THE RELATIONSHIP BETWEEN HARDINESS AND THE PERCEPTION OF STRESSFUL EVENTS IN FEMALE CRITICAL CARE NURSES

by

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A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF NURSING

DEDICATION

To the memory of my Parents:

John & Anne Sawatzky,

who encouraged me to follow my dreams.

ABSTRACT

Critical care nurses work in a stressful environment. Without interventions which mediate the stress response to ensure effective coping and adaptation, the effects of that stress can be deleterious to nurses' health. Moreover, it can impact on the care nurses give to their patients.

The theoretical framework for this study was based on Pollock's Adaptation Nursing Model, which proposes that the personality characteristic of hardiness buffers or mediates the stress-illness relationship directly, by the enhancement of successful coping and indirectly, through its influence on the perception of the stressor. Numerous hardiness studies have been published, however, few have focused on female critical care nurses. In addition, minimal research involving this population has examined the relationship between the perception of stressful events and this personality characteristic.

A descriptive, correlational design was employed to examine the relationship between hardiness and the perception of stressful events in female critical care nurses. Instruments which operationally defined the variables of hardiness (Personal Views Survey II), actual and perceived work stressors (Critical Care Nursing Stress Scale), and perceived global stress (Perceived Stress Scale),

as well as a demographic form, were administered to a convenience sample (N=96) of the target population.

Data were analyzed using both parametric and nonparametric techniques. Findings of a significant relationship between the hardiness composite and perceived, but not with actual stressors lent support to the conceptual model. Correlations between perceived global stress and the negative perception of work stressors, as well as between actual and perceived stressful work events were also significant. Ranking the stressful work situations revealed that patient care related stressors ranked the highest for frequency, intensity and challenge, while management related stressors were among the highest in the threat category. Overall, lack of control appeared to be a common element among those situations ranked as the most stressful.

The findings of this study impact primarily on the domains of nursing administration and research. The empirical evidence related to hardiness and the perception of work-related stressors and personal life stress, as well as the ranked work stressors, will provide nurse managers with insight into the stressful experiences of female critical care nurses. Moreover, because the concept of stress was expanded beyond the typical measures of previous hardiness research to include perception of those events, the foundation for future research, particularly in the context of the Adaptation Nursing Model, has been established.

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CHAPTER I: INTRODUCTION

For many years now, medical literature and the mass media have been replete with warnings of the negative effects of stress (Kobasa, Hilker & Maddi, 1979). This message has precipitated a growing trend toward stress avoidance as one possible solution. These efforts are, however, "doomed to failure because forces beyond our control are producing a mounting rate of stressful life events" (Kobasa, et al. 1979, p.595). Like death and taxes, stress is an inevitable part of our existence. One alternative, which is rapidly gaining favour, is to determine ways to buffer stress and thus remain healthy.

Statement of the Problem

Critical care nurses work in an environment that is highly stressful for even the best prepared individual (Anderson & Basteyns, 1981; Cassem & Hackett, 1972; Storlie, 1979).

> "The role of the professional nurse is undergoing a dramatic expansion in relation to the delivery of health care services. Nurses in the intensive care unit (ICU) are assuming greater responsibility for managing patient care in the acute health care settings. In this

> expanding nursing role, the ICU nurse is confronted by both the impending potential crisis of the patients' condition and the demand for technological excellence. Nurses in critical care units experience stressful events related directly to the individual patient needs and indirectly to the pressures within the highly technical environment" (Oskins, 1979, p.953).

Stress may lead to work related problems such as staff conflicts, absenteeism, lowered morale, markedly decreased energy levels, and lowered productivity (Bailey, 1980; Huckabay & Jagla, 1979). More importantly, nursing stress can ultimately impact on the patient and compromise patient care (Gentry, Foster, & Froehling, 1972). "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" (Cronin-Stubbs & Rooks, 1985, p.31). Without interventions which mediate the stress response to ensure effective coping and adaptation, the effects of stress can be deleterious to the nurse's health and her work.

Burnout is viewed as an adverse behavioral, physiological and psychological response to excessive job related stress (Rich & Rich, 1987). Defined by Maslach as "a syndrome of physical and emotional exhaustion that involves the development of negative job attitudes, a poor professional self-concept and a loss of empathetic concern for patients" (Rich & Rich, 1987, p.63), burnout has

become a well-recognized phenomenon in critical care (Patrick, 1984). The common concomitants to burnout such as ineffective coping and resignation, as well as compromised patient care, have significant implications for the nursing profession.

Although the Canadian nursing shortage, in the crisis proportions of the 1980s appears to be subsiding, recruitment and retention prevails as a major issue in critical care. Even the "downsizing" and "cutbacks" of the recent health care reforms have had little direct impact on these areas. Turnover rates in critical care tend to be higher than in other settings (Benner, 1975; Duxbury & Thiessen, 1979). Moreover, "ICU nurses who terminate tend to leave nursing altogether, rather than simply relocate to another unit" (Gentry & Parkes, 1982, p.46).

