff nurse positions in US neonatal intensive care units (n = 283)	Low professional esteem Poor leadership behaviour
Edwards, Burnard, Coyle, Fothergill and Hannigan (2000b)	Community mental health nurses in Wales (n = 301)	Lack of career prospects
Elovainio and Kivimäki (1996)	RNs and administrative nurses in Finland (n = 433)	Workload Role uncertainty Lack of job control/autonomy Job complexity Conflict with co-workers Patient care demands
Erlen and Sereika (1997)	Registered staff nurses in two Pennsylvanian hospitals (n = 63)	Lack of job control/autonomy
Fielding and Weaver (1994)	Hospital based mental health nurses in England (n = 67)	Workload Role uncertainty Low professional esteem Lack of supervisor support Lack of co-worker support
Fielding and Weaver (1994)	Community mental health nurses in England (n = 55)	Workload Role uncertainty Poor physical environment Lack of supervisor support
Firth, McIntee, McKeown and Britton (1986)	Charge, staff and enrolled nurses in UK psychiatric and mental handicap hospitals and general medical units (n = 185)	Poor leadership behaviour
Firth, McKeown, McIntee and Britton (1987)	Charge, staff and enrolled nurses in UK psychiatric and mental handicap hospitals and general medical units (n = 200)	Role uncertainty
Flanagan and Flanagan (2002)	Correctional nurses working in the south-western US prison system (n = 287)	Low professional esteem Shift work

(Table 1 continues)

(Table 1 continued)

Fox, Dwyer and Ganster (1993)	Nurses in a private mid-western hospital (n = 151)	Workload Lack of role confidence and competence Lack of job control/autonomy Low professional esteem Patient care demands
Glass, McKnight and Valdimarsdottir (1993)	Hospital nurses in New York state (n = 162)	Lack of job control/autonomy
Greenglass and Burke (2000)	Hospital nurses in Ontario (n = 1363)	Lack of career prospects
Greenglass, Burke and Fiksenbaum (2001)	Same sample as above	Workload
P. L. Harris (1984)	Hospital nurse managers in the US (n = 71)	Responsibility
Healy and McKay (1999)	Nurses in Victorian metropolitan and regional institutions (n = 129)	Low professional esteem
Hinds et al. (1998)	Paediatric oncology nurses in the US (n = 126)	Low professional esteem Lack of co-worker support
Jain, Lall, McLaughlin and W. B. Johnson (1996)	Nurses in an Hawaiian hospital (n = 34)	Low professional esteem
Jamal and Baba (1992)	Nurses in a large Canadian metropolitan hospital (n = 1148)	Workload Role uncertainty Low professional esteem Shift work
Janssen, de Jonge and Bakker (1999)	Nurses in a Dutch general hospital (n = 156)	Workload Lack of career prospects Lack of co-worker support
Janssen, Schaufeli and Houkes (1999)	Same sample as above	Poor leadership behaviour
Kandolin (1993)	Male mental health and mental handicap nurses in Finland (n = 132)	Workload
Kandolin (1993)	Female mental health and mental handicap nurses in Finland (n = 154)	Workload
Kirkcaldy and Martin (2000)	Nurses in a large urban general hospital in Northern Ireland (n = 276)	Workload Role uncertainty Lack of role confidence and competence Home/work conflict Patient care demands

(Table 1 continues)

(Table 1 continued)

Landeweerd and Boumans (1994)	Staff nurses in the Netherlands (n = 561)	Workload Role uncertainty Lack of job control/autonomy Job complexity Lack of career prospects Poor leadership behaviour Patient care demands
Leary and Brown (1995)	Ward-based psychiatric nurses in England (n = 323)	Low professional esteem
V. Lee and Henderson (1996)	Nurse administrators in the US (n = 78)	Low professional esteem Lack of co-worker support
Linder-Pelz, Pierce and Minslow (1987)	RNs and student nurses in a Sydney teaching hospital (n = 983)	Workload Role uncertainty Lack of role confidence and competence Lack of career prospects Low professional esteem Poor leadership behaviour
Livingston and Livingston (1984)	British female nurses (n = 183)	Patient care demands
McCranie, Lambert and Lambert (1987)	Staff RNs working in a US urban community hospital (n = 107)	Patient care demands Lack of co-worker support Conflict with co-workers Workload
Michie, Ridout and Johnston (1996)	Nurses from general medical wards in a London hospital (n = 34)	Workload Role uncertainty Lack of role confidence and competence Low professional esteem Poor leadership behaviour Home/work conflict Patient care demands
Motowidlo, Packard and Manning (1986)	Staff nurses in the US (n = 171)	Lack of role confidence and competence
Munro, Rodwell and Harding (1998)	RNs in an Australian private psychiatric hospital (n = 60)	Lack of job control/autonomy Low professional esteem
Norbeck (1985)	Critical care nurses from eight western US hospitals (n = 180)	Workload Job complexity Poor physical environment Low professional esteem Conflict with co-workers Patient care demands

(Table 1 continues)

(Table 1 continued)

Oehler, Davidson, Starr and D. A. Lee (1991)	Nurses in neonatal intensive care units (n = 49)	Lack of supervisor support
Packard and Motowidlo (1987)	Nurses in five US hospitals (n = 366)	Low professional esteem
Parke (1982)	Student nurses on medical-surgical placements in the UK and Ireland (n = 164)	Lack of job control/autonomy Lack of co-worker support
Parry-Jones, et al. (1998)	Community nurses in an assessment/care management role in Wales (n = 61)	Workload Job complexity Low professional esteem
Parry-Jones, et al. (1998)	Community psychiatric nurses in an assessment/care management role in Wales (n = 61)	Workload Job complexity Low professional esteem
Proctor, Stratton-Powell, Tarrier and Burns (1998)	Care assistants in nursing and residential homes (n = 98)	Role uncertainty Lack of career prospects Conflict with co-workers Home/work conflict
Severinsson and Hummelvoll (2001)	Nursing staff on an acute ward in a Norwegian psychiatric hospital (n = 23)	Patient care demands
Severinsson and Kamaker (1999)	Nurses in a Swedish public general hospital (n = 158)	Patient care demands
Stordeur, D'hoore and Vandenberghe (2001)	Ward nurses in a Belgian hospital (n = 625)	Workload Role uncertainty Poor leadership behaviour Lack of co-worker support Conflict with co-workers Patient care demands
Sullivan (1993)	Nurses in English acute psychiatric inpatient facilities (n = 78)	Patient care demands
Topf and Dillon (1988)	Nursing personnel from two western US hospitals (n = 100)	Poor physical environment
Tyler and Cushway (1995)	Nurses in two English general hospitals (n = 245)	Workload Lack of co-worker support Conflict with co-workers

Coding of Data

When a study was identified as meeting the criteria for inclusion, the relevant data were extracted and entered into a spreadsheet. The following information was coded for each study:

1. Authors, year of study, sample size, and sample characteristics (e.g., nationality, setting, occupational role).
2. Measure of stress and its reliability estimate if available.
3. Measure of the related variable and its reliability estimate if available.
4. Zero-order correlation(s) between stress and the related variable(s).
5. Where data had to be converted to a correlation coefficient, the type of data reported was noted on the spreadsheet, as was the transformation made.

A list of 16 variable categories was developed prior to the classification of study variables. This list was based on the work stressors identified in the literature review. The 16 categories were framed negatively – that is, as stressors rather than as resources – to ensure ease of interpretation. In order to categorise the related variables, a catalogue of the measures was compiled (see Appendix A). This included the name of the measure, its source, a description of the measure and its subscales (if applicable). Each study variable was then assigned to the variable category it most closely resembled.

In order to avoid overexposure to biases (e.g., method variance) inherent in particular studies when more than one variable in a single study corresponded with one variable category, only one of those study variables (that which most closely approximated the category) was selected for inclusion in the meta-analysis. A second researcher examined the final classification of variables under the 16 categories. Any differences of opinion over classification were discussed until a consensus was

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reached. Table 2 displays the 16 variable categories, and the study variables that were included in each category. Strain and the measures used to assess it are also included in the table.

Table 2

Classification of Study Variables Under Variable Categories

Final variable category	Study variable
Workload	Workload Work/role overload Work pressure Time pressure Mental work overload Subjective quantitative workload Amount of physical work Number of inpatient beds Caseload
Role uncertainty	Role ambiguity Ambiguous team status Role conflict Clarity Sufficient performance feedback Conflicting demands Anxiety in considering nursing action
Lack of role confidence and competence	Lack of role confidence and competence Interpersonal effectiveness Willingness to take risks Job performance Problems with training
Lack of job control/autonomy	Job control Lack of job control Autonomy Job discretion
Job complexity	Job complexity and difficulty Cognitive workload Number of rapid decisions that must be made
Responsibility	Level of responsibility Supervisory responsibility
Physical environment	Physical comfort Noise level Disturbance due to noise

(Table 2 continues)

(Table 2 continued)

Lack of career prospects	Unmet career expectations Job security Promotional and growth opportunities Future workplace threats Career and achievement Lack of prospects Job deterioration
Low professional esteem	Job/work satisfaction Organisational commitment Job involvement Low professional esteem
Poor leadership behaviour	Nursing leadership behaviour Social-emotional leadership Inadequacy of reward Inspirational role Lack of participation in decision-making Supervisor behaviour Non-responsiveness of management Consideration of head nurse Personal respect from supervisor
Lack of supervisor support	Attitude of line manager Supervisor support
Lack of co-worker support	Work support Social support at work Organisational social support Lack of support Work group relations Relations with co-workers Peer cohesion Group cohesion Discussing work problems with colleagues Nurse-physician collaboration
Conflict with co-workers	Conflict with other nurses Relationships with others Social environment Communication problems with unit nurses
Home/work conflict	Home/work conflict Job/non-job conflict Work/family conflict Home and work interface
Shift work	Shift work Degree of rotation of shift

(Table 2 continues)

(Table 2 continued)

Patient care demands	Death and dying Patient care Patient attending and caring Patient demands Demanding contact with patients Troublesome patients Patient contact hours Patient aggression Dealing with patients and relatives Moral sensitivity Meeting the psychological needs of patients
Strain	Emotional exhaustion (MBI) Depersonalization (MBI) General Health Questionnaire Stress symptoms (Occupational Stress Indicator) Nursing Stress Scale Perceived Stress Scale State/Trait Anxiety Inventory Subjective stress Staff Burnout Scale for Health Professionals Stress (Measure of work environment, not specified) Psychological distress Health Professions Stress Inventory Job Stress Scale Stress and experience of shortcomings Health complaints (Organizational Stress Questionnaire) Hopkins Symptom Checklist Illness and somatic complaints Change in stress levels Oldenburg Burnout Inventory Health Professional Stress Inventory Current stress level Occupational Stress Questionnaire Job stress Nurse Stress Index Burnout Tedium Scale Global Severity Index (Brief Symptom Inventory)

Meta-analytic Procedure

The procedure followed was that given by Hunter and Schmidt (1990) for correlations using artifact distributions. As well as considering sampling error, this procedure takes into account the fact that statistical artifacts such as measurement error produce a downward bias in obtained correlations, and corrects for such error in the process of estimating population effect sizes.

First, uncorrected sample size-weighted mean correlations (and their standard deviations) between each stressor variable and strain were calculated, using the zero-order correlations obtained from the 54 studies. The next step involved correcting weighted mean correlations for measurement error.

When information on an artifact such as the reliability of the independent variable is only sporadically available in the studies included in the meta-analysis, Hunter and Schmidt (Hunter & Schmidt, 1990) recommend obtaining reliability estimates from other sources. As this was the case for all independent variables in the current study, reliability estimates were sought from a number of scale manuals (Cooper, Sloane, & Williams, 1988; Gray-Toft & Anderson, 1981; P. E. Harris, 1989; Moos, 1981; Osipow & Spokane, 1987) for as many variables as possible. These reliability estimates were then combined with those available in the studies included in the meta-analysis, and the square root of each estimate was calculated to form an artifact distribution for each stressor variable and for the strain variable. The average of the square root of reliabilities was then calculated for each artifact distribution, and the product of the relevant averages (i.e., for strain and the stressor variable in question) yielded the mean compound attenuation factor for each correlation (\bar{A}_i). Dividing the weighted mean correlation by the mean compound attenuation factor resulted in an estimate of the mean unattenuated study correlation (r_c).

In order to derive the variance (and standard deviation) of the unattenuated study correlations for each variable, a number of computations were made:

1. The mean and standard deviation of each component attenuation factor were calculated.
2. The coefficient of variation (CV) was calculated for each component attenuation factor (by dividing the standard deviation by the mean).
3. The sum of the squared coefficients of variation for each component (i.e., CV_{strain}^2 and $CV_{stressor}^2$) – V – was multiplied by the square of the mean compound attenuation factor (\bar{A}_i^2), yielding the variance of the compound attenuation factor, $VAR(A_i)$. [$VAR(A_i) = \bar{A}_i^2 V$]
4. The variance of the compound attenuation factor was multiplied by the square of the mean unattenuated study correlation. [$r_c^2 VAR(A_i)$]
5. The difference between the above product and the variance of the uncorrected weighted study correlation was divided by the square of the mean compound attenuation factor to arrive at the variance of the unattenuated study correlation, $VAR(r_c)$. $\{VAR(r_c) = [VAR(r) - r_c^2 VAR(A_i)] / \bar{A}_i^2\}$

Next, a credibility interval was constructed around the mean unattenuated study correlation using the standard deviation of the unattenuated study correlation. This credibility interval was used to test for homogeneity – that is, to check whether the study sample ought to be broken down into sub-samples. If the credibility interval included zero or was sufficiently large (i.e., greater than .50), it was concluded that a moderator (e.g., sample type) might be operating (see Whitener, 1990). When this was the case, and if sub-samples comprising three or more studies could be identified, the sample was broken down into sub-samples, and the meta-analytic procedure was then applied to each sub-sample. Those variables with large credibility intervals that

could not be broken down into sub-samples were noted so that results could be interpreted with caution.

Finally, in order to assess the accuracy of each sample-size weighted mean correlation, confidence intervals were constructed using the standard error of the mean correlation, as outlined by Whitener (1990). Confidence intervals were also used in the moderator analysis to detect the presence of statistically significant differences between sub-samples, as suggested by Hunter and Schmidt (1990).

CHAPTER 4: RESULTS – STUDY I

The results of the meta-analysis of the relationships between stressor variables and strain are presented in Table 3. The data included in the table are the number of samples providing correlations (k), the total number of participants in the k samples (N), the sample-size weighted mean correlation (r), the standard deviation of correlations weighted for sample-size (SD), the standard error of the mean correlation (SE), the mean compound attenuation factor (\bar{A}_i), the weighted mean correlation corrected for measurement unreliability (r_c), the standard deviation of weighted correlations corrected for measurement unreliability (SD_c), the credibility interval and the confidence interval.

Table 3 shows small to moderate credibility intervals for 13 corrected weighted mean correlations, between strain and role uncertainty, lack of role confidence/competence, lack of job control, job complexity, responsibility, poor physical environment, lack of career prospects, poor leadership behaviour, lack of supervisor support, lack of co-worker support, conflict with co-workers, and home/work conflict. All of the above homogeneous relationships were statistically significant as reflected by 95% confidence intervals that did not include zero. The relationship between shift work and strain, which was not subject to correction for attenuation, was also significant.

The corrected weighted mean correlation between strain and home/work conflict, based on 1,727 participants from seven independent samples, represented the strongest relationship measured in the meta-analysis ($r_c = .52$). Strong relationships were also found between strain and conflict with co-workers ($r_c = .42$), for 1,688 individuals from six samples; and between strain and poor leadership behaviour ($r_c = .41$), which was based on 5,090 individuals from nine samples.

Table 3

Meta-analysis Results

Variable	<i>k</i>	<i>N</i>	<i>r</i>	<i>SD</i>	<i>SE</i>	\bar{A}_i	<i>r_c</i>	<i>SD_c</i>	Credibility Interval		95% Confidence Interval	
									Lower	Upper	Lower	Upper
Workload	23	7,590	.38	.12		.70	.48	.14	.20	.77		
Role uncertainty	13	4,871	.28	.07	.013	.80	.35	.09	.17	.52	.25	.30
Lack of role confidence/competence	5	1,549	.28	.06	.023	.83	.34	.07	.21	.48	.24	.33
Lack of job control	7	1,594	.23	.08	.024	.81	.29	.10	.09	.49	.18	.28
Job complexity	3	850	.13	.05	.034	.71	.18	.05	.07	.28	.06	.19
Responsibility	4	625	.20	.06	.038	.78	.26	.07	.11	.41	.12	.28
Poor physical environment	3	335	.30	.03	.050	.86	.35	.03	.28	.41	.20	.40
Lack of career prospects	8	4,170	.18	.05	.015	.75	.24	.07	.11	.37	.15	.21
Low professional esteem	24	7,939	.39	.14		.86	.45	.16	.13	.77		
Poor leadership behaviour	9	5,090	.35	.11	.012	.86	.41	.12	.17	.65	.33	.38
Lack of supervisor support	5	507	.29	.07	.041	.81	.35	.09	.17	.54	.20	.37
Lack of co-worker support	12	4,205	.32	.08	.014	.82	.39	.10	.19	.58	.29	.34
Conflict with co-workers	6	1,688	.31	.07	.022	.74	.42	.08	.26	.58	.27	.35
Home/work conflict	7	1,727	.42	.09	.020	.82	.52	.11	.30	.74	.38	.46
Shift work*	3	1,544	.12	.07	.025						.07	.17
Patient care demands	12	2,735	.17	.12		.78	.22	.15	-.07	.52		

Note. Boldface type indicates those variables whose credibility intervals were large or included zero.

As these variables were subjected to moderator analysis, confidence intervals were not calculated.

* No reliability information available, therefore estimates could not be corrected for attenuation by measurement error.

There was a moderate corrected weighted mean correlation between strain and lack of co-worker support ($r_c = .39$), based on 12 samples totalling 4,205 participants. The moderate corrected weighted mean correlation between strain and lack of supervisor support was equivalent to that between strain and role uncertainty, and between strain and poor physical environment ($r_c = .35$). However, role uncertainty was measured in 13 studies, with a combined sample size of 4,871, while lack of supervisor support was measured in a far smaller sample ($N = 507$) from five studies, and the sample for poor physical environment was smaller still at 335 participants from only three studies. Lack of role confidence and competence also showed a moderate relationship with strain ($r_c = .34$). This corrected weighted mean correlation was based on a sample of 1,549 from five studies.