Stress has been implicated as a significant factor in the exodus of nurses from the profession (Bailey, Steffen, & Grout, 1980; Evans, Laundon, & Yamamoto, 1980; Harris, 1989; Husted, Miller, & Wilcznski, 1989). Numerous studies in the past have concentrated on the identification of key job related stressors, such as heavy workload, staffing problems and conflict with other health care providers (Anderson & Basteyns, 1981; Bailey, et al. 1980). However, the focus of recent stress and illness research has been to examine stress resistance resources that may prevent debilitating responses (Antonovsky, 1979; Topf, 1989).

This change in research direction is based on anecdotal observations that not all persons who experience high degrees of stress become ill and that some of these individuals appear to actually thrive on stress (Kobasa, et al. 1979). Research results of a "merely modest relationship between stressful life events and illness symptoms" (Kobasa, Maddi & Puccetti, 1982, p.391) add validity to these observations. Among the growing list of variables which may buffer the individual against the debilitating effects of stress are: personality characteristics, social supports, health practices, and constitutional predispositions (Antonovsky, 1982; Kobasa, et al. 1979; Kobasa, Maddi, Puccetti & Zola, 1985).

The hardiness construct is defined as "a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events" (Kobasa, Maddi & Kahn, 1982, p.169). Together, the three main elements of commitment, control, and challenge form a personality style which effects coping by a buffering effect on the stress-illness relationship (Kobasa, 1982a). On the other hand, burnout is characterized by the antithesis of this attitude of an openness to change, a feeling of involvement in whatever one is doing, and a sense of control over one's life (Keane, Ducette, & Adler, 1985).

Perception or cognitive appraisal of stressful events has also received considerable acclaim as a significant factor in the stress-illness relationship. In fact, it has been suggested that "nurses' self-perceptions of the stress level in their

working situations are more influential than the actual stressors themselves" (Milazzo, 1988, p.52). This has established yet another convincing rationale for why the manifestations of stress often vary remarkably from one individual to another. In her Adaptation Nursing Model, Pollock (1989a) not only acknowledges the significance of stress perception in the chronically ill, but also suggests that the personality characteristic of hardiness is central to that perception.

Hence, although outcomes of stress are significant, it is important to first understand the antecedent processes involved in the stressful experience. Numerous hardiness studies have been published, however, few have focused on critical care nurses. Moreover, none of the studies involving this population have examined the relationship between the perception of stressful events and the moderating effects of this personality characteristic.

Purpose of the Study

This study was designed to examine the role of hardiness in the stressful experiences of female critical care nurses. The purpose, therefore, was:

1. to describe the personality characteristic of hardiness, work stressors, and the perception of stressful work events and life stress in female critical care nurses, and

2. to explore possible relationships between hardiness, work stressors, and perception of stress in this population.

Significance of the Study

> "...Despite the attention given separately to the various components of stress, the intricate linkages that join them have not yet been unravelled" (Pearlin, Menaghan, Lieberman, & Mullan, 1981, p.337).

The literature reflects an apparent urgency to investigate the relationship between stressors and the stress response and/or the coping process before gaining an understanding of the perception of those stressors, or stressful events. To this end, the purpose of most studies examining stress in critical care nurses has been to substantiate its presence and to describe its antecedents (Stehle, 1981). "While the frequency or importance of stressors has been studied extensively, investigating the impact of both the intensity and frequency of work-related stressors is a relatively new enterprise" (Cronin-Stubbs & Rooks, 1985, p.32). Measures of intensity and frequency of work-related stressors, as well as an additional measure of stress perception in the workplace, and a global measure of perceived stress, were central to this study.

There has also been a paucity of investigations related to the impact of stress-resistance resources on the stress-illness relationship in the population of critical care nurses. For example, little attention has been extended to the processes by which the personality characteristic of hardiness appears to effect its

health-protective function. The question of whether hardy individuals, because of their behaviours and choices, actually encounter different experiences, or if they appraise stressful experiences differently, was addressed in this study.

Thus, this investigation provided empirical evidence of the relationship between the hardiness construct and work related stressors, as well as personal life stress in female critical care nurses. Furthermore, because the concept of stress was expanded beyond the typical measures of previous hardiness research to include perception of those stressful events, a foundation for subsequent research in this area has been established.

This study also built on the theory base of Pollock's (1989a) Adaptation Nursing Model, thus contributing valuable support for the utilization of this framework in further research.

> "Once nurse scientists understand the effect of hardiness and how it promotes health and adaptation in both well individuals and those with health problems, the implications for nursing practice will be limitless" (Pollock, 1989a, p.53)

Theoretical Framework

The utilization of a conceptual framework in research is of paramount importance, however, more often than not it is either inappropriately applied or neglected. "If a conceptual framework is really linked to a research problem, then the design of the study, the selection of appropriate data collection strategies, and the analysis and (especially) the interpretation of data *flow* from that conceptualization" (Polit & Hungler, 1987, p. 93). Careful attention was therefore given to this aspect of the study.

A conceptual model of the buffering effect of hardiness on the stress-illness relationship was first illustrated by Kobasa and Puccetti in 1983 (see Appendix A). This model, however, fails to acknowledge the significance of perception of the stressful event or the impact of resistance resources on that perception. Because Pollock (1989a) recognizes the importance of hardiness, as well as perception in the stress-illness relationship, her Adaptation Nursing Model (see Appendix B) was considered to be more appropriate for this study. Although it was developed for the chronically ill, the current study demonstrated the generalizability of this model to other populations, such as female critical care nurses (see Figure 1).

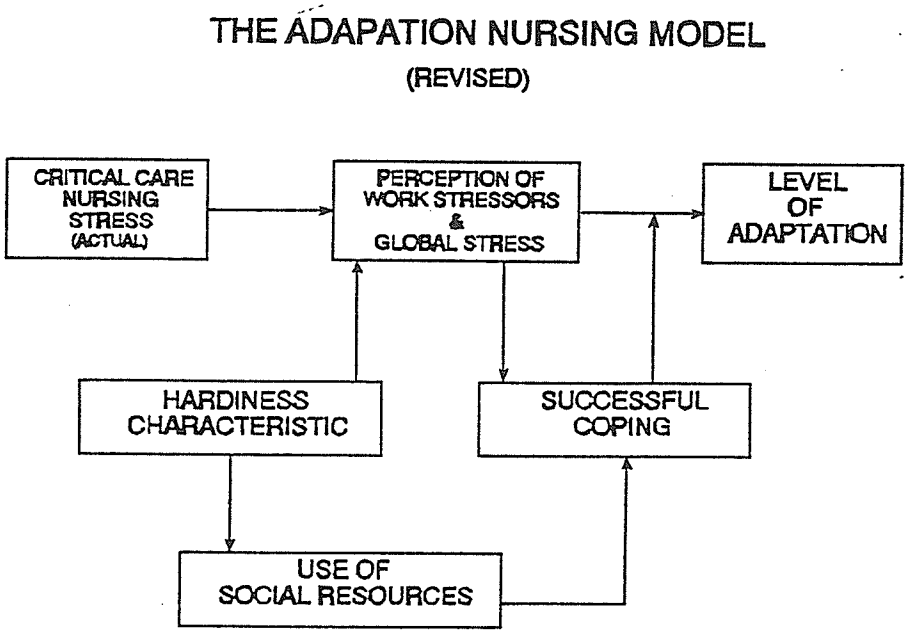

Figure 1: Adaptation Nursing Model (revised)

It is important to determine the relationships between hardiness, stress, and the perception of stressful events prior to examining methods of coping and levels of adaptation. Therefore, this study only examined this aspect of Pollock's Adaptation Nursing Model. Although the variables of coping and adaptation were not part of the study, a brief discussion of these concepts is included to facilitate an understanding of the model as a whole.

Historical Evolution of Pollock's Adaptation Nursing Model

Because the Adaptation Nursing Model has progressed through several stages of development, it is felt that tracing the evolution of each of its major concepts will effect a clear understanding of the model as a whole. In addition,

because each author's conceptualization is unique, explicitly defining concepts is central to the readers' understanding of the study and its findings.

Stress. The purpose of Pollock's original conceptual framework (see Appendix C) was to "describe the stress phenomenon in more precise and scientific terms and to identify the basic components of the stress concept" (Pollock, 1984, p.1). To this end, Pollock relied on the writings of physiological and psychological stress experts, Hans Selye and Richard Lazarus.

Review of the literature reveals a myriad of stress definitions. Although, at times there seems to be little consensus as to what this abstract concept really is, three variations appear to be most popular: stress as the stimulus, stress as the response, and stress as "a relational or transactional concept describing certain kinds of adaptive commerce between any system (e.g. the person) and environment" (Lazarus & Launier, 1978, p.293). It is this transactional perspective of a bidirectional, dynamic, mutually reciprocal relationship between the person and the environment that constitutes the foundation of Lazarus' research in the area of stress and coping (Folkman, Lazarus, Gruen, & DeLongis, 1986).

Lazarus (1966) recommends that stress be utilized as an organizing concept to facilitate the understanding of the vast range of phenomenona involved in adaptation.

> ...stress is just a handy term to refer to the operation of many variables and processes in situations in which the demands tax or exceed the person's resources, and the person appraises the encounter as relevant to well-being, engages in coping processes, and responds cognitively, affectively, and behaviorally to feedback about what is happening (Lazarus, DeLongis, Folkman, & Gruen, 1985, p.777).

This view of stress, as a complex rubric involving many processes and variables rather than a single variable, is central to the Adaptation Nursing Model and, therefore, to this study as well.

The term "stress," however, is thought to have its origins in the physical sciences, where it is referred to as the external force directed at a physical object. The probable reason why this definition of stress as the stimulus and strain as the response appealed to psychologists and physiologists, was because it fit into their conceptualization of homeostasis (Lazarus, 1966). Description and analysis of biologic stress was pioneered by Hans Selye (1956). Generally regarded as the father of stress research, his definition is in keeping with psychology's tradition of a stimulus-response orientation..."Stress is the nonspecific response of the body to any demand made upon it" (Selye, 1974, p.27).

Moreover, it was Selye who first distinguished between negative/ undesirable (distress) and positive/desirable (eustress) stress responses..."stress is the spice of life. Without it you would be a vegetable-or dead" (1974, p.27). Renowned for his explanation of stress in terms of the three stages of the general adaptation syndrome (GAS): the alarm reaction, the stage of resistance, and the stage of exhaustion, Selye believed that threats to physical or emotional homeostasis can be induced by a variety of external stimuli.