The corrected weighted mean correlation between strain and lack of job control was .29. This estimate was from seven studies with a combined sample size of 1,594. Estimates of .26 and .24 were found for the relationships between strain and responsibility, and between strain and lack of career prospects, respectively. However, the sample size of the latter (4,170 participants from eight studies) was far greater than that of the former (625 participants from four studies).

Based on 850 participants from three studies, a weak relationship was found between job complexity and strain ($r_c = .18$). The uncorrected mean correlation between shift work and strain was weaker still ($r = .12$), though the sample size for this estimate was somewhat larger, at 1,544 individuals from three studies.

Table 3 shows that the corrected correlations between strain and three variables – workload, low professional esteem and patient care demands – had credibility intervals that were sufficiently large to suggest the presence of moderators. For each of these variables, two occupational groups (represented by at least three

studies, as suggested by Hunter & Schmidt, 1990) were identified. For workload, general nurses (i.e., hospital nurses from various departments, community nurses and nurse administrators) were separated from mental health nurses. A similar distinction was made for patient care demands (though the general nurse sample in this analysis did not include community nurses). For low professional esteem, paediatric nurses (paediatric oncology, acute care, and neonatal intensive care nurses) were separated from other nurses (both general and mental health nurses). Each sub-sample was subjected to the meta-analytic procedure, the results of which are presented in Table 4.

Table 4

Moderator Analysis by Sample Type

Variable Sub-sample	<i>k</i>	<i>N</i>	<i>r</i>	<i>SD</i>	<i>SE</i>	\bar{A}_i	<i>r_c</i>	<i>SD_c</i>	Credibility Interval		95% Confidence Interval	
									Lower	Upper	Lower	Upper
Workload												
General	18	7,347	.39	.12	.029	.80	.49	.14	.20	.77	.33	.45
Mental health	5	488	.28	.03	.042	.83	.34	.04	.27	.40	.20	.37
Low professional esteem												
Paediatrics	3	2,357	.53	.08	.015	.87	.60	.09	.42	.78	.50	.56
Other	21	5,582	.33	.12	.035	.86	.38	.13	.11	.65	.30	.40
Patient care demands												
General	9	2,531	.15	.07	.020	.77	.19	.09	.01	.38	.11	.19
Mental health	3	204	.50	.06	.053	.81	.61	.08	.46	.76	.39	.60

Note. When credibility intervals were sufficiently large to indicate heterogeneity of the sub-sample (as indicated by boldface type), the 95% confidence interval for heterogeneous effect sizes was estimated (Whitener, 1990). In all other cases, the 95% confidence interval for homogeneous effect sizes was constructed.

Table 4 shows that, for 7,347 general nurses from 18 independent samples, there was a strong relationship between strain and workload ($r = .49$). In contrast, among 488 mental health nurses from five samples, the relationship was moderate ($r_c = .34$). However, the 95% confidence intervals for the weighted mean correlations between strain and workload for each of these groups overlapped, indicating that the difference between weighted, *uncorrected* mean correlations for the general and mental health nurses (.39 and .28 respectively) were not statistically significant. It should be noted that although the analysis indicated heterogeneity of the general sample, a further moderator analysis of this sample was not possible, due to insufficient numbers for division into sub-samples.

For the relationship between strain and low professional esteem, Table 4 shows a clear difference between paediatric nurses and others. The corrected weighted mean correlation for paediatric nurses ($r_c = .60$) was much stronger than that for other types of nurses ($r_c = .38$). Moreover, the 95% confidence intervals for the relevant weighted mean correlations were sufficiently discrete as to suggest a statistically significant difference. Though the size of each of these sub-samples was sufficiently large (2,357 paediatric nurses and 5,582 nurses from other areas), the number of studies used to estimate the relationship between strain and low professional esteem for other nurses ($k = 21$) was far higher than the number of studies involving paediatric nurses ($k = 3$). Thus, care should be taken in interpreting these results.

Table 4 also shows that, while the relationship between strain and patient care demands was relatively weak when measured among general nurses ($r_c = .19$), for the sub-sample of mental health nurses, the corrected weighted mean correlation between strain and patient care demands was strong ($r_c = .61$). The independent 95% confidence intervals for the pertinent weighted mean correlations indicate that this

difference is statistically significant. In spite of this, these results should also be interpreted cautiously, given the small size of the mental health sub-sample (204 individuals from three studies) when compared to the general sub-sample (2,531 nurses from nine studies).

Finally, Table 5 presents final correlations in order of strength, to facilitate comparison of the results of the above analyses. As there was no significant difference between general and mental health nurses found for the relationship between workload and strain, workload is presented as a single, heterogeneous population.

Table 5

Rank-ordering of Effect Sizes

Variable (subsample)	r_c	SD_c
1. Patient care demands (Mental health)	.61	.08
2. Low professional esteem (Paediatrics)	.60	.09
3. Home/work conflict	.52	.11
4. Workload	.48	.14
5. Conflict with co-workers	.42	.08
6. Poor leadership behaviour	.41	.12
7. Lack of co-worker support	.39	.10
8. Low professional esteem (Other)	.38	.13
9. Poor physical environment	.35	.03
10. Role uncertainty	.35	.09
11. Lack of supervisor support	.35	.09
12. Lack of role confidence/competence	.34	.07
13. Lack of job control	.29	.10
14. Responsibility	.26	.07
15. Lack of career prospects	.24	.07
16. Patient care demands (General)	.19	.09
17. Job complexity	.18	.05
18. Shift work*	.12	.07

Note. Heterogeneous effect size estimates are indicated by boldface type.

* No reliability information available, therefore estimates could not be corrected for attenuation by measurement error.

CHAPTER 5: DISCUSSION – STUDY I

The primary aims of Study I were to confirm the existence of relationships between occupational strain and the various stressors present in a nursing context; to determine the strength of these associations; and to establish which stressors are most strongly correlated with occupational strain. These objectives were to be met through meta-analytic review of the research literature.

To begin with, it was predicted that patient care demands, high workload, conflict with staff, a lack of staff and supervisor support, problems with leadership, role uncertainty, lack of role confidence and competence, level of responsibility, lack of job control, job complexity, poor physical environment, shift work, home/work conflict, lack of career prospects, and lack of professional esteem would all correlate positively with occupational stress in nurses. The results support this hypothesis: All variables included in the meta-analysis had statistically significant correlations with occupational stress.

It is recognised that correlational analyses can not be taken to indicate causation. However, in the present case, tentative interpretations regarding the causal influences of nursing stressors on occupational strain will be ventured when such explanations are considered logical and appropriate. For the most part, the discussion will be restricted to the impact of stressors on strain, though it is acknowledged that such relationships are often reciprocal, such that the level of strain being experienced influences the degree to which a stressor impacts on the emotional well-being of the nurse.

Relationships Between Occupational Stressors and Strain

Leadership, Conflict and Support

Issues related to staff relationships and leadership were expected to have relatively strong associations with occupational stress. Poor leadership behaviour, lack of co-worker support, conflict with co-workers and lack of supervisor support all yielded correlations with occupational stress that were greater than .30. Of these variables, co-worker conflict was the strongest correlate, though its correlation with occupational stress was only marginally stronger than that between poor leadership behaviour and occupational stress. Conflict between co-workers is a major concern in the nursing profession, and is characterised by surreptitious activities such as “backstabbing” (B. Taylor & Barling, 2004) and gossip (Kipping, 2000), which, understandably, can be quite traumatic for the victim. Leaders that fail to encourage participation or provide appropriate feedback and rewards can also contribute to depleted emotional resources in their staff (Bratt et al., 2000). Overall, the results of Study I give the impression that the social environment figures strongly in the nurse’s experience of well-being at work.

The results align with those of Melchior et al. (1997), who conducted a meta-analysis of the variables related to burnout in psychiatric nurses, and found moderate relationships between burnout and staff support, and between burnout and involvement with the organisation. A large scale study conducted by Bourbonnais, Comeau, Vezina and Dion (1998), which found a strong relationship between burnout and social support at work, also lends support to the results of Study I. The importance of the social environment to occupational well-being is not a phenomenon that is unique to nurses, however: The results are similar to the findings of R. T. Lee and Ashforth (1996), whose meta-analytic examination of the correlates of

burnout among other human service professionals (e.g., counsellors, teachers, and police officers) demonstrated moderately strong relationships between burnout and such variables as social support and supervisor support.

Interestingly, the present meta-analysis demonstrated that lack of co-worker support was more strongly correlated with occupational stress than was lack of supervisor support. Some justification for this finding may be offered by equity theory. Equity theory holds that people pursue mutuality in their relationships. That is, what one party invests in and gains from a relationship should be relative to that of the other party. Inequity results when the ratio of investments to outcomes is unbalanced (Taris, Peeters, Le Blanc, Schreurs, & Schaufeli, 2001). One of the consequences of inequity in work relationships is burnout (van Dierendonck, Schaufeli, & Buunk, 2001). Given the power differential inherent in relationships with supervisors, it may be that the expectations of equity in such relationships are not as strong as those in co-worker relationships. Thus, a lack of support from supervisors may not be quite as stressful for nurses as a lack of support from co-workers, because inequity in relationships with superiors is to be expected to some degree. However, this explanation is offered tentatively, particularly given the disparity in the sample sizes for the two correlations. Nevertheless, the potential moderating influence of expectations of equity on the relationship between support and stress deserves the attention of future research.

Home/Work Conflict

It was anticipated that home/work conflict would also be strongly associated with occupational stress, relative to other stressors. The results support this supposition. In fact, home/work conflict was the third highest correlate of occupational stress in Study I. Since nursing is a female-dominated profession, the

importance of home/work conflict in the nurse's experience of occupational stress, demonstrated by Study I, is not surprising. Lundberg and Frankenhaeuser (1999) demonstrated that women who work full-time and have children at home experience greater stress than their male counterparts. Schwartzberg and Dytell (1996) note that gender differences in the experience of interference between work and family is a common finding.

Of course, the large effect size established in Study I may also be explained by the mutual influence of occupational stress on home/work conflict. When elevated levels of strain are experienced at work, it would be extremely difficult to avoid "taking it home". Indeed, if the occupational stress is related to a lack of support at work, then support would naturally be sought outside the work environment, for example, from one's spouse, family, or friends, potentially producing an experience of home/work conflict.

The results show a moderate degree of variance in the effect size estimate for home/work conflict. There may be a number of reasons for such variance, including work hours and individual variables such as ability to manage time and perceived control. Adams and Jex (1999) found that strain arising from work-family conflict could be reduced through individual time management behaviours such as setting priorities and goals. They also found that greater distress was experienced by those with greater work-family conflict *and* lower levels of perceived control.

It is possible that the strong association between occupational stress and conflict between work and home life may be partially attributable to the fact that many nurses are engaged in shift work. This proposition can not be confirmed by the present research, as Study I did not look comprehensively at the triadic relationship between shift work, work/home conflict and strain. However, Jamal and Baba (1992)

note the disruptive effects of rotating shifts on family life; and other research has demonstrated gender differences in the strain associated with shift work in nurses (e.g., Kandolin, 1993). It may be the case that work hours in general influence the experience of home/work conflict, which in turn affects levels of occupational stress. Indeed, Field and Bramwell (1998) found differences between women employed full-time and part-time with regard to their attitudes about the dual responsibilities of work and home. In addition, Lynch (1999) found that mothers employed full-time experienced higher levels of occupational stress than those employed part-time, so there appears to be a possibility that work hours (i.e., shift work, or part-time versus full-time work status) moderate the relationship between home/work conflict and occupational stress.

Shift Work

While shift work may be implicated in the relationship between home/work conflict and occupational stress, and although it was significantly related to an increase in occupational stress, shift work was the weakest correlate of those included in the meta-analysis. The accuracy of this finding is somewhat questionable, given the small number of samples on which it is based. Yet, there is some sense to be made of this finding. One reason for the weak relationship may be that nurses working evenings and nights, (when most patients are likely to be sleeping) have more time for non-patient related duties, and consequently have a less burdensome workload. The likelihood of encountering difficult, demanding and aggressive patients and families is also smaller at night. Moreover, fewer staff are rostered on at such times, reducing the opportunities for staff conflicts. Thus, nurses working some or all of their shifts during nights and evenings have less chance of being subjected to other stressors that might contribute to an increase in occupational strain.

Control, Complexity, Career Prospects and Responsibility

Other stressors that were found to have relatively weak relationships with occupational stress included job complexity, lack of career prospects, responsibility and lack of job control. As the estimate of the association between job complexity and strain was based on only three studies, conclusions about the basis of the weak relationship are speculative. It may be that jobs that are more complex are in fact favourable, or even satisfying in some cases, as they give nurses an opportunity to be stimulated and utilise more complex skills. For example, task variety has been found to have an inverse relationship with burnout in nurses (Demerouti et al., 2000). In her meta-analysis of the correlates of job satisfaction in nurses, Blegen (1993) found a strong association between task variety and job satisfaction. McNeese-Smith (1999) also determined that variety was particularly relevant to satisfaction, in her qualitative study of hospital nurses. Likewise, Parsons (1998) found task variety to be a central element in nurses' job satisfaction. Similarly, having a role that is responsible for the care and well-being of patients, families, and other staff, may be more satisfying than stressful for nurses, as it can give a sense of purpose and useful contribution to society.

With regard to the relationship between strain and lack of career prospects, its relative weakness may be attributable to the reality that concerns about job security and promotional opportunities are less likely to have an immediate impact on the nurse and her day-to-day activities than things such as conflict and workload. Likewise, lack of autonomy and job control is perhaps a less pervasive stressor, which may explain its relatively weak relationship with occupational strain. An alternative explanation is that the effects of a lack of job control on occupational stress may be subjectively experienced as a poor relationship with supervisors and leaders, which

are seen to have a greater impact on stress. Indeed, Seltzer and Numerof (1988) acknowledge the relationship between low autonomy and leadership styles that impose too much structure.

Lack of Role Confidence/Competence/Certainty

The results show that role stressors such as role uncertainty and lack of role confidence/competence were moderately correlated with occupational strain in nurses. Kipping (2000) demonstrated that nurses' expectations of themselves, and their perceived inability to make a difference were important confidence and competence issues that shaped their occupational well-being. Organisational changes and the evolutionary nature of the profession may also influence occupational stress resulting from role uncertainty and a lack of confidence and competence in role (Michie et al., 1996). The effect size for role uncertainty was identical to that found for lack of role clarity in R. T. Lee and Ashforth's (1996) meta-analysis conducted using a wider sample of human service professionals, which suggests that this is another aspect of nurses' experience of occupational well-being that parallels the experience of other workers.

Physical Environment

Poor physical environment was also found to have a moderate correlation with occupational stress. However, the number of studies and total sample size for this effect size were both very small, so broad conclusions and generalisations about the importance of this stressor can not be made. Two of the variables included in the meta-analysis under the banner "poor physical environment" focused on noise levels. Topf and Dillon (1988) suggest that unpredictable and inescapable noises have the greatest impact on nurses' levels of stress, particularly noises that are construed as

demanding – that is, those that prompt nurses to take some sort of action (e.g., beeping monitors, telephones, equipment alarms).

Workload

As expected, the results show that workload was amongst the strongest correlates of occupational stress. This is not surprising, given the volume of research that supports the importance of staff and time resources in determining the well-being of nurses at work (e.g., Evans, 2002; Foxall et al., 1990; C. M. Healy & McKay, 2000; McNeely, 1995; David Prosser et al., 1997; Sullivan, 1993; S. Taylor et al., 1999; Wheeler & Riding, 1994; White & Tonkin, 1991). Again, this is a trend that is replicated in other human service professions: R. T. Lee and Ashforth (1996) demonstrated that workload and work pressure are two of the strongest correlates of burnout in their meta-analysis. The hypothesis that a high degree of variance would be found in the relationship between workload and occupational stress was also supported. However, the grounds for this variance remain unclear.

While the effect size estimate for the relationship between workload and occupational stress was much higher for general nurses than mental health nurses, these correlations were not significantly different, which implies that nursing specialisation does not account for the variance. However, the moderator analysis was not able to *fully* examine whether nursing specialisation affects the relationship between workload and occupational stress, as the sub-sample of general nurses was unable to be further broken down into more specific sub-samples. Since mental health nurses were shown to be a homogeneous subset of the sample when it came to workload; it would not have been surprising to find that nursing specialisation influences the relationship between workload and occupational stress to some degree: If it had been possible to break down the general sub-sample into homogeneous

subsets (e.g., ICU nurses, medical-surgical nurses, etc.), it may have been shown that workload is a significantly stronger correlate of occupational stress for some groups of nurses than for mental health nurses.

While the question of whether nursing specialisation moderates the relationship between workload and occupational stress remains largely unanswered, the results show that two other relationships – those between professional esteem and occupational stress, and between patient care demands and occupational stress – are unequivocally affected by nursing specialisation. This discussion will now turn to the first of these two relationships.

Influence of Nursing Specialisation

Low Professional Esteem

Overall, the results show a strong association between low professional esteem and increased occupational stress. This is supported by Blegen's (1993) meta-analysis of variables related to job satisfaction in nurses, which also demonstrated a robust relationship between stress and job satisfaction. The present meta-analysis revealed a high degree of variance in the relationship between professional esteem and occupational stress. The moderator analysis demonstrated that this variance could be partially attributed to nursing specialisation, as the correlation between low professional esteem and increased occupational stress was significantly stronger in paediatric nurses than in other nurses. While there was only a small number of studies included in the sub-sample of paediatric nurses, the total sample size was very large, ensuring a high degree of generalisability. The foundation of the importance of low professional esteem in paediatric nurses' experience of occupational well-being may be found in an examination of the nature of the work of paediatric nurses.

There are a number of unique stressors to be found in paediatric nursing, most notably, the care of sick and dying children and infants, who have a higher degree of dependence than adult patients, and whose suffering has particular significance to their parents and society (Oehler & Davidson, 1992). It has been noted that an inverse relationship exists between the age of a patient and level of distress experienced by those caring for that patient (O'Hara, Harper, Chartrand, & Johnston, 1996).

Paediatric nurses also have the added pressure of dealing with their patients' parents and extended family members on a daily basis, and the crucial role of providing support and education. On the other hand, the opportunity to make a difference in a sick child's life through providing care, comfort and compassion provides the paediatric nurse with a role that is potentially very fulfilling. It is probable that these equally unique possibilities for stress and satisfaction have a reciprocal influence, such that when professional esteem is low, occupational stress is very likely to be high, and vice versa.