These stress stimuli, or "stressors", according to Lazarus and Cohen (1977), can be of three types. Major changes involving large numbers and considered to be universally cataclysmic phenomena, such as war and natural disasters, are included in the first type. Major changes or events can also be cataclysmic for only one or a few people. This type includes uncontrollable events such as the death of a loved one and events which are greatly influenced by the person to whom it befalls, such as divorce.

Less dramatic stressful experiences which occur as a result of our daily living are recognized as the third type of stressors. Although seemingly less significant than bereavement or divorce, "daily hassles" such as the dog having an accident on the carpet, the computer breaking down, or getting caught in rush hour traffic, are thought to have an even more important impact on one's level of adaptation (Lazarus & Folkman, 1974).

Lazarus and Folkman (1984) also acknowledge the importance of the properties of stress identified by Elliott and Eisdorfer (1982). Rather than differentiating stressors based on their intensity, they proposed four broad types of stressors based on their duration:

> (1) *Acute, time limited stressors*, such as going parachute jumping, awaiting surgery, or encountering a rattlesnake; (2) *Stressor sequences*, or series of events that occur over an extended period of time as the result of an initiating event such as job loss, divorce, or bereavement; (3) *Chronic intermittent stressors* such as conflict-filled visits to in-laws or sexual difficulties, which may occur once a day, once a week or once a month; and (4) *Chronic stressors* such as permanent disabilities, parental discord, or chronic job stress, which may or may not be initiated by a discrete event and which persist continuously for a long time (Lazarus & Folkman, 1984, pp. 150-151).

What is important to keep in mind, however, is that regardless of the intensity, duration, or chronicity of the stressor, responses will vary from one individual to another. "It is the observed stimulus-response relationship, not stimulus *or* response, that defines stress" (Lazarus & Folkman, 1984, p.15). Therefore, Lazarus and Folkman's definition of stress as "a particular relationship between the person and the environment that is *appraised* by the person as taxing

or exceeding his or her resources and endangering his or her well-being," (Lazarus & Folkman, 1984, p.19; emphasis added) was central to this study.

The key to this definition is the concept of appraisal. No two individuals appraise or perceive an event in exactly the same way... "What is mildly stressful for one individual may not affect another person at all and may appear to be an insurmountable obstacle to still another" (Frain & Valiga, 1979, p.51). Hence, the assessment of one's perception of a situation or event appears to be more relevant than simply calculating the total number of possible stressful events or stressors.

Perception of stress. Renowned for his work in the area of coping, Lazarus (1966) contends that perception or cognitive appraisal of the stressor is the key to understanding the psychological component of the stress response. In order to understand why people respond differently to comparable situations, one must consider the cognitive processes involved in the interaction as well as the factors affecting the mediation. To this end, Lazarus and Folkman (1984) have made a distinction between these two principal evaluative issues of appraisal.

Through the process of *primary appraisal*, stress can be classified as irrelevant, benign-positive, or stressful. Situations which have no implications for the well-being of the individual are defined as irrelevant. When the outcome is interpreted as positive, the appraisal is said to be benign-positive.

Characteristically, this type of appraisal involves emotions of pleasure such as happiness, love, or peacefulness.

Appraisals interpreted as stressful include threat, harm/loss, and challenge. Threat differs from harm/loss in that the harm or loss has not yet taken place, however, it is anticipated. Although this effects an adaptational advantage because threat permits anticipatory coping, it is nonetheless accompanied by negative emotions, such as worry, fear, and anxiety (Folkman & Lazarus, 1985).

Challenge is similar to threat in that it also mobilizes coping efforts. What is different however, is that challenge appraisals are characterized by positive emotions such as confidence, hopefulness, and eagerness (Folkman & Lazarus, 1985), because the focus is on the potential for growth or gain in the encounter. Furthermore, "the quality of functioning is apt to be better in challenge because the person feels more confident, less emotionally overwhelmed, and more capable of drawing on available resources than the person who is inhibited or blocked" (Lazarus & Folkman, 1984, p.34). In other words, "challenge involves a judgement that the demands of a transaction can be met and overcome" (Coyne & Lazarus, 1980, p.151). Hence, it is the perception of the stressor rather than the stressor itself that determines the stress response.

Secondary appraisal, according to Lazarus and Folkman (1984), is a misnomer, because it is neither less important, nor does it necessarily occur later in time than primary appraisal. As a complex process of evaluation that takes place when one is threatened or challenged, it includes the assessment of which coping alternatives are available, whether they will accomplish what they are intended to, and whether the strategies can be effectively applied by the individual. "Thus, the more an encounter unfolds, the more firmly the person should be making either a negative (harm) or a positive (benefit) appraisal at the outcome" (Folkman & Lazarus, 1985, p.154). Whereas, harm emotions include anger, sadness, disappointment, guilt, and disgust, benefit emotions of exhilaration, pleasure, happiness, and relief reflect a sense of mastery and gain.

Based on these earlier principles, Pollock's (1984) definition of stress was gleaned from a biologic and psychologic as well as a sociologic perspective: "the whole set of physiologic and psychologic phenomena including the objective event or stressor, the person's perception of the stressor, the conditioning factors or contextual stimuli, the various intervening processes or the residual stimuli, and the manifestations of response to the stressor"(p.3).

Adaptation. Pollock acknowledges the influence of two additional theorists in her original model. Helson (1964) applied the biological concept of adaptation to sensory physiology. In addition to *adaptation*, the concept of *level* was central

to his theory. He argued that adaptation is a two-way process..."Effects of stimulation initiate changes within the organism. These changes adapt the organism to prevailing conditions, but may also actuate the organism from within" (Helson, 1964, p.54). He described *adaptation* and *level* as coordinate terms..."for every state of adaptation corresponds to a given level of activity. Conversely, level of activity is a reflection of the state of adaptation" (Helson, 1964, p.55).

Sister Callista Roy (1971) borrowed much of Helson's work and adapted the concepts to nursing in the Roy Adaptation Model. Included in her model are three classes of stimuli. While the focal stimulus is defined as the stressor, or cause of the behaviour, the contextual and residual stimuli are the external and internal conditioning or mediating factors respectively (Helson, 1964; Roy, 1976). The process of perception is found in the cognator and regulator subsystems of Roy's model.

Pollock operationally defines the objective event or stressor as the actual chronic illness, while the contextual stimuli or intervening variables are selected demographics, such as age, sex, race, and social status. The residual stimulus is defined as the hardiness characteristic, and manifestations of the stress response are correlated with one's level of physiological and psychological adaptation. While Pollock's inclusion of perception under the umbrella of focal stimuli differs

from Roy, it simply reflects her contention that the appraisal of a stressor has an important bearing on the adaptational outcome. Like Roy, however, adaptation has been defined by Pollock as "a dynamic process between the individual and environment and was considered effective if it promoted the physiological, psychological, and social integrity of the person" (Pollock, 1984, p.54).

Thus, Pollock's original Adaptation Nursing Model integrated and synthesized concepts from Selye, Lazarus, Helson, and Roy. Although she does not define health and illness, Pollock acknowledges a positive relationship between stress and illness and further, that..."Stress is related to illness according to certain complex patterns that appear to depend on a variety of individual and situational variables" (Pollock, 1984, p.4). She views the client as a holistic being, and the health care provider as the facilitator of health care. In addition, "the greatest challenge faced by the nursing profession is assisting individuals in adapting to the stress of life in an increasingly complex society" (Pollock, 1984, p.11).

The concepts of subsequent Adaptation Nursing Models are more specific and hence her schematics are more appropriately termed theoretical frameworks. These frameworks reflect Pollock's interest and research in the area of chronic illnesses, which she defines as "conditions of long-term duration, not curable, and/or having some residual features that impose limitations on an individual's

functional capabilities" (Pollock, Christian & Sands, 1990, p.300). With specific reference to chronic illness, she describes adaptation as a complex process which "implies a balance between the demands of the situation and the ability of an individual to respond to the demands" (Pollock, et al. 1990, p.300)

Hardiness. An in-depth look at the hardiness construct is of foremost importance because it is an integral component of Pollock's model and the essence of this study.

The construct of hardiness is an integration of various theoretical and empirical leads, however, the existential theory of personality (Kobasa & Maddi, 1977) was central in its development (Kobasa, 1979). The emphasis of existentialism is on persons as beings-of-the-world who "continuously and dynamically construct personality through their actions" (Kobasa, 1982a, p.6). Although they portray life as constantly changing, and therefore, inevitably stressful, existentialists believe "that persons can rise to the challenges of their environment and turn stressful events into possibilities or opportunities for personal growth and benefit" (Kobasa, 1982a, p.6). Of particular interest, is that perception plays an important role in this personality theory... "Existential theory offers a definition of personality as healthy or ideal when it consists of characteristic interests, motivations, and values which influence the successful

perception and interpretation of and coping with stressful life events" (Kobasa, 1981, p.184).

Ultimate existential fulfilment, or authenticity, is attained through the utilization of self-reflection and self-discipline in meeting the challenges of life (Bigbee, 1985). Inauthenticity, or existential sickness, on the other hand, is characterized by a sense of meaninglessness, which results in irresponsible adventurousness and nihilism in its less extreme, and vegetativeness in its more extreme form (Kobasa & Maddi, 1977).

Consequently, Kobasa deductively derived an "amalgam of cognition, emotion, and action aimed at not only survival, but also the enrichment of life through development" (Kobasa, Maddi, & Courington, 1981, p.368), from this theory of personality. The personality style, which she so aptly termed *hardiness*, is a stress-resistant composite of three existential concepts: commitment, control, and challenge.

Kobasa's (1982b) definition of commitment as "the ability to believe in the truth, importance and interest value of what one is doing and the willingness to exercise influence or control in the personal and social situations in which one is involved" (p.708), is derived from the writings of her mentor (Maddi, 1967). This sense of purpose mitigates perceived threats from the stressful environment, thus

serving as a buffer against stress (Kobasa, 1979). Furthermore, committed individuals feel a social involvement, because they are able to turn to others in times of great pressure and are also there for others in need. Antonovsky (1982) refers to this sense of community and accountability as the most fundamental resistance resource against the impact of stress.