According to the moderator analysis, nurses other than those working in paediatric units experience a moderately strong relationship between low professional esteem and increased occupational stress. However, the results show that this subset of "other" nurses was heterogeneous. Thus, there are likely to be further differences among nurses in other specialisations regarding the degree to which occupational stress is influenced by factors such as job satisfaction.

Patient Care Demands

The hypothesis that nursing specialisation would moderate the relationship between patient care demands and occupational stress was supported by the meta-analysis. The results show that for general nurses, patient care demands represent one of the weakest correlates of occupational stress. This is not surprising, because nurses

in generic medical-surgical wards are unlikely to encounter stressors such as death and dying and patient aggression on a regular basis. While nurses in such areas are likely to be faced with issues such as the pain and suffering of patients, dealing with such issues is central to nursing work. Presumably, then, individuals attracted to the nursing profession are aware that they will face patient suffering on a daily basis, and account for this in their career decisions. Thus, those who end up practicing as nurses are perhaps more able to cope with patients' pain and suffering than those who do not.

Another possible explanation for the relative unimportance of patient care demands in general nurses' well-being at work is that patients' stays in medical-surgical wards are relatively short, so troublesome and demanding patients and their relatives are not likely to produce long-term concerns for nurses. That is, if nurses can perceive an end to the daily hassles triggered by a difficult patient, they are less likely to experience distress as a result. Furthermore, the pain and suffering experienced by patients in general wards is unlikely to be of a critical or chronic nature. Thus, there is more likely to be an atmosphere of hope around patients' problems, decreasing the impact of patient care demands on general nurses' well-being at work.

As expected, the relationship between patient care demands and occupational stress was shown to be much stronger for mental health nurses. In fact, the correlation between patient care demands and occupational stress in mental health nurses was the largest effect size obtained in the meta-analysis. This result should be read with caution, though, given the few studies and very small sample from which the correlation was obtained. Nevertheless, the fact that such a marked difference in the strength of the correlation between patient care demands and occupational stress was shown between general and mental health nurses is worthy of exploration.

In contrast to general nurses, those working in psychiatric settings deal with patients whose issues are often of a chronic nature. In long-term institutions, mental health nurses work with patients who have little chance of rehabilitation; and in acute in-patient settings, while their patients may have the capacity to function independently in the community, mental illness may see them being re-hospitalised on numerous occasions. Melchior et al. (1997) note that psychiatric nurses' unrealistic beliefs about the likelihood of their patients' rehabilitation can lead to frustration, which can subsequently result in burnout. Comments made by a mental health nurse participating in a qualitative study conducted by B. Taylor and Barling (2004) provide some insight into the types of stressors encountered:

I find the chronicity of the mental illnesses and just how tortured some people are [is hard to deal with]...Some of them are so miserable and there's no cure, there's no change....The thing that really gets me is the torture that some people experience from their voices, from their madness and there's no relief from it no matter what they take. That's what breaks my heart. (p. 117)

Moreover, mental health nurses are subjected to an additional stressor, in that they frequently face unpredictable and aggressive behaviour from patients, which can put at risk the lives of nurses (e.g., violent outbursts directed at nurses) and the patients themselves (e.g., self-harm and suicidal behaviour) (Coffey, 1999; Edwards, Burnard, Coyle, Fothergill, & Hannigan, 2000a). It is not surprising that the demands of patient care, such as facing threats to one's physical integrity on a daily basis, are strongly associated with increased distress at work for mental health nurses. Additionally, there may be a reciprocal influence of nurses' distress on patient aggression. Winstanley and Whittington (2002) suggest that depersonalisation, which forms part of the burnout experience, may manifest in more negative behaviour

towards patients, which could subsequently render nurses more susceptible to patient aggression.

In recent years, mental health services have seen an increase in violent incidents and disturbing patient behaviour (Sammut, 1997), which may be due to a greater number of admissions due to drug-induced psychosis (NSW Government, 2002, May 30). Nurses may be less sympathetic towards individuals if they believe that their patients have acquired psychiatric conditions because of their own risk-taking behaviour. They may harbour greater contempt towards such patients, and have less compassion and tolerance for their aggressive behaviour. Such attitudes may contribute to the strong relationship between patient care demands and occupational stress in mental health nurses. This proposition is supported by the research of Whittington (2002), who found an inverse relationship between tolerance for aggression and burnout in mental health nurses.

Study Limitations and Implications for Future Research

There are two matters requiring further attention that should be discussed at this point. First, given the importance of home/work conflict in nurses' experience of occupational well-being, the tension between work and extra-occupational roles and responsibilities deserves further exploration. The potential influence of variables such as hours of work on the stress resulting from home/work conflict requires investigation before the management of the work-family interface can be addressed.

Secondly, many of the strongest correlates of occupational stress identified in Study I are stressors that are common to many occupations. Indeed, in her meta-analysis of the correlates of job satisfaction, Blegen (1993) found that effect sizes were similar to those found in meta-analyses using the same variables with other

occupational groups. Given these findings, a question that arises is whether nurses' experience of the relationships between occupational stressors and strain is in fact different to that of other professionals.

Summary

In summary, the hypotheses generated from the literature review were largely supported by the meta-analysis. All variables were shown to have significant associations with occupational stress in nurses. The results demonstrated that workload, home/work conflict, leadership, co-worker conflict and support are among the strongest correlates of strain; physical environment, lack of support, and role stressors have moderate associations with strain; and responsibility, lack of control and career prospects, job complexity and shift work have weaker connections with strain. The variance in these effect sizes is comparatively reasonable, and may be attributable to the variety of measures used in the research literature, or to methodological issues (see general discussion).

In contrast, it was found that the relationship between professional esteem and occupational stress is unequivocally influenced by nursing specialisation, whereby factors such as job satisfaction are more intimately related to strain in paediatric nurses than in other nurses. Similarly, it was found that nursing specialisation clearly has a moderating influence on the relationship between patient care demands and occupational stress, such that patient factors have a substantial impact on the well-being of mental health nurses, but have a much weaker effect on the strain experienced by general nurses. This may be due to a number of factors, namely the chronic nature of problems experienced by the mentally ill; nurses' unrealistic

expectations regarding rehabilitation and negative attitudes towards patients; and violent, unpredictable patient behaviour.

The moderating influences of variables other than nursing specialisation on the relationships between stressors and occupational strain deserves further consideration; for example, the effect of work hours on occupational stress resulting from home/work conflict is a pertinent matter for future research. Finally, the issue of whether the magnitude of relationships between occupational stressors and strain in the nursing profession reflects that found in other areas is a key direction for meta-analytic research. These two concerns will be addressed by Study II.

CHAPTER 6: INTRODUCTION – STUDY II

Rationale

The results of the first study demonstrated that many of the strongest correlates of strain in nurses (e.g., workload, home/work conflict, leadership, co-worker conflict and support) are, in fact, not specific to the nursing profession. The issue of whether there are differences between nurses and workers in other professions with regard to the magnitude of relationships between occupational stressors and strain was cited as an important matter for further research. The moderating influence of work hours (or employment status) on the nature of occupational stress was also questioned, given the strong association between home/work conflict and occupational stress determined in Study I. These questions form the basis of the second study. This introduction therefore has a dual purpose. Its first intention is to examine selected studies on the relationships between work stressors and strain in occupations other than nursing. The second objective is to explore the research on the effects of employment status on occupational stress.

Occupational Stressors in Other Professions

Public Servants

The relationship between workplace stressors and strain has been widely researched in countless occupations, including banking, teaching, policing, and work in the public service. Public servants are a diverse group with a range of roles and responsibilities. The ambiguous nature of the research into work stress among public servants reflects this. Mak and Mueller (2000) assessed job insecurity, social support (at work and at home), and various indices of strain in their survey of 222 Australian public servants under threat of job loss due to restructuring. Participants included

administration officers, professional officers, research officers, health workers, technicians and managers. Perceived job insecurity was moderately and positively associated with vocational strain, and the inverse relationship between social support and vocational strain was of an equivalent magnitude. They suggested that the current trend in Australia's public and private sectors towards organisational restructuring and rationalisation underlies heightened levels of occupational stress.

In a second study, Mak and Mueller (2001) surveyed 157 public servants, this time utilising alternative measures of occupational stress (a scale assessing depressive symptoms, and a measure of somatic symptoms) and the Occupational Role Questionnaire (ORQ), which assesses role overload, role insufficiency, role ambiguity, role boundary, responsibility and physical environment. Of the variables measured by the ORQ, role ambiguity had the strongest association with strain. Physical environment (indicating exposure to noise, extreme temperatures, dust, dampness, toxic material, or unpleasant odours; physical isolation; or an erratic work schedule) was, not surprisingly, the second strongest correlate of somatic symptoms, but was not related to depression. Conversely, role boundary (i.e., role conflict) and role insufficiency (denoting poor career prospects and a lack of recognition) were the second strongest correlates of depression, but were only weakly associated with physical symptoms. Role overload (i.e., excessive workload and a lack of role confidence/competence) and responsibility (for subordinates) were weakly related to both dimensions of strain.

Yang and Carayon (1995) examined the impact of organisational climate on occupational stress in a study measuring American public servants' perceived social support (supervisor and co-worker support), peer cohesion, quantitative workload, and various indices of stress. Of the organisational factors measured, workload had the

strongest correlation with a number of the stress indices (i.e., workload dissatisfaction, fatigue, and daily life stress). The relationship between supervisor support and stress was stronger than those between co-worker support and stress, and between peer cohesion and stress. Most of the correlations between support and occupational stress were relatively weak, and few were statistically significant. A similar result was found when Tetrick, Slack, Da Silva and Sinclair (2000) measured emotional exhaustion, quantitative workload, role ambiguity, role conflict, and social support at work among 160 American morticians. While social support at work was only weakly related to emotional exhaustion, workload, ambiguity and conflict all had strong associations with strain.

In contrast, Workplace OHS (2002) reported research that showed the level of support from both supervisors and colleagues was the strongest correlate of workplace stress in employees of a Victorian City Council. Perceived control (involvement in decision-making) was the second strongest correlate of workplace stress. Houkes, Janssen, de Jonge and Bakker (2003) had a comparable finding in their investigation of emotional exhaustion in 627 Dutch bankers and teachers. In this study, while workload was the strongest correlate of strain among the occupational stressors, social support from supervisors and colleagues had a moderately strong association with emotional exhaustion.

There may be a number of explanations for the discrepancies in the above findings, for instance, the nationality of participants, or the divergence in participants' occupations. Yet, the most probable reason is the way occupational stress was conceptualised, and therefore measured, in the studies. For example, Yang and Carayon's (1995) indices of stress were boredom, workload dissatisfaction, daily life-stress, tension-anxiety, depression, anger, and fatigue. In contrast, the research

reported by Workplace OHS (2002) assessed employees' commitment to the organisation, job satisfaction, and psychological health and well-being.

The divergence in the above research is reflective of the ambiguity in the broader literature on the relationships between occupational stressors and strain, as with the research on the nature of occupational stress in the nursing profession. Like the nursing literature, most studies of employee well-being in other occupations tend to look at a small selection of variables, and studies vary widely in their operationalisation and measurement of variables. This inconsistency in the measurement of stress is perhaps the most likely source of uncertainty in our understanding of the causes of occupational stress. However, while definitive inferences about the relative importance of particular stressors are difficult to achieve, the work of Hart and colleagues (e.g., Hart, 1994; Hart & Cooper, 2001; Hart & Cotton, 2002; Hart, Wearing, & Headey, 1995) suggests that, as demonstrated for nurses in Study I, the centrality of generic organisational issues may be a feature of occupational stress that is shared by most (if not all) occupations. This discussion will not turn to two examples of such research.

Police Officers

Parallel to the assumption that nursing is a particularly stressful occupation due to the unique nature of the work, police work is also commonly considered inherently more stressful than many other fields of work, due to the danger involved in the roles and responsibilities of those who enforce the law. In order to investigate this conventional wisdom, Hart and Cotton (2002) employed the organisational health framework to structure an exploration of occupational stress among 589 sworn police officers, 167 unsworn employees within a police organisation, and 1,087 public sector employees not working in a police organisation. They measured distress, morale, and

quality of work life (i.e., job satisfaction); positive and negative work experiences, including both operational and generic stressors; and organisational climate variables.

Hart and Cotton (2002) found that police officers were experiencing lower morale and job satisfaction than general public sector employees. Police officers were also under significantly greater distress than both unsworn employees and public servants, though there were no differences in withdrawal intentions. However, the results demonstrated that generic stressors (e.g., lack of communication, workload, and problems with co-workers) were more important than specific operational experiences (such as exposure to danger and dealing with victims of crime) in shaping police officers' occupational well-being. Organisational climate factors were found to be central to police officers' experience of occupational stress. These results called into question popular notions regarding the nature of occupational stress in police officers, suggesting that it is not the intrinsically stressful nature of police work, but rather the organisational context that determines police officers' occupational well-being.

Teachers

Hart (1994) investigated occupational well-being among educators from Australian primary and secondary schools through a sequence of studies. He initially measured psychological distress at work, using the General Strain Index in 652 teachers. The Teacher Stress Inventory was utilised to assess two generic organisational stressors (i.e., authoritarian leadership and poor staff relations) and three teaching-specific negative work experiences (i.e., ministry demands, parent demands, and student behaviour). Hart found that organisational issues were more strongly related to distress than those concerns typically connected with teaching.

Poor staff relations was the strongest correlate of psychological distress at work, followed by authoritarian leadership.

Positive work experiences were explored in a second study, in which Hart (1994) administered the General Strain Index and nine subscales from the School Organisational Health Questionnaire to a separate sample of 563 teachers. Two subscales, 'Curriculum Consultation' and 'Effective Discipline Policy', measured positive experiences specific to the teaching profession, while the remainder measured generic work experiences (i.e., feedback, goal congruence, participative decision-making, professional development, professional interaction, role clarity, supportive leadership). Again, organisational factors were, on the whole, more strongly associated with psychological distress. Of the positive work experiences measured, role clarity was the strongest correlate of distress at work, followed by feedback. Curriculum consultation, goal congruence and supportive leadership were also relatively important dimensions.

From the research outlined above and the findings of Study I, it is clear that the importance of generic, organisational issues over and above operational stressors is a characteristic of occupational stress that is not limited to the nursing profession, but is also found in teaching and policing, among other occupations. This inference concurs with Ganster and Schaubroek (1991), who, in their large-scale review of the effects of work characteristics on employee well-being, stated: "Although investigators do uncover unique attributes of different occupational groups that are reported to be causes of stress, there is also a striking similarity in the nature of stressors from one occupation to the next" (p. 239).

Effects of Employment Status on Occupational Stress

It has been suggested that consideration of part-time and full-time employees as a homogeneous group is somewhat simplistic (Feldman, 1990). Wetzel, Soloshy and Gallagher (1990) proposed that part-time workers are more concerned with and attached to the organisation, and more disparaging of conditions and changes in the organisation than their part-time counterparts. In addition, full-time nurses have been found to be positioned more centrally than part-time nurses in social relationships (Barker, 1993). Differences between part-time and full-time employees with regard to levels of occupational stress have also been demonstrated in numerous studies.

Benavides, Benach, Diez-Roux and Roman (2000) conducted a large-scale study into the effects of working conditions on employee health, among 15,146 workers from 15 European countries. They found that, of those in fixed-term employment, full-time employees were more likely to report increased stress, fatigue, backache and muscular pains than part-time employees. Similarly, full-time sole traders were more likely to report increased stress than part-time sole traders. In a study of 184 part-time and full-time Australian general practitioners (GPs) working in rural areas, Dua (1997) administered the Rural GP Occupational Stress Scale, and found that occupational stress was significantly higher in full-time GPs than in part-time GPs. Moreover, employment status was the best predictor of occupational stress when considered among other demographic variables.

In a study of 153 Israeli nurses, Krausz, Sagie and Bidermann (2000), measured employment status and burnout. Significantly higher levels of burnout were found in those working full-time than those working part-time. As well as assessing levels of occupational stress, various studies have looked at the influence of employment status on employees' experiences of the wider organisational context. In

a study conducted by Burke and Greenglass (2000a), measures of workload, perceived job insecurity, organisational support, professional efficacy, and burnout were administered to 1,362 Canadian nurses during hospital restructuring and downsizing. This study also found that full-time nurses experienced greater emotional exhaustion than part-time nurses. While there were no differences between full-time and part-time nurses in terms of perceived organisational support and job insecurity, full-time nurses reported a greater workload than part-time nurses, and part-time nurses experienced lower professional efficacy than full-time nurses.

Schaubroek, Judge and L. A. Taylor (1998) assessed occupational stressors in 316 employees of a US military reserve unit. Participants worked part-time for the military, and also had full-time jobs elsewhere. The researchers measured lack of co-worker social support, quantitative workload, skill underutilization, role conflict, role ambiguity and lack of job control. Participants reported significantly higher role conflict, role ambiguity, workload and lack of support in their primary (full-time) occupation, and higher levels of skill underutilisation and lack of job control in their part-time position.

In conclusion, the research presented above unambiguously demonstrates that full-time workers are more likely to experience heightened levels of occupational stress and burnout than part-time workers. There is less clarity regarding the impact of employment status on organisational factors, though there is certainly evidence to suggest that workplace stressors are affected by work hours. Additionally, Feldman (1990) posits a triadic relationship between work arrangements, organisational factors and job attitudes, such that work context mediates the relationship between employment status and attitudinal outcomes. This suggests that the association between the number of work hours and level of occupational stress might be stronger,

for example, if there is a perception of a lack of co-worker support than if sufficient support is experienced. Alternatively, the three-way relationship may exist via a moderating effect of employment status on the relationships between workplace stressors and strain, which would see the magnitude of the relationship between lack of co-worker support and strain increasing (or decreasing) with the number of hours worked.

Aims and Hypotheses

While plenty of studies have examined the influence of employment status on workplace stressors and occupational strain, there appears to be a gap in the research regarding the impact of employment status on the relationship *between* occupational stressors and strain. Moreover, whereas experiences of occupational stress in nurses working in different specialties have often been compared (e.g., research), there has been a paucity of research comparing nurses with other occupational groups. Study II aims to address these issues. In addition to investigating the moderating effects of employment status and occupation on the associations between workplace stressors and strain, Study II will endeavour to ascertain which generic work events and organisational factors are most strongly related to individual psychological distress at work.

Study I demonstrated the efficacy and utility of the meta-analytic technique in establishing the degree of association between occupational stressors and strain. Meta-analysis is therefore considered an appropriate means to achieve the above objectives. However, the results of Study I also indicated that a degree of variance in effect sizes can be expected when variables are operationalised and measured in many ways, which can generate uncertainty about the relative influence of potential

moderators. In order to avoid such ambiguity, Study II will apply the meta-analytic technique to a population (including nurses and public servants) in which organisational factors and work distress have been quantified by one measure – the Queensland Public Agency Staff Survey (QPASS).

Specific predictions about exactly which climate variables and work events will have the greatest effect sizes will not be made. However, it is thought that, as found in Study I, variables measuring aspects of staff relationships, leadership, the home-work interface and workload will rate highly. Based on the research of Hart and colleagues (e.g., Hart, 1994; Hart & Cotton, 2002), it is expected that, overall, factors related to the organisational climate will be more strongly associated with distress than positive and negative work experiences.

Further to this hypothesis, and according to the research that shows employees in a variety of occupations perceive similar occupational stressors to those experienced in the nursing profession (as shown in Study I), it is anticipated that occupation will not moderate the relationships between strain and organisational factors or between strain and work experiences. That is, the null hypothesis – that there will be no difference between nurses and public service employees in the effect sizes of organisational climate variables and positive and negative work experiences – is expected to be confirmed.

Finally, based on the research investigating the effects of employment status on organisational factors and occupational stress, a moderating influence of employment status on the effect sizes of organisational climate variables is posited. However, this hypothesis is offered tentatively, given the dearth of research on this matter.

CHAPTER 7: METHOD – STUDY II

Data Used in the Meta-analysis

Study II used a selection of archival data, which was originally gathered by a team at the University of Southern Queensland (USQ) as part of an ongoing consultancy commissioned by a number of Queensland Government agencies (e.g., Albion, Machin, & Fogarty, 1999; Albion, Machin, & Fogarty, 2002; Albion, McKeon, Hoare, Fogarty, & Machin, 2004; Albion, McKeon, Hoare, Fogarty, Patrick et al., 2004; Albion, McKeon, Machin, & Fogarty, 2002, 2003a, 2003b, 2004; Fogarty, Machin, & Albion, 2000; Machin & Beccaria, 2000). Given the diversity of occupations in the public service, it was thought that this was an appropriate population with which to compare nurses. The data were from projects conducted between 1999 and 2004.

Participants

In the section of the original research used in the current study, there were 4,509 participants, 1,483 of whom were nurses employed by Queensland Health in six regional Health Service Districts and one regional Mental Health Service, and 3,026 of whom were public servants employed in five Queensland Government departments. Other general demographic characteristics of participants can be found in Table B1 (see Appendix B). Approximately 68% of participants were female; and one third of participants were aged 41-50 years, while the other age groups (under 21, 21-30, 31-40, 51-60, and over 60) were represented by 1%, 18%, 28%, 18% and 2% of the sample respectively. Almost three quarters were employed on a permanent full-time basis (71%), 11% were temporary full-time employees, and 18% worked part-time.

Measures

In the original research from which the data used in the current study were extracted, the QPASS, developed by Hart et al. (1996) was the primary tool. The instrument was specifically developed to help improve Queensland public servants' quality of work life as a result of the Queensland State Government's Occupational Stress Project (Douglas, 2001), and was endorsed in 1997 by the Queensland Government for the measurement of organisational climate in the Queensland Public Service (Office of the Public Service Commissioner, 2000). 1,117 employees of five Queensland Government agencies were surveyed in the development of the QPASS, which is based on the organisational health model, and measures employees' opinions on work events, organisational climate, their coping strategies, and psychological outcomes. 203 items form 8 scales, consisting of 41 distinct subscales (i.e., there is no item overlap).

Items require a response based on a Likert scale, with different ranges depending on the scale. Responses indicate level of agreement/disagreement (1-7, where 1 = strongly disagree, and 7 = strongly agree for Quality of Work Life; or 1-5, where 1 = strongly disagree, and 5 = strongly agree for Organisational Climate); level of relevance to respondent (0-5, where 0 = definitely does not apply to me, and 5 = strongly applies to me for Positive Work Events and Negative Work Events; or 0-4, where 0 = not at all, and 4 = very much so for Emotion-focused Coping and Problem-focused Coping); or frequency of occurrence (1-7, where 1 = not at all, and 7 = all the time for Individual Morale and Psychological Distress). The subscales of the QPASS were validated using confirmatory factor analysis, which yielded factor loadings ranging from .43 to .94. (P. M. Hart et al., 1996). Hart et al. also reported estimated subscale reliability coefficients of between .73 and .94. These statistics suggest that

the QPASS is, overall, a psychometrically sound instrument. Only data from the organisational climate, positive and negative work events, and individual psychological distress scales were used in the meta-analysis.

Organisational Climate

Ten elements of organisational climate are included in the QPASS. The Workplace Morale subscale (5 items) covers employees' perceptions of team spirit, energy, enthusiasm and pride in the workplace, while Workplace Distress (5 items) encompasses awareness of frustration, stress, tension, anxiety and depression in staff. Five items concerning the approachability, reliability, helpfulness, communication and understanding of management constitute the Supportive Leadership subscale. The extent to which staff are able to contribute to decision making and convey their opinions is assessed by the Participative Decision-making subscale (4 items). Role Clarity contains four items dealing with the clear definition of expectations, amount of authority, responsibility and work objectives. Perceptions of acceptance, involvement, and support from others are measured by the Professional Interaction subscale (7 items). The quality and regularity of encouragement and feedback are included in the Appraisal and Recognition subscale (6 items). Professional Growth (5 items) focuses on career and professional development, and Goal Congruence (5 items) addresses consensus regarding values, goals, objectives, and work practices. Finally, the Excessive Work Demands subscale (4 items) examines expectations, burdens and pressures on staff in the workplace (P. M. Hart et al., 1996).

Positive Work Events

Variables included in the Positive Work Events scale contribute to the employee's feelings of accomplishment and empowerment in the workplace (Hart et al., 1996). Subscales measure perceptions of the job itself (7 items), customer service

(2 items), positive features of workload (4 items), suitable work schedule (3 items), positive aspects of administration (3 items), positive characteristics of management (9 items), amenities (4 items), equipment and resources (4 items), positive attributes of co-workers (8 items), decision-making (6 items), and satisfying family life (4 items).

Negative Work Events

The Negative Work Events scale gauges the degree to which employees feel disempowered, overburdened, and prevented from performing successfully (Hart et al., 1996). Negative Work Events comprises subscales assessing perceived insufficient communication (6 items), negative features of workload (4 items), negative attributes of co-workers (6 items), lack of outside support (3 items), negative aspects of administration (9 items), job insecurity (2 items), unsatisfactory resources (4 items), dual careers in the family (2 items), imbalance between work and home life (5 items), insufficient career opportunities (4 items), and personality clashes with other staff (4 items).

Individual Psychological Distress

The seven items of the Individual Psychological Distress scale concern negative feelings such as fear, anxiety and unease. A high score on this scale indicates that the respondent experiences a high proportion of such feelings at work.

Data Collection

The administration of the survey to Queensland Health and public service employees began with consultation with staff to facilitate understanding and encourage participation. All employees were required to sign a form indicating their consent to participate in the survey. The surveys (either paper copies or web-based surveys) were then distributed among employees. Web-based surveys were free of

identifying information, and all paper forms were returned directly to USQ employees to ensure confidentiality.

Preparation of the Archival Data for Meta-analysis

Separating the Samples

Once the relevant data were extracted from the archival data sets, full-time employees were separated from part-time employees in each public service or nursing sample. This resulted in a total of 24 independent samples. Ten of these samples were from public service agencies, that is, full-time and part-time employees of the following departments: The Department of Innovation and Information Economy, Sport and Recreation Queensland (DIIESRQ); the Department of Industrial Relations (DIR); the Department of Communication and Information, Local Government and Planning (DCILGP); the Shared Service Initiative (SSI); and the corporate arm of the Department of Emergency Services, Business Support Services (BSS). Fourteen of the samples were full-time and part-time nurses from the following areas: Southern Downs Health Service District, Toowoomba Health Service District, Gladstone Health Service District, Atherton Health Service District, Rockhamptom Health Service District, North Burnett Health Service District, and the Toowoomba Mental Health Service. The number of participants in each of these samples is presented in Table B1 (see Appendix B).

Preliminary Analyses

In order for the meta-analytic procedure to be applied to the data, a reliability analysis for each subscale was conducted for each of the 24 samples. Following this, Pearson product-moment correlations were computed for the relationships between individual psychological distress and the organisational climate subscales, positive

work events subscales and negative work events subscales for each sample. The results of these preliminary analyses are reported in Appendix C.

Meta-analytic Procedure

The procedure followed was that given by Hunter and Schmidt (1990) for correlations corrected individually for artifacts. As with the method used in Study I, this procedure accounts for artifactual error in the process of approximating population effect sizes.

As with Study I, the first step was to calculate the sample-size weighted mean correlations between the dependent and independent variables. Next, an artifact attenuation factor was computed for each artifact (i.e., the measure reliability for each of the 33 subscales in each of the 24 samples) by taking the square root of the reliability of the subscale. The compound attenuation factor for each correlation (A_i) was then calculated by summing the artifact attenuation factors (i.e., the artifact attenuation factor for each of the two subscales correlated). Dividing the observed (or study) correlation (r_{oi}) by its compound attenuation factor yielded the corrected study correlation (r_{ci}). A weight for each study was subsequently computed by multiplying the study's sample size by the squared compound attenuation factor for the study correlation ($w_i = N_i A_i^2$). This weight was used in generating the weighted mean corrected correlation, r_c . ($r_c = \sum w_i r_{ci} / \sum w_i$)

Second, a complex set of steps was undertaken before arriving at the corrected variance of corrected correlations (or *actual variance*) for each variable:

1. The mean observed (uncorrected) correlation across studies (r_o) was calculated. The difference between the square of this mean observed correlation and one was squared, then divided by one less than the study

sample size to obtain the sampling error variance in the observed correlation,

$$\text{VAR}(e_{oi}). [\text{VAR}(e_{oi}) = (1 - r_o^2)^2 / (N_i - 1)]$$

2. The sampling error variance in the corrected correlation, $\text{VAR}(e_{ci})$, was computed by dividing the above result by the squared compound attenuation factor for the observed correlation. $[\text{VAR}(e_{ci}) = \text{VAR}(e_{oi}) / A_i^2]$
3. The weighted sampling error variance, $\text{VAR}(e_c)$ was computed using the weights previously calculated. $[\text{VAR}(e_c) = \sum w_i \text{VAR}(e_{ci}) / \sum w_i]$
4. The uncorrected variance of the corrected correlations, $\text{VAR}(r)$, was estimated via computing the square of the difference between the corrected study correlation and the weighted mean corrected correlation. $[\text{VAR}(r) = \sum w_i (r_{ci} - r_c)^2 / \sum w_i]$
5. The corrected variance of corrected correlations was estimated as the difference between the uncorrected variance of corrected correlations and the weighted sampling error variance. $[\text{VAR} = \text{VAR}(r) - \text{VAR}(e_c)]$. As suggested by Hunter and Schmidt (1990), when this estimate was less than zero, it was inferred that there was no actual variance.

Next, the actual standard deviation (derived from the actual variance) was used to construct a credibility interval around the weighted mean corrected correlation (except for those correlation where the actual variance was zero). Following this, a chi-square test for homogeneity of the true correlations across studies was performed by calculating the Q statistic thus: The product of the number of studies in the sample (k) and the uncorrected variance of corrected correlations was divided by the weighted sampling error variance $[Q = k \text{VAR}(r) / \text{VAR}(e_c)]$. The chi-square test and credibility interval were used to assess heterogeneity in the sample (Hunter & Schmidt, 1990; Whitener, 1990). As with Study I, confidence intervals were then constructed using

the standard error of the mean correlation (Whitener, 1990) with the purpose of gauging the statistical significance and precision of the weighted mean estimates.

The final step in the meta-analysis was to carry out moderator analyses where relevant. When it was concluded that moderators might be operating, the sample was broken down on the basis of occupation (i.e., nurses were separated from public servants), and the meta-analytic procedure applied to each sub-sample. When the effect-sizes in the moderator analysis were shown to be homogeneous, confidence intervals were used to test whether the difference between the weighted mean correlations of the two sub-samples was statistically significant (which would indicate that occupation was a likely moderator). In the case of those sub-scales measured in sufficiently large samples (i.e., organisation climate subscales), if heterogeneity was suspected in one of the effect-sizes in the moderator analysis, the sub-sample was further broken down based on current employment status (e.g., full-time nurses were separated from part-time nurses), and a secondary moderator analysis was conducted. If occupation was shown not to moderate the relationship (i.e., if the nursing and public service effect-sizes were homogeneous but not significantly different), an alternative moderator analysis was conducted by breaking down the full sample on the basis of current employment status (i.e., all full-time employees were separated from all part-time employees), and applying the meta-analytic procedure to each sub-sample.

CHAPTER 8: RESULTS – STUDY II

The results of the meta-analyses of the correlations between organisational climate variables and individual psychological distress, between positive work events and psychological distress, and between negative work events and psychological distress are presented in the tables below. The data included in the tables are the number of samples providing correlations (k), the total number of participants in the k samples (N), the sample-size weighted mean correlation (r), the standard error of the mean correlation (SE), the weighted mean correlation corrected for measurement unreliability (r_c), the variance of corrected correlations corrected for measurement unreliability (VAR), the credibility interval, the Q statistic and the confidence interval. Boldface type indicates those variables whose Q statistic and/or credibility interval indicated the possible presence of a moderating variable. In such cases the standard error and 95% confidence interval for heterogeneous effect sizes were estimated (Whitener, 1990). In all other cases, the 95% confidence interval for homogeneous effect sizes was constructed. In cases where estimates of actual variance were less than zero, credibility intervals could not be constructed and the Q statistic could not be calculated.

Table 6 shows no actual variance in the relationships between psychological distress and appraisal and recognition, and between psychological distress and professional growth, indicating homogeneous effect sizes. Small credibility intervals and non-statistically significant Q statistics for weighted mean corrected correlations between psychological distress and workplace morale, and between psychological distress and workplace distress reflected that these effect sizes were also homogeneous. These four relationships were statistically significant (as indicated by 95% confidence intervals that did not include zero).

Organisational Climate

Table 6

Meta-Correlations Between Individual Psychological Distress and Organisational Climate Variables

Variable	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
Workplace morale	24	4,431	-.48	.012	-.54	.001	-.58	-.49	27.18	-.50	-.45
Workplace distress	23	4,413	.62	.009	.71	<.001	.68	.73	25.63	.60	.64
Participative decision-making	23	4,418	-.43	.031	-.49	.002	-.58	-.40	32.56	-.49	-.36
Supportive leadership	24	4,429	-.46	.032	-.52	.001	-.59	-.45	30.32	-.53	-.40
Role clarity	23	4,422	-.46	.029	-.57	.003	-.68	-.46	35.93*	-.52	-.41
Professional interaction	22	4,392	-.44	.029	-.50	.001	-.57	-.43	28.57	-.50	-.38
Appraisal and recognition	23	4,418	-.42	.012	-.46	< 0				-.44	-.39
Professional growth	23	4,416	-.38	.013	-.45	< 0				-.41	-.36
Goal congruence	24	4,417	-.47	.026	-.55	.001	-.62	-.48	29.66	-.52	-.41
Excessive work Demands	24	4,428	.40	.032	.46	.005	.33	.60	46.68**	.34	.46

* $p < .05$.

** $p < .01$.

Of the homogeneous effect sizes presented in Table 6, the corrected weighted mean correlation between workplace distress and individual psychological distress was the strongest ($r_c = .71$). The organisational climate variables workplace morale, appraisal and recognition, and professional growth all had strong, negative relationships with psychological distress ($r_c = -.54$, $-.46$ and $-.45$, respectively).

For two relationships, between role clarity and psychological distress and between excessive work demands and psychological distress, the Q statistic was significant, as shown in Table 6. These weighted mean corrected correlations also had the largest credibility intervals of the organisational climate variables. These two signs of heterogeneity suggested the presence of a moderating variable in the relationships. Therefore, moderator analyses were performed on these correlations by separating samples of nurses from public servant samples and/or dividing the sample into part-time employees and full-time employees. The results of these moderator analyses are presented in Table 7.

Table 6 shows moderate credibility intervals for the weighted mean corrected correlations between psychological distress and participative decision-making, supportive leadership, professional interaction and goal congruence. While the Q statistic for each of these relationships was not significant, given that the meta-analysis was performed on data using a single instrument, these credibility intervals were considered large enough to signify that a moderator might be operating in each of these relationships. Thus, moderator analyses (similar to those outlined above) were thus performed on these correlations, the results of which are presented in Table 7.

Table 7

Moderator Analyses of Selected Organisational Climate Correlates

Variable Sub-sample	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
Participative decision-making											
Public servants	9	3,001	-.43	.015	-.50	.001	-.57	-.43	13.93	-.46	-.40
Nurses	14	1,417	-.41	.022	-.48	.004	-.60	-.36	18.81	-.45	-.36
Part-time employees	11	768	-.40	.057	-.47	.010	-.67	-.28	18.24	-.52	-.28
Full-time employees	12	3,650	-.43	.012	-.50	<.001	-.54	-.45	13.88	-.46	-.40
Supportive leadership											
Public Servants	10	3,008	-.47	.014	-.52	< 0				-.49	-.44
Nurses	14	1,421	-.46	.021	-.52	.005	-.66	-.38	21.81	-.50	-.42
Part-time employees	12	781	-.41	.031	-.48	.008	-.66	-.30	18.58	-.54	-.29
Full-time employees	12	3,648	-.47	.013	-.53	< 0				-.50	-.45
Role clarity											
Public servants	9	3,003	-.49	.013	-.60	< 0				-.52	-.46
Nurses	14	1,419	-.40	.022	-.51	.008	-.69	-.34	23.24*	-.48	-.32
Part-time nurses	7	575	-.35	.037	-.46	<0				-.42	-.26
Full-time nurses	7	844	-.44	.056	-.55	.01	-.75	-.34	15.59*	-.32	-.55
Professional interaction											
Public servants	9	2,999	-.42	.015	-.48	.001	-.55	-.41	12.17	-.45	-.39
Nurses	14	1,408	-.48	.021	-.54	.001	-.62	-.46	16.28	-.51	-.43
Part-time employees	11	765	-.44	.070	-.50	.010	-.70	-.30	18.86*	-.58	-.30
Full-time employees	12	3,642	-.44	.012	-.50	<.001	-.53	-.46	13.50	-.46	-.41

(Table 7 continues)

(Table 7 continued)

Variable Sub-sample	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
Goal congruence											
Public servants	10	3,011	-.47	.014	-.56	< 0				-.50	-.44
Nurses	14	1,406	-.45	.021	-.54	.005	-.69	-.40	21.51	-.50	-.41
Part-time employees	12	772	-.44	.029	-.53	< 0				-.50	-.38
Full-time employees	12	3,645	-.47	.013	-.56	.001	-.63	-.48	17.60	-.50	-.45
Excessive work demands											
Public servants	10	3,006	.37	.016	.43	<.001	.42	.44	10.14	.34	.40
Nurses	14	1,422	.45	.021	.54	.007	.37	.71	24.19**	.36	.54
Part-time nurses	7	581	.43	.072	.51	.011	.31	.72	12.67*	.28	.57
Full-time nurses	7	841	.47	.027	.56	.004	.43	.69	10.86	.42	.52

* $p < .05$.** $p < .01$.