A sense of control, or belief that the course of events can be influenced by one's efforts or attributes, is derived from Rotter and associates' (1962) concept of locus of control. Kobasa (1979a) further specified three dimensions of control: coping skills - a repertoire of effective responses to stressful life events; decisional control - the ability to choose appropriate courses of action in dealing with stress; and cognitive control - the ability to interpret and incorporate stressful events into "an ongoing life plan" (p.3). Thus, "control enhances stress resistance perceptually by increasing the likelihood that events will be experienced as a natural outgrowth of one's actions and therefore, not as foreign, unexpected and overwhelming experiences" (Kobasa, et al. 1982a, p.169).

LaGreca (1985) identifies control as the "single most important factor of personality related to mitigating the effects of stress" (p.27). His contention is that people with a high sense of control not only cope better with stress, but are also more likely to engage in health promoting behaviour.

The challenge disposition, according to Kobasa, et al. (1982a), "is expressed as the belief that change rather than stability is normal in life and that the anticipation of changes are interesting incentives to growth rather than threats to security" (p.170). Furthermore, "challenge mitigates the stressfulness of events on the perceptual side by coloring events as stimulating rather than threatening, specifically because they require change and adjustment" (Kobasa, et al. 1982a, p.170). Thus, challenge effects coping through optimistic appraisal and decisive action to lessen the stressfulness of the event (Maddi, 1980).

It is important to note that Kobasa's definition of "challenge", as an integral component of the hardy personality, is quite different from Lazarus' interpretation of the same term as a descriptor of stress appraisal. Whereas, "Kobasa characterizes challenge as the tendency to value change and unpredictability in living... Lazarus conceptualizes challenge as a response to a particular stressful situation in which there is a potential for some significant gain under difficult odds" (Pagana, 1990, p.256). Therefore, the two uses of the term "challenge" should not be regarded as overlapping in meaning.

The concepts of commitment, control, and challenge are viewed by Kobasa, (1982a) not as mutually exclusive, but rather as "interlocking parts of an overall orientation or style of stress resistance - a style that can be termed hardiness" (p.8). The converse, however, according to Maddi, Hoover, and Kobasa (1982),

"brings intrinsic motivation into juxtaposition with alienation. To feel uninvolved (rather than committed), powerless (rather than in control), and threatened (rather than challenged) is to experience alienation" (p.885).

Although the first published model of hardiness (see Appendix D) presented a direct as well as an indirect effect of hardiness on strain, the subsequent and more popular model (see Appendix A) depicted the role of hardiness exclusively as a stress buffer, through its effect on successful coping. Topf (1989), on the other hand, proposed not only a stress buffering effect, but also a direct (negative) relationship between hardiness and occupational stress in critical care nurses (see Appendix E). Thus, like the Adaptation Nursing Model, most studies have focused on the buffering effect of hardiness on the stress-illness relationship.

Although existential theory, which constitutes the foundation of Kobasa's model, "offers a definition of personality as healthy or ideal when it consists of characteristic interests, motivations, and values which influence the successful *perception* and interpretation of and coping with stressful life events" (Kobasa, 1985, p.184; emphasis added), few studies have examined the relationship between hardiness and perception of the stressful event. Pollock not only acknowledges the stress buffering effect of hardiness through successful coping, but also recognizes the significance of perception of the stressful event on the

outcome or level of adaptation. Additionally, she postulates a significant effect of hardiness on the perception of the stressful event, and of perception on successful coping (see Appendix B).

Coping. Lazarus and Folkman (1984) define coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p.141). Hence, within the dynamics of stress, coping is viewed as a process which involves several stages. During the period of anticipation the stressful event has not yet occurred, and the individual must appraise what may happen. Coping strategies during this stage may include denial and avoidance or information seeking behaviors.

The impact period requires different coping strategies because the stressful event has begun or has just ended. Energies are focused on action and reaction as well as re-appraisal, or a re-assessment of its significance. This re-appraisal often persists in the post-impact period, when the individual is faced with the task of assessing the significance of the stressful event. Thus, coping is a "crucial determining factor in emotion and adaptive outcome" (Lazarus & Launier, 1978, p.302).

In her third variation of the Adaptation Nursing Model (see Appendix F), Pollock differentiated between the theoretical and the operational level of the model (Pollock, 1989b). A significant adjunct at the operational level of this framework was coping styles. Once again borrowing from the writings of Lazarus and Folkman, Pollock included problem and emotion-focused coping as significant intervening variables. An important difference between these two concepts is that problem-focused coping is directed at managing or changing the situation causing the distress, whereas emotion-focused coping "is directed at regulating emotional response to the problem" (Lazarus and Folkman, 1984, p.150).

Successful coping is a component of the Adaptation Nursing Model, however, it is not clearly defined, and is measured, circuitously, in only one of Pollock's published studies (1989b). It is possible that the title is simply a misnomer, and that the concept should in fact be entitled coping styles. Although coping was not central to this study, it will be explored in future studies.

Basic Tenets

Although not explicitly stated, several basic tenets or principles, originating from Selye, Lazarus, Antonovsky, Helson, and Roy's work can be gleaned from Pollock's writings:

*1. Stressors may be physical or psychologic.