Table 7 shows that when the nursing sample was meta-analysed separately from the public service sample, the confidence intervals constructed around the weighted mean correlations between psychological distress and participative decision-making overlapped, indicating that these correlations were not significantly different. Thus, occupation did not appear to moderate the relationship between participative decision-making and psychological distress. Nor did employment status appear to moderate this relationship, as the weighted mean correlations for part-time employees and full-time employees were not significantly different. Therefore, the weighted mean corrected correlation between psychological distress and participative decision-making for *all* samples ($r_c = -.49$) was the estimate most appropriate for interpretation. This negative, strong relationship was statistically significant, as indicated by the 95%

confidence interval (for heterogeneous effect sizes) that did not include zero (see Table 6).

Table 7 shows that when the nursing sample was meta-analysed separately from the public service sample for the relationship between psychological distress and supportive leadership, there was no actual variance in the public service sample, suggesting that this sample was homogeneous. However, the weighted mean correlations for these two groups were not significantly different. Thus, occupation did not appear to moderate the relationship between supportive leadership and psychological distress. Similarly, employment status did not appear to moderate this relationship, as the weighted mean correlations for part-time employees and full-time employees were not significantly different. The weighted mean corrected correlation between supportive leadership and psychological distress for *all* samples ($r_c = -.52$) was, therefore, the most appropriate estimate for interpretation. As shown in Table 6, this was a statistically significant strong, negative relationship.

When the nursing and public service samples were meta-analysed separately for the relationship between psychological distress and role clarity, the public service sample was again shown to be homogeneous (see Table 7). This sample yielded a strong, negative correlation between psychological distress and supportive leadership ($r_c = -.60$) that was statistically significant. In contrast, as illustrated in Table 7, the Q statistic and credibility interval for the relationship between psychological distress and role clarity in the nursing sample suggested that this sample might not be homogeneous. A second moderator analysis was thus conducted for this relationship, this time separating part-time nurses from full-time nurses. Interestingly, this analysis showed that the relationship between role clarity and distress was significantly stronger in public servants ($r_c = -.60$) than in part-time nurses ($r_c = -.46$). However,

the correlations for part-time nurses and full-time nurses were not significantly different (see Table 7). Thus, employment status did not appear to moderate the relationship between role clarity and psychological distress in nurses. A 95% confidence interval for heterogeneous effect sizes was therefore constructed around the weighted mean correlation between role clarity and psychological distress for the nursing sample (see Table 7). This confidence interval overlapped with that constructed for the public service sample, indicating a non-significant difference between these two samples in terms of this particular relationship. So, while part-time nurses differed from public servants, occupation did not moderate the relationship in the full sample. Hence, the weighted mean corrected correlation between role clarity and psychological distress for *all* samples ($r_c = -.57$), which represented a statistically significant, negative, strong relationship (see Table 6), was considered the most appropriate estimate for interpretation.

Table 7 indicates that the weighted mean correlations between psychological distress and professional interaction for nurses and public servants were not significantly different. Thus, occupation did not appear to moderate the relationship between professional interaction and psychological distress. Nor was this relationship moderated by employment status, as the weighted mean correlations for part-time employees and full-time employees were not significantly different. Therefore, the most appropriate estimate for interpretation was the weighted mean corrected correlation between psychological distress and professional interaction for *all* samples ($r_c = -.44$). This negative, strong relationship was statistically significant (see Table 6).

When the nursing and public service samples were meta-analysed separately for the relationship between psychological distress and goal congruence, the correlations were not significantly different (see Table 7), suggesting that occupation did not moderate the relationship. Likewise, the correlations between distress and goal congruence for part-time employees and full-time employees were not significantly different, signifying that employment status did not moderate the relationship either. Therefore, the weighted mean corrected correlation between psychological distress and goal congruence for *all* samples ($r_c = -.55$), which denoted a negative, strong, statistically significant relationship (see Table 6), was seen as the most appropriate estimate for interpretation.

Table 7 shows that when the nursing sample was meta-analysed separately from the public service sample for the relationship between psychological distress and excessive work demands, the Q statistic and credibility interval in nurses suggested that this sample might not be homogeneous. Thus, part-time nurses were separated from full-time nurses in a second moderator analysis of excessive work demands. While the weighted mean correlations for part-time nurses and full-time nurses were not significantly different, the results are noteworthy, as the relationship between excessive work demands and distress was significantly stronger in full-time nurses ($r_c = .56$) than in public servants ($r_c = .43$). However, the correlations for part-time nurses and full-time nurses were not significantly different (see Table 7), indicating that employment status did not moderate the relationship between excessive work demands and psychological distress in nurses. Therefore, a 95% confidence interval for heterogenous effect sizes was constructed for the nursing sample (see Table 7). This confidence interval overlapped with that constructed for the public service sample, indicating a non-significant difference. So, while full-time nurses differed

from public servants, occupation did not appear to moderate the relationship between excessive work demands and psychological distress in the full sample. Hence, the weighted mean corrected correlation between role clarity and psychological distress for *all* samples ($r_c = .46$), which represented a statistically significant, positive, strong relationship (see Table 6), was considered the most appropriate estimate for interpretation.

In summary, the moderator analyses conducted for those organisational climate variables with heterogeneous effect sizes indicated that neither occupation nor employment status were relevant moderator variables. As shown in Table 6, when the heterogeneous effect sizes were taken into account, workplace distress remained the strongest correlate of individual psychological distress. In order of strength of association with psychological distress, workplace distress was followed by role clarity; goal congruence; workplace morale; supportive leadership; professional interaction; participative decision-making; excessive work demands and appraisal and recognition; and professional growth. While the weighted mean correlation between workplace distress and individual psychological distress was significantly stronger than any other correlation, all other correlations represented strong relationships between psychological distress and the other organisational climate variables, and there were no statistically significant differences among these other correlations.

Positive Work Events

Table 8

*Meta-Correlations Between Individual Psychological Distress and Positive Work**Events*

Variable	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
The job itself	7	848	-.30	.065	-.34	.002	-.42	-.26	8.39	-.43	-.17
Customer service	8	869	-.18	.033	-.22	< 0				-.25	-.12
Workload	8	872	-.23	.032	-.27	< 0				-.30	-.17
Work schedule	8	868	-.25	.068	-.30	.002	-.40	-.21	9.63	-.39	-.12
Administration	8	851	-.24	.032	-.27	< 0				-.30	-.17
Management	8	858	-.42	.028	-.47	< 0				-.48	-.36
Amenities	8	871	-.23	.067	-.27	.001	-.34	-.20	8.95	-.36	-.10
Equipment/resources	8	869	-.24	.032	-.28	< 0				-.31	-.18
Co-workers	8	867	-.30	.031	-.34	< 0				-.36	-.23
Decision-making	8	864	-.30	.031	-.35	< 0				-.37	-.24
Family	8	864	-.19	.058	-.23	.001	-.30	-.16	8.82	-.30	-.07

Table 8 shows that the relationships between psychological distress and customer service, workload, administration, management, equipment/resources, co-workers and decision-making, yielded homogeneous effect sizes. These seven relationships were all statistically significant. Of these effect sizes, the corrected weighted mean correlation between management and individual psychological distress was the strongest ($r_c = -.47$). Moderate, negative relationships were also found between decision-making and psychological distress ($r_c = -.35$) and between co-workers and psychological distress ($r_c = -.34$). The corrected weighted mean correlation between equipment/resources was $-.28$. An estimate of $-.27$ was found for

the relationships between workload and psychological distress, and between administration and psychological distress. An estimate of -.22 was found between customer service and psychological distress.

Table 8 shows moderate credibility intervals for the weighted mean corrected correlations between psychological distress and the job itself, work schedule, amenities and family. These moderate credibility intervals were treated akin to those in the meta-analysis of organisational climate variables, and moderator analyses (in which occupation was again specified as a the potential moderating variable) were performed on these correlations, the results of which are presented in Table 9.

Table 9

Moderator Analyses of Selected Positive Work Events

Variable Sub-sample	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
The job itself											
Public servants	4	650	-.34	.035	-.37	< 0				-.40	-.27
Nurses	3	198	-.20	.069	-.22	< 0				-.34	-.06
Work schedule											
Public servants	4	648	-.24	.106	-.30	.003	-.41	-.18	6.01	-.45	-.03
Nurses	4	220	-.29	.063	-.32	< 0				-.40	-.15
Amenities											
Public servants	4	652	-.20	.038	-.24	< 0				-.30	-.13
Nurses	4	219	-.30	.096	-.34	.001	-.41	-.27	4.23	-.50	-.11
Family											
Public servants	4	649	-.15	.039	-.18	< 0				-.23	-.07
Nurses	4	215	-.30	.088	-.34	.013	-.57	-.12	6.54	-.48	-.12

* $p < .05$.** $p < .01$.

While Table 9 shows that conducting separate meta-analyses of the selected positive work events for nurses and public servants reduced the variance in many cases, it also shows the effect sizes of these groups did not differ significantly on any of the four variables subjected to moderator analysis. This suggests that occupation did not moderate the relationships between positive work events and individual psychological distress. It was not possible to conduct a moderator analysis specifying employment status as the moderator in this case, due to the small number of part-time workers in the sample. Therefore, the weighted mean corrected correlations for *all* samples were identified as the estimates most appropriate for interpretation. The 95% confidence intervals (for heterogeneous effect sizes), which were constructed for the job itself, work schedule, amenities and family, indicated that the weighted mean correlations between these positive work events and psychological distress were all statistically significant (see Table 8). Of these four relationships, moderate effect sizes were obtained between the job itself and psychological distress ($r_c = -.34$), and between work schedule and psychological distress ($r_c = -.30$). Estimates of $-.27$ and $-.23$ were found for the relationships between psychological distress and amenities, and between psychological distress and family, respectively.

In short, when the heterogeneous effect sizes were taken into account, management remained the strongest correlate of individual psychological distress. In order of strength of association with psychological distress, management was followed by decision-making; co-workers and the job itself; work schedule; equipment/resources; workload, administration and amenities; family; and customer service.

Negative Work Events

Table 10

Meta-Correlations Between Individual Psychological Distress and Negative Work Events

Variable	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
Communication	8	865	.50	.026	.55	<.001	.53	.56	8.17	.44	.55
Workload	7	848	.34	.030	.37	< 0				.28	.40
Co-workers	8	870	.32	.031	.36	<.001	.31	.40	8.47	.26	.38
Outside support	7	854	.23	.032	.27	<.001	.22	.32	7.42	.17	.30
Administration	7	843	.39	.029	.43	< 0				.33	.45
Job insecurity	7	856	.23	.032	.29	< 0				.17	.30
Resources	7	847	.26	.032	.30	< 0				.19	.32
Dual careers	6	829	.13	.064	.18	.007	.01	.34	9.09	.01	.26
Work and home life	8	868	.30	.031	.34	< 0				.23	.36
Career opportunities	7	849	.37	.029	.41	< 0				.31	.43
Personality clashes	7	852	.42	.049	.47	.004	.34	.60	14.34*	.32	.52

* $p < .05$.

Table 10 shows that, of the negative work events, there was no actual variance in the relationships between psychological distress and workload, administration, job insecurity, resources, work and home life and career opportunities. Small credibility intervals and non-statistically significant *Q* statistics for weighted mean corrected correlations between psychological distress and communication, co-workers and outside support reflected that these effect sizes were also homogeneous. These nine relationships were statistically significant.

Of the homogeneous effect sizes presented in Table 10, the corrected weighted mean correlation between communication and individual psychological distress was the strongest ($r_c = .55$). Administration and career opportunities both had strong relationships with psychological distress ($r_c = .43$ and $.41$, respectively). Moderate relationships were found between workload and psychological distress ($r_c = .37$), between co-workers and psychological distress ($r_c = .36$), between psychological distress and work and home life ($r_c = .34$) and between psychological distress and resources ($r_c = .30$). Estimates of $.29$ and $.27$ were found for the relationships between psychological distress and job insecurity, and between psychological distress and outside support, respectively.

For the relationship between personality clashes and psychological distress, the Q statistic was significant, as shown in Table 10. The credibility interval of this weighted mean corrected correlation was also considerable. While the Q statistic for the relationship between dual careers and psychological distress was not significant, the corresponding credibility interval was comparable to that for the relationship between personality clashes and psychological distress. A moderator analysis was thus performed on these correlations by separating nurses from public servants. The results of these moderator analyses are presented in Table 11.

Table 11

Moderator Analyses of Selected Negative Work Events

Variable Sub-sample	<i>k</i>	<i>N</i>	<i>r</i>	<i>SE</i>	<i>r_c</i>	VAR	Credibility Interval		<i>Q</i> statistic	95% Confidence Interval	
							Lower	Upper		Lower	Upper
Dual careers											
Public servants	3	629	.11	.089	.15	.004	.03	.27	4.36	-.06	.29
Nurses	3	200	.19	.106	.29	.003	.17	.41	3.31	-.02	.40
Personality clashes											
Public servants	4	652	.38	.034	.43	< 0				.32	.449
Nurses	3	200	.55	.049	.62	< 0				.454	.65

Table 11 indicates that the weighted mean correlations between psychological distress and dual careers for nurses and public servants were not significantly different. Thus, occupation did not appear to moderate this relationship. As the sample could not be broken down on the basis of employment status, the most appropriate estimate for interpretation was the weighted mean corrected correlation between psychological distress and dual careers for *all* samples ($r_c = .18$). Though this relationship was weak, it was statistically significant (see Table 10).

When the relationship between personality clashes and psychological distress was meta-analysed separately for public servants and nurses, neither sample showed any actual variance, indicating homogeneity of effect sizes. Furthermore, the 95% confidence intervals constructed around the weighted mean correlations for these two groups were discrete, indicating that the relationship between personality clashes and psychological distress was significantly stronger in nurses ($r_c = .62$) than in public servants ($r_c = .43$). However, due to the proximity of the lower bound of the confidence interval for the nursing sample to the upper bound of the confidence

interval for the public service sample, this result should be interpreted with caution. That is, while this difference provides evidence that occupation type moderated the relationship between personality clashes and psychological distress in the current sample, this result may not be representative of the general population.

To sum up, the moderator analyses conducted for those negative work events with heterogeneous effect sizes indicated that while occupation was not a relevant moderate for the relationship between dual careers and psychological distress, it did contribute to the variance in the weighted corrected correlations between personality clashes and psychological distress. As shown in Tables 10 and 11, when this final analysis was taken into account, personality clashes was the strongest correlate of individual psychological distress, but only for nurses. In order of strength of association with psychological distress, this was followed by communication, personality clashes for public servants and administration, workload, co-workers, work and home life, resources, job insecurity, outside support and dual careers.

Lastly, in order to assist comparison of the results of the above analyses, Table 12 presents effect sizes for organisational climate variables and work events in order of strength. Correlations are presented as absolute values to facilitate interpretation.

Table 12

Rank-ordering of Organisational Climate and Work Events Effect Sizes

Variable (subsample)	Scale	r_c	VAR
Workplace distress	OC	.71	<.001
Personality clashes (nurses)	NWE	.62	<0
Role clarity	OC	.57	.003
Communication	NWE	.55	<.001
Goal congruence	OC	.55	.001
Workplace morale	OC	.54	.001
Supportive leadership	OC	.52	.001
Professional interaction	OC	.50	.001
Participative decision-making	OC	.49	.002
Management	PWE	.47	<0
Appraisal and recognition	OC	.46	<0
Excessive work demands	OC	.46	.005
Professional growth	OC	.45	<0
Administration	NWE	.43	<0
Personality clashes (public servants)	NWE	.43	<0
Career opportunities	NWE	.41	<0
Workload	NWE	.37	<0
Co-workers	NWE	.36	<.001
Decision-making	PWE	.35	<0
Co-workers	PWE	.34	<0
Work and home life	NWE	.34	<0
The job itself	PWE	.34	.002
Resources	NWE	.30	<0
Work schedule	PWE	.30	.002
Job insecurity	NWE	.29	<0
Equipment/resources	PWE	.28	<0
Administration	PWE	.27	<0
Workload	PWE	.27	<0
Outside support	NWE	.27	<.001
Amenities	PWE	.27	.001
Family	PWE	.23	.001
Customer service	PWE	.22	<0
Dual careers	NWE	.18	.007

Note. OC = organisational climate; PWE = positive work events; NWE = negative work events

CHAPTER 9: DISCUSSION – STUDY II

The chief objectives of Study II were to determine whether the relationships between individual distress at work and generic organisational factors and work events are occupational specific, and to ascertain whether these relationships are moderated by employment status. Study II also aimed to establish which generic work events and organisational factors are most strongly related to individual psychological distress at work. These goals were to be met through application of the meta-analytic technique to a set of data gathered from nurses and public servants using the QPASS.

As with Study I, it is noted that causality cannot be inferred from correlations. However, correlations between QPASS dimensions in the present meta-analysis will be explored within the context of the organisational health model, in which organisational climate variables and work events are seen as predictors of individual distress at work (P. Hart & Cooper, 2001; P. M. Hart et al., 1996).

Influence of Employment Status and Occupation

Employment Status

This discussion will first deal with the influence of employment status. According to research investigating the effects of work schedules on organisational factors and occupational stress, it was tentatively hypothesised that employment status would moderate the relationships between organisational factors and psychological distress. However, the results of Study II do not support this hypothesis. The moderator analyses show that the variance in the effect sizes of participative decision-making, supportive leadership, professional interaction, and goal congruence could not be attributed to employment status distinctions, as there were no significant differences between part-time and full-time employees with regard to the correlations

between these variables and psychological distress. Moreover, with regard to the effects of role clarity and excessive work demands, public servants were found to be a homogeneous group. While the results indicate heterogeneity in the nursing sample for these effect sizes, this is not due to differences in employment status among nurses.

Whereas research shows that levels of occupational strain and the experience of generic organisational stressors can be differentiated on the basis of employment status (e.g., Benavides et al., 2000; Burke & Greenglass, 2000a; Dua, 1997), the results of Study II indicate that this clearly does not correspond to an overall difference between part-time and full-time workers with regard to the relationships between organisational stressors and strain. Similar findings are reported by Cropanzano, Howes, Grandey and Toth (1997), who measured organisational politics and support, along with individual outcomes such as job satisfaction, withdrawal behaviour, and turnover intention among two samples –one group of full-time workers in a manufacturing organisation, and one group of students who were employed part-time. They found consistency between part-time and full-time workers in terms of the relationships between politics, support and work outcomes.

However, the finding that part-time and full-time workers are not divergent with regard to the relationships between organisational factors and individual psychological distress does not necessarily imply that employment status is an irrelevant issue. Rather, the implications of employment status for the effects of organisational factors on occupational stress may actually be more complex than the simple part-time/full-time dichotomy. Benavides et al. (2000) suggested that a distinction between permanent and precarious employment (i.e., temporary or fixed term contract work) may be equally important as that between part-time and full-time

employment, and they presented research that hinted at an interaction between these two variables with regard to effects on employee well-being. The influence of precarious employment seems a particularly pertinent issue, given the increasing casualisation of the workforce (B. Taylor & Barling, 2004).

Krausz et al. (2000) proposed that the distinction between part-time and full-time employment has little psychological relevance, as the term “part-time” can mean anything from a few hours up to 34 hours per week. They demonstrated that control over work schedule and preferred work schedule, as subjective dimensions, are more strongly related to burnout, job satisfaction, organisational commitment and intention to leave than is actual work schedule. A concept related to the idea of preferred work schedule, and one which is perhaps most noteworthy in the present case, is the notion of work status congruence.

Feldman (Feldman, 1990) suggested that there are at least two types of part-time employees – those who work part-time voluntarily (e.g., out of a need or preference for flexibility), and those who work part-time due to unavailability of full-time work. Presumably, this distinction also applies to full-time workers – for example, those who would prefer to work-part time, but are employed full-time out of financial necessity. Burke and Greenglass (2000b) used the term ‘work status congruence’ to describe correspondence between actual and preferred employment status. They measured the effects of work status congruence on work outcomes and psychological well-being in 1,362 nurses, and found that those whose actual employment status reflected their preferred status experienced greater job satisfaction and less intention to leave than those whose actual and preferred work schedule were incongruent. Of the nurses working full-time, those who preferred part-time work

reported more psychosomatic symptoms and greater emotional exhaustion than those who were happy with their current employment status.

The findings of Benavides and colleagues (2000), Burke and Greenglass (2000b), and Krausz et al. (2000), suggest that the impact of employment status on employee well-being may be multifaceted, in contrast to the part-time/full-time distinction examined in Study II. Although examination of the interactive effects of employment and contract status on employee well-being, and investigation of the impact of work status congruence on the relationships between organisational factors and individual distress fell outside the realm of possibility in Study II (due to the features of the archival data meta-analysed), these certainly represent important matters for further enquiry.

Occupational Differences

The results confirm the null hypothesis regarding differences between nurses and public servants, with one notable exception – occupation was found to moderate the relationship between individual psychological distress and the personality clashes subscale (which encompasses conflict with co-workers over work practices, and problems with other staff), such that a stronger effect size was observed in nurses than public servants. There may be a number of explanations for the finding that conflict with other staff is more stressful for nurses than for public servants.

Valentine (1995) suggested that the discomfort associated with conflict in nursing is related to the expectation that nurses are nurturing, caring, supportive people, which appears to be at odds with the idea of dealing with conflict (e.g., through assertiveness or confrontation). Valentine also reported that nurses are more likely to use avoidance as a method of dealing with conflict, which may increase

personality clashes and problems between staff, making conflict even more distressing.

Moreover, staff interaction is a central feature of nursing work, and successful performance of tasks allocated to nurses is heavily reliant on the performance of their co-workers, particularly when they are involved with the care of the same patients. Therefore, when there are personality clashes and disagreements over work practices that interfere with their ability to care for patients in the way they see fit, it is not surprising that nurses are likely to experience heightened distress.

Apart from the relationship between personality clashes and distress, no differences between nurses and public servants were found in Study II. This is not surprising, given the generic nature of the organisational factors and work events measured, and research that shows the centrality of common organisational factors in employee well-being among a number of occupations (e.g., Hart, 1994; Hart & Cotton, 2002). In addition, the results of Study II support the prediction that organisational climate factors, on the whole, would be more strongly associated with individual psychological distress than would positive and negative work experiences – the ten organisational climate subscales were among the top 13 correlates of distress.

Comparison of Effect Sizes

Based on the findings of the meta-analytic review of occupational stressors in nursing reported in Study I, it was anticipated that variables reflecting aspects of work relationships, leadership, the home-work interface and workload would have relatively strong correlations with psychological distress. The results demonstrate mixed support for this supposition. With regard to work relationships, subscales measuring professional interaction (i.e., acceptance, involvement and support from

colleagues), and personality clashes with other staff were strongly correlated with individual psychological distress. Negative and positive attributes of co-workers were more moderately correlated with distress (with effect sizes akin to those found for staff relationship variables in Study I), which is reasonable, given that these represent more peripheral issues in staff relationships.

In relation to leadership, the results show that subscales measuring insufficient consultation, inadequate feedback and encouragement from superiors, and poor communication between management and staff; supportive leadership; participative decision-making; positive manager and supervisor behaviours; and appraisal and recognition all had relatively strong associations with distress. These findings substantiate the notion that aspects of work relationships and leadership behaviour play a central role in employees' experience of distress at work.

However, whereas strong effect sizes were observed for most relationship and leadership variables, those for variables reflecting aspects of the home-work interface were less robust. Distress was moderately correlated with a negative impact of work on home life, and a favourable work schedule; but correlations with subscales measuring a lack of outside support, a lack of home/work conflict, and dual careers in the family were comparatively weak. This finding contrasts with the results of Study I, in which home/work conflict was strongly associated with occupational stress. One potential reason for this may be the populations involved in the different studies. Whereas the studies measuring home/work conflict included in the meta-analysis of Study I sampled US, UK and Irish nurses; the QPASS data meta-analysed in Study II were from employees of the Queensland Government. It is possible that cultural differences may impact on the levels of distress experienced as a result of conflict between work and home. Alternatively, it may be the case that working conditions in

the US and Europe are generally less family-friendly than those in Australia, leading to greater distress from home/work conflict. In any event, the inconsistency in correlations between distress and elements of the home-work interface deserves the attention of future research.

There was a great deal of variation among the effect sizes of subscales measuring elements of workload and administration. The correlation between distress and excessive work demands was moderately strong, as were those between distress and negative aspects of workload (e.g., meeting deadlines, too much to do, too little time), and between distress and excessive administration. However, somewhat weaker effect sizes were observed for positive experiences of administration and workload. It is likely that this latter finding simply reflects the weaker relationships between positive work events and the negatively oriented construct individual psychological distress (Hart, 1994; Hart et al., 1995).

The results show that role clarity and goal congruence were among the top five correlates of individual psychological distress. This was somewhat unexpected, given that role uncertainty was only moderately correlated with strain in Study I. However, these results align with the findings of Tetrick et al. (2000). Duquette, K  rouac, Sandhu and Beaudet (1994) also report a number of studies that point to the importance of a lack of role clarity in occupational stress. Moreover, the role clarity subscale of the QPASS measures a relatively specific aspect of the organisational climate. Conversely, role uncertainty was a variable category that encompassed a number of constructs, including role ambiguity, clarity, feedback and role conflict. Had role clarity been a category in and of itself in Study I, a stronger effect size, more comparable to that found in Study II, may have been observed.

Workplace morale was also shown to be one of the strongest correlates of distress. Various other researchers have demonstrated a robust link between occupational stress and workplace morale. For instance, a reasonably strong correlation between individual stress and morale of colleagues was demonstrated in a study conducted by Parry-Jones et al. (1998). Furthermore, Carson, Wood, White and Thomas (1997) found that low morale at work was one of the two most stressful organisational factors for a sample of hospital nurses. This finding, among others, has implications for the management of stress in work groups, which will be discussed shortly.

Two subscales reflecting career and professional growth had relatively strong effect sizes, indicating that perceived deficits regarding opportunities for skill development, access to training, being encouraged by colleagues to develop and grow as a professional, and promotion prospects were reasonably predictive of nurses' and public servants' individual psychological distress. This finding is supported by the research of Courtney, Yacopetti, James and Walsh (2001), which showed that opportunities for promotion and career advancement; professional development and training; and career advice and counselling were important for nurses' occupational well-being. The correlation between distress and job insecurity was comparatively weak. However, it was of a similar magnitude to the effect size obtained for lack of career prospects in Study I. It also corresponded to the correlation between job insecurity and mental health observed in Sverke and Hellgren's (2002) meta-analysis of job insecurity and its consequences.

The results show that workplace distress was the strongest correlate of individual psychological distress. At face value, this finding indicates that employees are far more likely to be distressed when there is tension in the workplace and other

staff feel frustrated, anxious and depressed about their work. However, it must be recognised that the measure of workplace distress, like the measure of individual distress, is a subjective one. Thus, an alternative explanation of this finding is that employees who experience a high degree of individual distress are more prone to perceive pressure in the workplace, and think that other staff are also distressed. This explanation begs consideration of the role of individual factors in employee well-being, for example, the influence of negative affectivity on self-reports of organisational stressors and occupational strain. Negative affectivity not only has an important direct effect on individual psychological distress at work (P. Hart & Cooper, 2001); it is also a potential moderator of the subjectively measured relationships between organisational factors and employee well-being (Mak & Mueller, 2000, 2001).

Given that the heterogeneity in a number of the effect sizes in the present study could not be accounted for by occupational differences or employment status, meta-analytic examination of the impact of dispositional variables (such as negative affectivity) on the relationships between individual distress and organisational factors, and between distress and work events, is an important direction for future research.

Summary

In summary, the results of Study II provided support for some of the hypotheses, though a number of expectations were not met. The results indicated that employment status does not moderate the relationships between organisational climate factors and individual distress. It was proposed that work status congruence may have been a more pertinent variable, and it was suggested that its influence on

the relationships between organisational factors and employee well-being be determined in the future.

Occupation was shown to moderate the relationship between personality clashes and individual psychological distress, such that a stronger effect size was obtained in the nursing sample than in the public service sample. In contrast, occupation did not influence any other relationship, demonstrating that, on the whole, there are few differences between nurses and other occupations when it comes to the effects of generic organisational factors and work events on individual distress at work.

The results also demonstrated that issues such as staff relationships, dimensions of leadership, role clarity, goal congruence, and workplace morale were amongst those most strongly associated with individual psychological distress. Workplace distress was the strongest correlate of all, and it was suggested that this may have been due to the subjective nature of the measures.

CHAPTER 10: GENERAL DISCUSSION

Summary of Findings

The primary goals of the research presented in this dissertation were to conduct a meta-analytic review of the literature on occupational stressors in the nursing profession, and to apply the meta-analytic technique to a wider population in an investigation of generic organisational factors and work events.

The results of Study I indicated that factors such as workload, home/work conflict, leadership, conflict and support are among the strongest correlates of occupational strain in nurses. The results of Study II showed that, as well as staff relationships and dimensions of leadership, role clarity, goal congruence, and workplace morale were amongst those aspects of the organisation most strongly associated with individual psychological distress. Study II also demonstrated that, for the most part, when it comes to generic organisational factors such as these, the nature of occupational stress in the nursing profession can not be distinguished from other professions, at least in the Queensland public service.

There were some interesting findings from the moderator analyses conducted in both studies. In Study I, nursing specialisation was found to influence the relationships between strain and professional esteem, and between strain and patient care demands: factors such as job satisfaction were more strongly related to occupational stress in paediatric nurses than in other nurses; patient factors were shown to have a far greater impact on the well-being of mental health nurses than on that of general nurses. In Study II, the association between individual psychological distress and personality clashed was the only relationship moderated by occupation: A stronger effect size was observed for nurses than for public servants.

As stated previously, one of the benefits of meta-analysis is that the clarity provided by effect size estimates can guide practice decisions. The findings of the present research have a number of implications for the practice of stress management in work groups.

Implications for Practice

Study I indicated that low professional esteem is of high importance in paediatric nurses' experiences of occupational stress. It is recommended that stress management interventions targeted in this specialisation address aspects of the work that are considered fulfilling, and aim to enhance job satisfaction. With regard to the strong association between home/work conflict and occupational stress demonstrated in Study I, it is suggested that, wherever possible, nurses be offered flexible work options that take into consideration their family responsibilities and obligations.

As Study II showed that personality clashes and conflict are more strongly related to distress in nurses than in other employees, it is recommended that conflict management be a key component of stress management programs for nurses. Seago (1996) suggests that strategies for increasing communication among nurses (e.g., focus groups, communication books and team meetings); enhancing staff governance (e.g., through team building and participation in decision-making); providing clarity and feedback; developing management expertise in handling staff discord; and improving orientation of new employees can all contribute to the successful management of troubled work groups. Indeed, many of these elements relate to improvements in other aspects of organisational climate and work experiences, which may further assist in a reduction of distress amongst nurses.

Perhaps the greatest implication for practice, according to the finding that nursing cannot be distinguished from the many occupations that comprise the public service, in terms of most of the issues that contribute to individual distress as work, is that generic interventions used to improve organisational climate and decrease stress will also be of value in the nursing profession. Overall, the results suggest that interventions employed to reduce stress should aim to increase the clear definition of role and expectations; address goal congruence; boost workplace morale; enhance group cohesion, interaction and support; and generally target leadership behaviours.

Much has been written on leadership behaviours that increase employee effectiveness and reduce stress. Practices such as challenging accepted processes, inspiring a collective vision, facilitating teamwork and enhanced individual performance, modelling behaviours and attitudes, and providing encouragement have been shown to improve individual outcomes for employees (McNeese-Smith, 1993). Various research has also revealed that clinical supervision, focusing on ethical decision-making, professional competence, and/or emotional support, is an effective tool for ameliorating occupational stress in nurses {e.g., Severinsson, 1999 #188; Butterworth, 1999 #82}.

Limitations and Directions for Future Research

Methodological Issues

The meta-analytic procedure was limited in Study I in that artifacts other than measurement unreliability and sampling error were not taken into consideration. The residual variation ascribed to the actual correlations in Study I therefore incorporates variation due to uncorrected artifacts, which means that the true standard deviations of effect sizes may be smaller than the estimates made in Study I.

Hunter and Schmidt (1990) suggest that differences in range restriction and dichotomization of measures also contribute to variation among studies. However, accounting for such artifacts was beyond the scope of Study I, as few studies reported the requisite statistical information. Furthermore, the process of considering only measurement unreliability and sampling error appears to be accepted practice in the meta-analytic literature – many other meta-analyses do not account for artifacts beyond those considered in the present case (e.g., R. T. Lee & Ashforth, 1996; Melchior et al., 1997; Parker et al., 2003; Sverke et al., 2002; Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003). Nonetheless, this widespread difficulty in accounting for artifacts such as restriction of range and imperfect construct validity denotes a need for researchers to provide as much artifactual information as possible, particularly because of the growing use of meta-analysis as a research tool.

While accounting for other artifacts may have reduced effect size variances, it is likely that some variance would have remained, due to the wide range of measures used to assess the different stressors and occupational strain. Blegen (1993) suggests that heterogeneity is not unusual in meta-analyses of descriptive research, when many different measures are used.

Fortunately, due to the use of a single instrument to measure the variables included in the meta-analysis, Study II was not plagued by the residual variation due to uncorrected artifacts present in Study I – that is, it did not have to content with the “apples and oranges” problem, a criticism often levelled at meta-analysis (as outlined previously). On the other hand, using a single instrument does limit the generalisability of the results of Study II to some degree. However, when the two studies are considered together, the methodological shortcomings of each study are balanced somewhat.

Moderator Analyses

Both studies were limited with respect to their moderator analyses. In Study I, only two nursing specialisations were represented in the population meta-analysed for patient care demands. Had further studies been obtainable, conclusions about the impact of patient care demands on occupational stress in other nursing settings could have been submitted. Furthermore, in the populations meta-analysed for low professional esteem and workload, there were insufficient studies to represent subsamples other than paediatric nurses and mental health nurses, respectively. Again, the availability of additional research for inclusion in the meta-analysis would have facilitated more specific inferences about the impact of nursing specialisation on these stressors.

In relation to the moderator analyses *not* performed, as employment status and occupation were the only moderators utilised in Study II, and nursing specialisation was the only moderator coded in Study I, the impact of other variables (e.g., culture, year of data collection) on the relationships between occupational stressors and strain could not be examined. Thoresen and colleagues (2003) suggest that “collapsing across levels of other potentially important moderator characteristics...may complicate inferences concerning the relative importance of such factors as determinants of the size of correlations” (p. 935). A consideration in further research, then, is the influence of additional moderators on the relationships between occupational stressors and strain in the public service and the nursing profession.

Other Correlates of Occupational Stress

A third limitation of the present research was that it did not look at the influence of demographic variables (beyond those used as moderators) or dispositional attributes on occupational stress. There is an abundance of research on

the effects of demographics such as age, gender, and years of experience on occupational stress in nurses (e.g., Bartz & Maloney, 1986; Chiriboga & Bailey, 1986; Guppy & Gutteridge, 1991; Jamal & Baba, 1992; Numerof & Abrams, 1984; S. L. Rosenthal, Schmid, & Black, 1989; Seltzer & Numerof, 1988; Walcott-McQuigg & Ervin, 1992). Research on the influence of personality factors on the subjective experience of strain is also plentiful; variables investigated include positive and negative affectivity (e.g., P. J. Decker & Borgen, 1993; Fogarty et al., 1999; Houkes et al., 2003; Mak & Mueller, 2000; Moyle, 1995), locus of control (e.g., Keane, Ducette, & Adler, 1985; Kirkcaldy & Martin, 2000; Schmitz, Neumann, & Oppermann, 2000), hardiness (e.g., Boyle, Grap, Younger, & Thornby, 1991; McCranie, Lambert, & Lambert, 1987; Rich & Rich, 1987; Topf, 1989), and self-efficacy (e.g., Holman & Wall, 2002; Kushnir et al., 1997; MacNeil & Weisz, 1987).