2. The stress response is a physiological as well as a psychological concept (Pollock, 1984).

3. The general adaptation syndrome (GAS) explains the general nature of the stress response.

*4. "Human responses to the same stressor or stressful situation vary markedly as do adaptational outcomes" (Pollock, 1989a, p.53).

*5. "Perception of the stressor is as important as the nature of the stressor in determining the response of the organism" (Pollock, 1984. p.3).

6. Adaptation is a complex and dynamic process between the individual and the environment which involves "numerous internal and external factors that influence response and the subsequent level of adaptation established" (Pollock, 1989a, p. 53).

7. Adaptation is effective if it promotes the psychological, physiological, and social integrity of the person (Pollock, 1989a).

8. Adaptation is a function of the focal, contextual, and residual stimuli to which the individual is exposed (Pollock, 1989a).

9. "Adaptation to chronic illness is a complex process involving internal and external factors that influence response and subsequent level of adaptation to the illness" (Pollock, 1986, p.90).

Additionally, the following assumptions, derived from the holistic health movement, appear to have been adopted by Pollock...

10. "The concept of health as the integration of mind, body and spirit;

11. Emphasis on perceiving the individual as a 'whole' being;

12. The idea that each person has the capacity and responsibility for personal health potential; and

13. The concept that the client is the controlling partner, with the health care provider acting as the facilitator of health care" (Pollock, 1984, p.11).

These basic tenets encompass the global concepts of health, nursing, environment, and person and therefore appear to be congruent with the philosophical bases of nursing models. They also appear to be valid and consistent with one another. Hence, these tenets establish a solid foundation for the Adaptation Nursing Model. However, because this study focused on a small portion of the model, only three of these assumptions (marked with asterisk*) were central in this investigation.

Summary

In Pollock's most recent conceptual framework (see Appendix B), the relationships between the concepts are readily apparent. The moderating effect of hardiness is clearly illustrated and supported by empirical evidence...

...hardiness may indirectly affect adaptation to chronic illness by influencing the individual's perception of the stressor (chronic illness), the coping strategies chosen, or the social resources used. Perception and the use of social resources were also significantly

related to the presence of hardiness in the study of healthy adults (Pollock, 1989a, p.59).

Hence, with minor changes, Pollock's Adaptation Nursing Model was easily adapted to this study. The objective events or stressors were defined as stressful work events rather than chronic illness. The contextual stimuli or intervening variables included selected demographics, such as age, education, employment status, and years of experience. Like Pollock's model, the residual stimulus was defined as the hardiness characteristic. Empirical evidence of the relationships between these variables is paramount to establishing support for the model, as well as a solid foundation for future research. Subsequent studies will examine the coping/adaptation component of the model, in addition to the relationship of hardiness with other resistance resources, such as social support and constitution.

DEFINITION OF TERMS

1. STRESS or GLOBAL STRESS: the whole set of physiologic and psychologic phenomena including the objective event or stressor, the person's perception of the stressor, the conditioning factors or contextual stimuli, the various intervening processes or the residual stimuli, and the manifestations of the response (Pollock, 1984, p.3); operationally defined by the Perceived Stress Scale.

2. STRESSORS or STRESSFUL EVENTS: objective events/external stimuli which threaten physical or emotional homeostasis (Selye). *Actual* stressors are operationally defined by scores obtained on the frequency component of the Critical Care Nursing Stress Scale. *Global* stressors are defined as situations in one's life which are appraised as stressful. Perception of global stress is operationally defined by scores obtained on the Perceived Stress Scale.

3. PERCEPTION: or cognitive appraisal is an evaluative process that determines why and to what extent a particular transaction or series of transactions between the person and the environment is stressful (Lazarus & Folkman, 1984, p.19); operationally defined by the perceived threat and challenge scores, as well as the frequency x intensity scores of the Critical Care Nursing Stress Scale.

4. HARDINESS: a composite personality characteristic, comprised of the three main elements of control, commitment, and challenge, that functions as a resistance resource in the encounter with stressful events (Kobasa, 1979a); operationally defined by scores obtained on the Personal Views Survey II (1991).

CHAPTER II: REVIEW OF RELATED LITERATURE

The following review of the literature focuses on the concepts of stress and hardiness. Only those stress studies which have specific relevance to the proposed study have been examined, however, a comprehensive review of hardiness research has been undertaken.

STRESS

Stress has been acknowledged as a significant problem in nursing for more than four decades. In an effort to resolve the question of why nurses leave their jobs, Diamond and Fox (1958) reviewed studies on nursing turnover dating back to 1948. Although they found that approximately two-thirds of staff nurses resigned for personal reasons, the remaining third were motivated to leave for reasons related to the job. "Areas of job dissatisfaction identified by staff nurses as primary reasons for resigning included: salaries, hours, work-load, general personnel policies, job security, opportunities for advancement, and relationships between supervisors and staff nurses" (Diamond & Fox, 1958, p.391). The following review of more recent nursing stress studies exhibits a startling similarity with these findings.

Stressors/Stressful Events

A review of recent stress research within ICU and non-ICU work environments revealed that a vast number of stressors have been identified by nurses. Moreover, diverse strategies have been utilized to measure nursing stress in the workplace. To allay this confusion, an informal qualitative study exploring various aspects of stress in female critical care nurses working in a major tertiary care institution was undertaken by the author (Sawatzky, 1991). The data from this pilot study was then used as a baseline for comparison of other nursing stress studies.