Moreover, as outlined previously, meta-analytic examination of the influence of dispositional variables (such as negative affectivity) in Study II may have enabled clarification of the reason for heterogeneity in a number of effect sizes (i.e., participative decision-making, supportive leadership, role clarity, professional interaction, goal congruence, excessive work demands, the job itself, work schedule, amenities, family and dual careers). This issue suggests an important direction for future meta-analytic research.

The Broader Context of Organisational Health

A drawback of Study I was that it did not investigate the relationships between stressors. For example, meta-analysis of correlations between patient care demands and professional esteem, between leadership behaviour and job control, or between home/work conflict and shift work could have helped explain the relationships between these stressors and occupational strain. Though exploration of such factors

was well outside the bounds of this dissertation, meta-analytic examination of these relationships would greatly enhance understanding of the nature of occupational stress in nurses, and presents an interesting direction for future research.

With regard to Study II, examination of the effects of organisational climate and work events on individual morale and job satisfaction; and investigation of coping, personality and organisational performance variables were beyond the intent of this meta-analysis. The capacity to consider the relationships between distress and organisational climate variables, and between distress and work events within the context of the organisational health model, was therefore limited. However, an opportunity now exists to build on the present research by conducting further meta-analyses of QPASS data, so that a more comprehensive picture of the 'true' relationships between variables in the organisational health model can be developed.

Conclusion

This dissertation represented an effort to address a perceived failure of the research literature to decisively quantify and define the most salient organisational correlates of occupational stress in nursing, through application of the meta-analytic methodology. It also undertook to scrutinize the idea that the nature of occupational stress in nursing is unlike that in other professional contexts. The demands of patient care and other such occupation-specific stressors, commonly thought to make nursing a uniquely stressful profession, were shown to be of little consequence to occupational stress in the general nursing milieu. In contrast, organisational issues common to most settings, including difficulties in staff relationships, inadequacies in leadership, conflict in the home-work interface, and pressure related to excessive workload and administration were found to have the greatest impact on occupational

stress amongst nurses. When nurses were compared with other professions found in the public service, it was demonstrated that individual distress in nursing work is not as distinctive as some research suggests. Finally, although the use of a single measure limited the generalisability of findings in the second phase of the research, when complemented with the first study, it constituted a comprehensive meta-analytic investigation into the relationships between stressors and strain in the nursing profession and other occupations – a valuable enterprise if considered in the context of organisational health.

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APPENDIX A

Table A1

Catalogue of Measures Used in Research Included in Study I Meta-analysis

Studies	Measure	Subscales and description	Category
Bacharach et al. (1991)	“job satisfaction”	Five-item scale measuring general job satisfaction.	Low professional esteem
Bacharach et al. (1991)	“quantitative role overload”	Three-item scale measuring conflict between organisational demands and the time allocated to meet them. Example item: “I’m rushed in doing my work”.	Workload
Bacharach et al. (1991)	“role conflict”	Eight-item scale developed by Rizzo House and Lirtman (1970), measuring the simultaneous occurrence of two or more sets of pressures in the work place, making compliance with more than one difficult. Example item: “I work under incompatible policies and guidelines”.	Role uncertainty
Bacharach et al. (1991)	“work-home conflict”	Four-item scale based on that of Holahan and Gilbert (1979), designed to measure the degree to which the job impacts on/disrupts home life.	Home/work conflict
Bakker et al. (2000)	“effort-reward imbalance”	$E/(R \cdot c)$, where: E = extrinsic effort index; R = reversed reward index; C = correction factor.	Poor leadership behaviour
Blair and Littlewood (1995b); Proctor et al. (1998).	Sources of Pressure Scale	Scale from the Occupational Stress Indicator (Cooper, Sloan & Williams, 1988); includes the following subscales: <i>Management role</i> (includes role ambiguity and role conflict) <i>Relationships with others</i> (peers and supervisors – negative) <i>Career and achievement</i> (promotion prospects and job security) Home and work interface	Role uncertainty Conflict with co-workers Lack of career prospects Home/work conflict
Boswell (1992); Norbeck (1985)	Nursing Job Satisfaction Scale	Part of an instrument developed by Hinshaw, Smeltzer and Atwood (1987); measures satisfaction with enjoyment, quality of care, and time to do the job.	Low professional esteem

(Table A1 continues)

(Table A1 continued)

Bratt et al. (2000)	“nursing leadership behaviours”	Measures management behaviours that empower staff to accomplish their work in meaningful ways.	Poor leadership behaviour
Bratt et al. (2000)	“nurse-physician collaboration”	Measures sharing by nurses and physicians of problem solving and decision making related to patients’ care.	Lack of co-worker support
Bratt et al. (2000)	Work Satisfaction Scale	Measure of satisfaction with administration, interaction, pay, professional status and task requirements.	Low professional esteem
Burke and Greenglass (2001)	“future workplace threats”	Seven-item scale, measuring likelihood of experiencing restructuring stressors such as layoff and deterioration in working conditions within the next year.	Lack of career prospects
Burke and Greenglass (2001)	“increased workload”	Four-item scale. Example item: “My workload has increased as a result of the lack of resources”.	Workload
Burke and Greenglass (2001)	“job satisfaction”	Five-item scale developed by Quinn and Shepard (1974). Example item: “All in all, how satisfied are you with your job?”	Low professional esteem
Burke and Greenglass (2001)	“work-family conflict”	Four-item scale developed by Kopelman, Greenhaus and Connolly (1983). Example item: “After work, I come home too tired to do things I would like to do”.	Home/work conflict
Carson et al. (1999)	de Villiers Carson Leary Stress Scale	Measure developed by Carson et al. (1997), to measure occupational stressors in ward-based nurses. Includes the following subscales:	
		<i>Patient demands</i>	Patient care demands
		<i>Job satisfaction</i>	Low professional esteem
Coffey and Coleman (2001)	“attitude of line manager”	Single item, measures perceived support from supervisor.	Lack of supervisor support
Coffey and Coleman (2001)	“caseload”	Single item, measures number of patients on caseload (<11 or ≥11).	Workload
Coffey and Coleman (2001)	“discuss work problems with colleagues”	Single item, measures perceived support from co-workers.	Lack of co-worker support
Coffey and Coleman (2001)	“job security”	Single item, measures presence of perceived job security.	Lack of career prospects

(Table A1 continues)

(Table A1 continued)

F. H. Decker (1997)	“job/non-job conflict”	Three-item scale assessing interference of work on social/family life and spare time.	Home/work conflict
F. H. Decker (1997)	“job satisfaction”	Five-item scale based on items used by Hackman & Lawler (1971) and Brayfield & Rothe (1951).	Low professional esteem
F. H. Decker (1997)	“occupational role relations with co-workers”	Three-item scale derived from the Minnesota Satisfaction Questionnaire (Vocational Psychology Research, 1977), measures feelings about cooperation, teamwork, and staff getting along.	Lack of co-worker support
Demerouti et al. (2000)	“cognitive workload”	Two-item measure. Example item: “In my work, I have to make complex decisions”.	Job complexity
Demerouti et al. (2000)	“participation in decision-making”	Single item measuring extent of agreement with the following statement: “The management decides on its own what everybody has to do”.	Poor leadership behaviour
Demerouti et al. (2000)	“shift work”	Two-item scale measuring the extent to which respondent’s shift work schedule is unfavourable for physical health, family life and social life. Example item: “It is taxing for me to get used to my working times”.	Shift work
Demerouti et al. (2000)	“time pressure”	Single item measuring extent of agreement with the following statement: “I always have enough time to perform my tasks”.	Workload
Duxbury et al. (1984)	“head nurse consideration”	Scale of the Leadership Opinion Questionnaire (Fleishman, 1969); high scores indicate a relationship with subordinates characterized by mutual trust, respect for ideas, consideration of feelings, and two-way communication.	Poor leadership behaviour
Duxbury et al. (1984)	Minnesota Satisfaction Questionnaire	20-item composite measure of all relevant dimensions of job satisfaction (Weiss, Davis, England & Lofquist, 1967).	Low professional esteem
Edwards et al. (2000b)	“job security”	Single item, measures whether job security is present or absent.	Lack of career prospects
Elovainio and Kivimäki (1996)	“conflict”	Eight-item scale measuring how often conflict-related situations had bothered, worried or disturbed respondent in the past six months	Conflict with co-workers

(Table A1 continues)

(Table A1 continued)

Elovainio and Kivimäki (1996)	“control”	10-item measure of assumed personal opportunity to influence work variability, to determine procedures at work and amount of work (Ganster, 1984).	Lack of job control/autonomy
Elovainio and Kivimäki (1996)	“lack of goal clarity”	Three-item measure of the extent to which respondents know the goals of their own job, their own work unit and the entire organization.	Role uncertainty
Elovainio and Kivimäki (1996)	“quantitative work overload”	Eight-item scale measuring how often workload-related situations had bothered, worried or disturbed respondent in the past six months.	Workload
Elovainio and Kivimäki (1996)	“responsibility”	Eight-item scale measuring how often responsibility-related situations had bothered, worried or disturbed respondent in the past six months.	Responsibility
Elovainio and Kivimäki (1996)	“troublesome patients”	Eight-item scale measuring how often patient-related situations had bothered, worried or disturbed respondent in the past six months.	Patient care demands
Erlen and Sereika (1997)	“nurse autonomy”	Subscale of the Nursing Autonomy and Patient Rights Scale (Pankratz & Pankratz, 1974), assessing attitude towards nurse autonomy.	Lack of job control/autonomy
Firth et al. (1986)	“personal respect from supervisor”	12-item scale measuring perceived respect from supervisor. Example items: “Does actually thank people for the things they have done”; “Makes staff feel at ease when talking to them”.	Poor leadership behaviour
Firth et al. (1987)	“role ambiguity”	Four-item measure. Example item: “How clear are you about what you have to do in this job?”	Role uncertainty
Flanagan and Flanagan (2002)	“shift work”	Single item measuring whether respondent involved in shift work.	Shift work
Flanagan and Flanagan (2002); Jain et al. (1996)	Index of Work Satisfaction	Measure developed by Stamps and Piedmonte (1986), assesses satisfaction with pay, autonomy, task requirements, organisational policies, interaction and professional status.	Low professional esteem

(Table A1 continues)

(Table A1 continued)

Fielding and Weaver (1994)	Work Environment Scale, Form R	Scale developed by Moos (1986), which assesses underlying dimensions of the social environment at work. Subscales include the following: <i>Involvement</i> (the extent to which employees are concerned about and committed to their jobs) <i>Peer cohesion</i> (the extent to which employees are friendly and supportive of each other) <i>Supervisor support</i> (the extent to which management is supportive of employees and encourages them to be supportive of each other) <i>Work pressure</i> (the degree to which the pressure of work and time urgency dominate the work milieu) <i>Clarity</i> (the extent to which employees know what to expect in their daily routine and how explicitly rules and policy are communicated) <i>Physical comfort</i> (the extent to which physical surroundings contribute to a pleasant work environment)	Low professional esteem Lack of co-worker support Lack of supervisor support Workload Role uncertainty Poor physical environment
Fox et al. (1993)	“job performance”	Appraisal rating of six major responsibility areas, including patient assessment, planning, and developing patient care plans, completed by head nurse/assessor.	Lack of role confidence and competence
Fox et al. (1993)	“overall job satisfaction”	Measured by a gender-neutral version of the “faces” scale (Kunin, 1955).	Low professional esteem
Fox et al. (1993)	“patient contact hours”	Percentage of total work time spent in contact with patient (given by head nurse).	Patient care demands
Fox et al. (1993)	“subjective quantitative workload”	Seven-item scale by Caplan, Cobb, French, Harrison and Pinneau (1975) measuring perceptions of amount and pace of workload (both physical and psychological demands).	Workload

(Table A1 continues)

(Table A1 continued)

Fox et al. (1993); Munro et al. (1998).	“job control”	22-item scale measuring employee perceptions of amount of control experienced at work. Drawn from scale developed by Dwyer and Ganster (1991), measuring control over task variety, order of task performance, procedures / policies, scheduling of breaks, pacing, and arrangement of physical environment. Augmented in Fox, Dwyer and Ganster (1993) with questions about patient loads, physician demands and exposure to health threats.	Lack of job control/autonomy
Glass et al. (1993)	“lack of perceived job control”	Questionnaire developed by McDermott (1984), measuring degree to which respondents have control over impact of work, policies, completing tasks in allotted time.	Lack of job control/autonomy
Greenglass and Burke (2000)	“job deterioration”	Assesses the extent of deterioration in nurses’ jobs, including perceived likelihood of being laid off.	Lack of career prospects
Greenglass et al. (2001)	“Amount of work”	Four-item measure of changes in workload as a result of hospital restructuring. Example item: “My workload has increased as a result of the lack of resources”.	Workload
P. L. Harris (1984)	“supervisory responsibility”	Single item measuring whether respondent a head nurse or supervisor.	Responsibility
Healy and McKay (1999); Kirkcaldy and Martin (2000); Michie et al. (1996).	Nurse Stress Index	Measure developed by Harris (1989), includes the following subscales: <i>Work overload</i> (insufficient time to complete tasks and meet deadlines) <i>Work distress</i> (conflicting demands of others and difficulty prioritising tasks) <i>Dealing with patients and relatives</i> <i>Home/work conflict</i> <i>Role confidence and competence</i> (feeling incompetent due to organisational or technological change, and difficulties in nursing role) <i>Job satisfaction</i>	Workload Role uncertainty Patient care demands Home/work conflict Lack of role confidence and competence Low professional esteem

(Table A1 continues)

(Table A1 continued)

Hinds et al. (1998)	Group Cohesion Scale	Measure of group judgement/attitude similarity, developed by Bryne, 1961.	Lack of co-worker support
Hinds et al. (1998)	Measure of Job Satisfaction	Measure developed by Traynor & Wade (1993), assesses satisfaction with workload, professional support, training, pay/career prospects, and own ability to provide high quality care.	Low professional esteem
Jamal and Baba (1992)	“degree of rotation of shifts”	Fixed shift (permanent day, evening or night); semi-rotating (between two shifts); or fully-rotating (between three shifts).	Shift work
Jamal and Baba (1992)	“job satisfaction”	Single item measuring global job satisfaction.	Low professional esteem
Jamal and Baba (1992)	“role ambiguity”	Four-item scale developed by Rizzo, House and Lirtman (1970).	Role uncertainty
Jamal and Baba (1992)	“role overload”	Six-item scale, modified version of the Michigan scale (Kahn, Wolfe, Quinn, Snock & Rosenthal, 1964).	Workload
Janssen et al. (1999)	“mental work overload”	Scale developed by de Jonge, Landeweerd and Nijhuis (1993) consisting of quantitative and qualitative demanding aspects of work such as working under time pressure, working hard, and strenuous work.	Workload
Janssen et al. (1999)	“social support from colleagues”	Five-item scale, derived from the Work Stress Questionnaire (Bergers, Marcelissen & de Wolff, 1986). Example item: “In case there exist problems at your work, can you discuss them with your colleagues”.	Lack of co-worker support
Janssen et al. (1999)	“support from supervisor”	Five-item scale, derived from the Work Stress Questionnaire (Bergers, Marcelissen & de Wolff, 1986), measuring perceived social support from supervisor.	Lack of supervisor support
Janssen et al. (1999)	“unmet career expectations”	Unmet expectations regarding salary, responsibility, opportunities to develop knowledge and skills, job security and position, derived from a scale by Janssen (1992).	Lack of career prospects
Kandolin (1993)	“time pressure”	Single item measuring frequency of high time pressure (often vs. not often).	Workload

(Table A1 continues)

(Table A1 continued)

Landeweerd and Boumans (1994)	“job characteristics”	Items derived from Hackman & Oldham (1975, 1976) and Algera (1981), measuring the following dimensions: <i>Job complexity and difficulty</i> <i>Feedback and clarity</i> <i>Work pressure</i> <i>Autonomy</i> <i>Promotional and growth opportunities</i> <i>Patient attending and caring</i> (e.g., the extent that the work consists of psycho-social counselling of patients)	Job complexity Role uncertainty Workload Lack of job control/autonomy Lack of career prospects Patient care demands
Landeweerd and Boumans (1994)	“social-emotional leadership”	Subscale of the Leadership Behaviour Questionnaire (Stogdill, 1963). Example item: “My head nurse gives me opportunities to express emotions over my work”.	Poor leadership behaviour
Leary and Brown (1995)	Minnesota Job Satisfaction Scale	Scale measuring satisfaction with intrinsic factors (e.g., degree of responsibility, recognition, sense of achievement) and extrinsic factors (e.g., salary, job image, job status).	Low professional esteem
Lee and Henderson (1996)	Organizational Commitment Questionnaire	Measure developed by Mowday, Steers and Porter (1979), assesses belief in and acceptance of organisation’s goals and values; willingness to exert considerable effort on behalf of organisation; and desire to maintain membership.	Low professional esteem
Lee and Henderson (1996)	“organisational social support”	Single item measuring number of workers providing trust and support.	Lack of co-worker support
Livingston and Livingston (1984)	“time in contact with patients”	Single item measuring amount of time in contact with patients	Patient care demands

(Table A1 continues)

(Table A1 continued)

Linder-Pelz et al. (1987)	“stressful events”	Questionnaire developed for this study, listing events which respondents rate according to the extent to which they cause problems. Includes the following subscales:	
		<i>Non- responsiveness</i> (hospital and nursing management)	Poor leadership behaviour
		<i>Overload</i> (rosters, fatigue)	Workload
		<i>Team status</i> (Unsatisfactory and ambiguous with respect to the job itself and other staff)	Role uncertainty
		<i>Low professional esteem</i> (feelings that integrity and assertiveness are being questioned; lack of respect)	Low professional esteem
		<i>Training</i> (problems with training requirements, credits, components of training, exams)	Lack of role confidence and competence
		<i>Prospects</i> (job security, career choices)	Lack of career prospects
McCranie et al. (1987); Stordeur et al. (2001); Tyler and Cushway (1995)	Nursing Stress Scale	Scale developed by Gray-Toft & Anderson (1981), includes the following subscales:	
		<i>Death and dying</i>	Patient care demands
		<i>Lack of support</i>	Lack of co-worker support
		<i>Conflict with other nurses</i>	Conflict with co-workers
		<i>Workload</i>	Workload
Motowidlo et al. (1986)	“interpersonal effectiveness”	A measure of personal warmth, morale, caring for unco-operative patients, teamwork and co-operation, and sensitivity to patients, completed by coworker and/or supervisor.	Lack of role confidence and competence
Munro et al. (1998)	“job satisfaction”	Scale developed by Warr, Cook and Wall (1979), designed to measure level of satisfaction / dissatisfaction regarding work conditions, management, promotion, salary, job security and coworkers.	Low professional esteem

(Table A1 continues)

(Table A1 continued)

Norbeck (1985)	Questionnaire of Stressful Factors in the Intensive Care Unit	32-item measure developed by Huckaby and Jagla (1979). Items include the following:	
		<i>Noise level on the unit</i>	Poor physical environment
		<i>Communication problems with unit nurses</i>	Conflict with co-workers
		<i>Workload and amount of physical work</i>	Workload
		<i>Number of rapid decisions that must be made</i>	Job complexity
		<i>Meeting the psychological needs of the patient</i>	Patient care demands
Oehler et al. (1991)	“supervisor support”	Three-item subscale of the House and Wells Social Support Scale (House & Wells, 1981), measuring reliability, listening and assistance to get the job done.	Lack of supervisor support
Packard and Motowidlo (1987)	“job satisfaction”	Seven-item scale developed by Price & Mueller (1981). Example items: “I find real enjoyment in my job”; “I consider my job rather unpleasant”.	Low professional esteem
Parkes (1982)	“job discretion change”	Based on job discretion factor reported by Karasek (1979), eight items concerned with decision making and the use of skill, measured on up to five occasions.	Lack of job control/autonomy
Parkes (1982)	“social support change”	Scores on Relationship dimension of the WES (Moos, 1981), items relating to staff support, peer support and general work commitment among employees, measured on up to five occasions.	Lack of co-worker support
Parry-Jones et al. (1998)	“job satisfaction and practice change”	Change in levels of job satisfaction and practice elements since implementation of community care reforms two years previous, on a five-point scale (1 = ‘decreased a lot’ to 5 = ‘increased a lot’); including the following dimensions:	
		<i>Level of responsibility</i>	Responsibility
		<i>Workload</i>	Workload
		<i>Job satisfaction</i>	Low professional esteem

(Table A1 continues)

(Table A1 continued)

Revicki and May (1989)	“organisational characteristics”	Questionnaire developed by Gray-Toft and Anderson (1985), partly based on the Michigan Organizational Assessment Questionnaire. Includes the following subscales: <i>Supervisor behaviour</i> (positive evaluation of supervisor’s performance in assigning tasks, specifying procedures and clarifying expectations) <i>Work group relations</i> (cohesive and supportive) <i>Role ambiguity</i> (lack of clarity about job expectations and uncertainty of response to behaviour) <i>Job satisfaction</i>	Poor leadership behaviour Lack of co-worker support Role uncertainty Low professional esteem
Severinsson and Hummelvoll (2001); Severinsson and Kamaker (1999).	Moral Sensitivity Questionnaire	Measure developed by Lützn (1993), which assesses patient autonomy and collaboration; ethical conflicts; decision making according to norms, duties and rules; the primacy of a caring relationship; following rules; and benevolence and moral sensing.	Patient care demands
Stordeur et al. (2001)	“inspirational role”	A subscale of the Multifactor Leadership Questionnaire (Bass & Avolio, 1991), which measures perceptions of leader’s behaviour. Example item: “She talks enthusiastically about what needs to be accomplished”.	Poor leadership behaviour
Stordeur et al. (2001)	“role ambiguity”	Three-item measure developed by House & Rizzo (1972). Example item: “Explanation of what has to be done is clear”.	Role uncertainty
Sullivan (1993)	“patient care”	A subscale of the Psychiatric Nursing Stress Inventory, developed by Sullivan (1993). Measures frequency of stressors such as potentially violent and suicidal patients.	Patient care demands
Topf and Dillon (1988)	Disturbance Due to Hospital Noise Scale	38-item scale assessing stress caused by hospital sounds (e.g., telephones, visitors, paging systems).	Poor physical environment

APPENDIX B

Table B1

Demographic Characteristics of QPASS Participants

Demographic characteristic	Frequency	Percentage
Agency		
Health Service District (HSD)		
Atherton HSD	176	3.9%
Gladstone HSD	65	1.4%
North Burnett	138	3.1%
Rockhampton HSD	451	10.0%
Southern Downs HSD	158	3.5%
Toowoomba HSD	327	7.3%
Toowoomba Mental Health Service	168	3.7%
	Total 1,483	Total 32.9%
Queensland Government Department		
BSS	141	3.1%
DCILGP	331	7.3%
DIIESRQ	333	7.4%
DIR	335	7.4%
SSI	1,886	41.8%
	Total 3,026	Total 67.1%
	Grand total 4,509	Grand total 100%
Gender		
Female	3,055	67.8%
Male	1,429	31.7%
Not specified	25	0.5%
Age group		
Under 21	61	1.4%
21-30	797	17.7%
31-40	1,273	28.2%
41-50	1,470	32.6%
51-60	792	17.6%
Over 60	87	1.9%
Not specified	29	0.6%
Current employment status		
Full-time		
Permanent full-time	3,184	70.6%
Temporary full-time	510	11.3%
	Total 3,694	Total 81.9%
Part-time		
Permanent part-time	698	15.5%
Temporary part-time	115	2.6%
Total	Total 813	Total 18.1%

APPENDIX C

Table C1

Number of Participants; Subscale Reliabilities; and Correlations between Organisational Climate Subscales and Individual Psychological Distress for Full-time Samples in Study II

Subscale	Public service samples					Nursing samples							
	BSS	SSI	DIIESRQ	DCILGP	DIR	SD	Gldstn	Athtn	NB	TMHS	Rckhtn	Tmba	
wkmoral													
n	133	1,752	311	304	308	84	45	64	86	129	275	156	
α	.90	.88	.87	.87	.86	.84	.91	.91	.88	.87	.87	.88	
r	-.48	-.46	-.52	-.38	-.49	-.51	-.52	-.59	-.53	-.59	-.59	-.45	
wkdistrs													
n	133	1,752	311	303	308	85	45	64	86	132	278	157	
α	.88	.86	.83	.83	.85	.82	.88	.89	.89	.86	.87	.89	
r	.71	.63	.65	.49	.62	.58	.63	.63	.66	.73	.64	.59	
supplead													
n	133	1,752	310	302	308	83	44	64	85	132	278	157	
α	.89	.88	.91	.85	.88	.82	.87	.86	.89	.89	.89	.89	
r	-.50	-.45	-.48	-.45	-.48	-.50	-.42	-.45	-.55	-.55	-.56	-.43	
particdm													
n	133	1,752	311	302	308	84	45	64	84	132	276	159	
α	.87	.84	.85	.80	.84	.67	.83	.82	.79	.83	.84	.85	
r	-.36	-.42	-.51	-.39	-.47	-.26	-.42	-.39	-.34	-.52	-.53	-.40	
roleclar													
n	133	1,752	310	305	308	85	45	64	86	132	274	158	
α	.80	.74	.79	.75	.74	.56	.65	.70	.74	.75	.72	.72	
r	-.50	-.49	-.48	-.48	-.45	-.46	-.57	-.58	-.24	-.54	-.46	-.31	
profinter													
n	133	1,751	311	301	308	84	45	64	85	128	277	155	
α	.82	.86	.87	.84	.89	.75	.84	.86	.82	.86	.84	.88	
r	-.43	-.42	-.41	-.34	-.45	-.48	-.50	-.48	-.56	-.53	-.52	-.46	
apprecog													
n	133	1,752	311	304	308	82	45	64	84	132	277	157	
α	.91	.91	.91	.92	.91	.83	.86	.85	.86	.91	.89	.90	
r	-.40	-.41	-.44	-.40	-.45	-.24	-.42	-.45	-.55	-.48	-.42	-.36	
profgow													
n	133	1,752	311	303	308	84	45	64	86	130	277	158	
α	.88	.83	.84	.83	.82	.83	.74	.77	.78	.83	.83	.85	
r	-.35	-.40	-.36	-.30	-.40	-.27	-.56	-.28	-.48	-.47	-.39	-.40	
goalcong													
n	133	1,752	311	305	308	84	45	64	84	132	270	157	
α	.80	.79	.83	.78	.80	.63	.81	.82	.73	.83	.78	.80	
r	-.47	-.49	-.50	-.40	-.40	-.53	-.43	-.44	-.46	-.57	-.53	-.30	
exwkdem													
n	133	1,752	311	300	308	83	45	63	86	132	274	158	
α	.89	.84	.82	.81	.79	.69	.82	.78	.76	.79	.83	.82	
r	.44	.38	.31	.30	.37	.42	.21	.40	.52	.62	.45	.47	

Table C2

Number of Participants; Subscale Reliabilities; and Correlations between Organisational Climate Subscales and Individual Psychological Distress for Part-time Samples in Study II

Subscale	Public service samples					Nursing samples						
	BSS	SSI	DIIESRQ	DCILGP	DIR	SD	Gldstn	Athtn	NB	TMHS	Rckhtn	Tmba
wkmoral												
n	8	134	19	15	27	69	20	105	41	33	154	159
α	.79	.88	.90	.89	.82	.79	.79	.85	.80	.88	.87	.85
r	-.45	-.45	-.64	-.31	-.75	-.44	-.38	-.41	-.22	-.40	-.48	-.42
wkdistrs												
n	8	134	19	14	27	70	20	105	40	33	151	158
α	.75	.86	.87	.92	.94	.83	.80	.82	.89	.82	.89	.87
r	.51	.55	.44	.56	.74	.49	.03	.57	.59	.53	.61	.67
supplead												
n	8	134	19	15	27	70	20	103	41	33	153	158
α	.64	.88	.85	.81	.90	.76	.82	.84	.91	.82	.87	.88
r	-.33	-.52	-.57	-.07	-.76	-.23	-.45	-.45	-.36	-.17	-.52	-.31
particdm												
n		134	19	15	27	68	20	104	40	33	154	154
α		.85	.87	.87	.87	.70	.82	.68	.88	.87	.80	.77
r		-.47	-.67	-.27	-.78	-.28	-.23	-.46	-.41	-.20	-.47	-.24
roleclar												
n		134	19	15	27	68	19	104	40	32	153	159
α		.79	.86	.84	.78	.64	.50	.58	.70	.76	.69	.70
r		-.56	-.55	-.54	-.74	-.37	-.34	-.17	-.34	-.38	-.48	-.33
profinter												
n		134	19	15	27	69	19	104	40	32	150	156
α		.89	.87	.85	.87	.79	.74	.83	.83	.81	.84	.88
r		-.54	-.49	.07	-.70	-.46	-.59	-.43	-.23	-.05	-.47	-.43
apprecog												
n	8	134	19	14	27	69	20	105	39	32	155	155
α	.74	.91	.93	.89	.95	.89	.88	.88	.91	.92	.89	.87
r	-.05	-.49	-.33	-.45	-.68	-.31	-.36	-.29	-.55	-.29	-.46	-.32
profgow												
n	8	134	19		27	70	20	105	39	32	152	159
α	.83	.84	.84		.83	.78	.69	.71	.80	.85	.82	.77
r	-.46	-.47	-.38		-.65	-.27	-.24	-.39	-.37	-.21	-.44	-.26
goalcong												
n	8	134	19	14	27	69	20	104	40	33	151	153
α	.50	.76	.81	.73	.85	.71	.72	.77	.64	.82	.81	.81
r	-.30	-.47	-.55	-.28	-.70	-.46	-.33	-.46	-.47	-.18	-.54	-.34
exwkdem												
n	8	134	18	15	27	69	20	104	40	33	156	159
α	.80	.82	.55	.85	.82	.71	.74	.76	.73	.86	.83	.81
r	.64	.40	.48	.66	.59	.17	.16	.58	.52	.26	.48	.43

Table C3

Number of Participants; Subscale Reliabilities; and Correlations between Positive Work Events and Individual Psychological Distress for Samples in Study II

Subscale	Public service samples				Nursing samples			
	DIIESRQ		DCILGP		Southern Downs HSD		Gladstone HSD	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
jobitself								
n	311	19	305	15	84	69	45	20
α	.92	.98	.90	.83	.91	.91	.93	.88
r	-.38	-.50	-.27	-.51	-.29	-.09	-.21	.46
custserv								
n	311	19	306	15	84	69	45	20
α	.81	.86	.79	.56	.91	.96	.83	.93
r	-.16	-.33	-.20	.22	-.23	-.27	-.19	.06
wkldpos								
n	311	19	307	15	85	70	45	20
α	.83	.88	.77	.71	.90	.85	.89	.91
r	-.33	-.10	-.15	-.34	-.24	-.19	-.30	.05
wksched								
n	311	19	303	15	85	70	45	20
α	.80	.83	.69	.39	.89	.77	.88	.88
r	-.23	-.55	-.22	-.59	-.23	-.19	-.52	-.27
admnpos								
n	310	19	297	14	82	65	45	19
α	.89	.86	.87	.91	.90	.94	.91	.93
r	-.45	-.28	-.41	-.64	-.54	-.23	-.44	-.34
managmt								
n	310	19	302	15	83	67	44	18
α	.92	.94	.90	.84	.94	.95	.95	.96
r	-.45	-.28	-.41	-.64	-.54	-.23	-.44	-.34
amenities								
n	311	19	307	15	85	69	45	20
α	.82	.82	.78	.84	.82	.92	.92	.94
r	-.18	-.26	-.21	-.61	-.41	-.17	-.39	-.10
equipres								
n	311	19	306	15	83	70	45	20
α	.90	.86	.85	.90	.84	.79	.89	.91
r	-.21	-.20	-.22	-.64	-.32	-.32	-.38	.02
cowkpos								
n	311	19	303	15	84	70	45	20
α	.88	.81	.79	.89	.94	.94	.97	.94
r	-.31	-.31	-.23	-.52	-.36	-.42	-.39	-.09
decimake								
n	311	18	302	15	84	69	45	20
α	.87	.88	.80	.67	.92	.92	.93	.94
r	-.38	-.12	-.30	-.21	-.19	-.34	-.24	.03
family								
n	311	19	304	15	82	68	45	20
α	.76	.78	.73	.34	.86	.89	.88	.97
r	-.18	-.34	-.11	-.08	-.40	-.11	-.39	-.34

Table C4

*Number of Participants; Subscale Reliabilities; and Correlations between Negative**Work Events and Individual Psychological Distress for Samples in Study II*

Subscale	Public service samples				Nursing samples			
	DIIESRQ		DCILGP		Southern Downs HSD		Gladstone HSD	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
commctn								
n	311	19	304	15	83	68	45	20
α	.92	.91	.92	.94	.91	.92	.91	.93
r	.56	.25	.47	.27	.51	.34	.60	.56
wkldneg								
n	311	19	303	15	85	70	45	19
α	.94	.92	.92	.90	.96	.94	.94	.78
r	.36	-.01	.31	.51	.36	.31	.34	.24
cowkneg								
n	311	19	306	15	84	70	45	20
α	.94	.84	.94	.93	.94	.94	.95	.84
r	.37	.46	.32	.21	.35	.17	.37	-.17
outsupt								
n	311	19	306	15	85	69	45	19
α	.84	.70	.90	.65	.86	.90	.83	.67
r	.18	.24	.28	-.41	.32	.07	.46	.03
admneg								
n	311	18	303	15	84	67	45	20
α	.95	.85	.92	.95	.94	.94	.94	.93
r	.42	.44	.36	.33	.45	.30	.47	-.01
jobinsec								
n	310	19	307	14	85	70	45	20
α	.75	.76	.79	.68	.74	.79	.63	.38
r	.20	.19	.24	-.34	.37	.15	.36	.09
resource								
n	311	19	304	14	85	69	45	20
α	.85	.83	.89	.89	.90	.85	.87	.91
r	.24	.29	.24	.26	.25	.30	.52	-.06
dualcars								
n	311	19	299	14	85	70	45	20
α	.63	.50	.66	.89	.44	.60	.37	.79
r	.18	.32	.03	-.51	.10	.18	.40	-.03
wrkhome								
n	311	19	304	14	85	70	45	20
α	.87	.96	.88	.90	.89	.84	.77	.79
r	.29	.21	.24	.26	.54	.26	.34	.32
careerop								
n	311	19	305	14	85	70	45	20
α	.93	.82	.87	.84	.96	.94	.92	.89
r	.40	-.02	.38	-.03	.41	.29	.45	-.49
perclash								
n	311	19	307	15	85	70	45	20
α	.90	.87	.91	.90	.90	.94	.87	.87
r	.41	.54	.34	.63	.55	.55	.56	.05

Note. In Tables C1-2, SD = Southern Downs HSD; Gldstn = Gladstone HSD; Athtn = Atherton HSD; NB = North Burnett HSD; TMHS = Toowoomba Mental Health Service; Rckhtn = Rockhampton HSD; Tmba = Toowoomba HSD; wkmorale = Workplace morale; wkdistrs = Workplace distress; supplead = Supportive leadership; particdm = Participative decision-making; roleclar = Role clarity; profinter = Professional interaction; apprecog = Appraisal and recognition; profgow = Professional growth; goalcong = Goal congruence; exwkdem = Excessive work demands. In Table C3, jobitself = The jobitself; custserv = Customer service; wkldpos = Workload (PWE); wksched = Work schedule; admnpos = Administration (PWE); managmt = Management (PWE); amenities = Amenities; equipres = Equipment/resources; cowkpos = Co-workers (PWE); decimake = Decision-making; family = Family. In Table C4, commctn = Communication; wkldneg = Workload (NWE); cowkneg = Co-workers (NWE); outsuppt = Outside support; admneg = Administration (NWE); jobinsec = Job insecurity; resource = Resources; dualcars = Dual careers; wrkhome = Work and home life; careerop = Career opportunities; perclash = Personality clashes.