Using their own instrument, the Work-Related Stressors Questionnaire (WRSQ), Robinson and Lewis (1990) identified work-related stressors as internal and external. The authors utilized a large sample size of critical care nurses from facilities with more than 400 beds, of whom approximately 70 percent were female. Overall, lack of reward ranked the highest, both in total responses and in perceived severity of work related stressors.

Harris (1984) recognized the impact of external as well as internal rewards on nursing stress. In addition to salary and benefits, he reported shift work, lack of status and prestige, and insufficient learning opportunities as examples of inadequate rewards cited by nurses. This last point related to education concurs

with the recommendations of a recent Canadian study that more entry level and ongoing education is needed in critical care (Shortridge & Koprowy, 1989).

Failure of physicians to recognize their skill and expertise was also reported by Harris (1984) to be stressful for critical care nurses. This concurs with the author's pilot project (Sawatzky, 1991), as well as the findings of Gentry and Parkes (1982). The primary source of stress identified in Gentry and Parkes' (1982) study, however, was workload. This factor may be situation specific. For example, although there seem to be staffing shortages everywhere, there is still considerable variation from place to place. Perception also plays an important role, because what is perceived as adequate staffing in one unit, may be regarded as grossly inadequate in another. Gentry and Parkes (1982) also identified caring for dying patients as a significant stressor for ICU nurses. This coincides not only with the author's (Sawatzky, 1991) findings, but also with the results of another Canadian study (Vachon, 1984).

Vachon (1984) utilized a qualitative, phenomenological approach to examine occupational stress in the care of the critically ill and dying. In her comparison of Palliative Care and ICU caregivers, she found that the sources of stress came primarily from four areas: illness, patient/family, occupational role, and the environment. Although more ICU nurses found illness to be stressful, dividing this stressor into two categories revealed a significant difference in the

type of illness perceived as stressful by the two groups. For example, the Palliative Care staff perceived the type of illness as stressful only if it caused disfigurement or a major personality change. On the other hand, ICU nurses found "unnecessary" illnesses such as attempted suicides, accidents, and iatrogenic illnesses difficult to deal with.

Both groups in Vachon's (1984) study, however, identified the trajectory of the illness or death as stressful. Unexpected death, for example, was perceived as a major stressor by both groups. ICU nurses also reported the unnecessary prolongation of life, difficult deaths (ie. where the patient was in pain), and slow deaths (ie. chronic patients with multisystem failure) as being stressful.

Families that appeared to have personality problems and were therefore difficult to deal with, were perceived as significant sources of stress, as were patients who did not appear to be coping well with their disease. Situations where the staff could identify with the patients were also classified as stress provoking for both groups.

Role difficulties within the team structure were rated as the most difficult in terms of role stress, for both groups in Vachon's (1984) study. The unit operation also accounted for a large proportion of the stressors reported, both in the ICU and in Palliative Care. Similar to the findings of others (Oskins, 1979;

Sawatzky, 1991), inadequate and unqualified medical and nursing staff were also cited as significant stressors in the ICU.

Measuring Critical Care Nursing Stress

Several investigators of critical care nursing stress (Anderson & Basteyns, 1981; Dewe, 1989; Gribbons & Marshall, 1982; Huckabay & Jagla, 1979; McGrath, Reid & Boore, 1989; Oskins, 1979; Rosenthal, Schmid & Black, 1989; Spoth & Konewko, 1987), have developed and utilized their own stress measurement instruments. In addition, studies involving this population often focus on specific stressors such as noise (Topf & Dillon, 1988), ethical issues (Rosenthal, et al. 1989), and shiftwork (Harma, Ilmarinen & Knauth, 1988).) Most of these instruments originated from unstructured interviews or critical incident techniques and are typically used solely by the creator(s). Hence, with little replication or psychometric analysis, selection of an instrument to measure any aspect of stress in critical care nurses is at best tenuous.

There are, however, several measures which have been tested and are familiar components of nursing stress studies. The Nursing Stress Index (NSI), for example, was developed as "a diagnostic measure for identifying sources of stress" (Harris, 1989, p.343) or stressors. Although it was found to have acceptable reliability, weaknesses were identified in its content validity. Furthermore, the

sources of stress were drawn from staff and management level nurses, not critical care nurses.

Similarly, the Nursing Stress Scale (NSS; Gray-Toft & Anderson, 1981) was conceived from interviews, diaries, and group meetings with staff nurses and managers. Hence, it focuses on general nursing stressors and therefore does not recognize stressors specific to critical care. Although the NSS purports to measure perception of stressors by using a 4-point Likert scale to assess how often a situation is found to be stressful, this type of question effects ambiguity, because it reflects how often the situation was perceived as stressful, but not how often it actually happened.

The Stress Audit (Bailey, et al. 1980) was part of a research strategy to obtain data on stressors of critical care nurses. Although the goal was not to design a stress measurement instrument for critical care nurses, the free responses of approximately 1800 ICU nurses established a convincing data base of critical care nursing stressors. Interestingly, the stressors listed in the Stress Audit coincided with those identified in the author's pilot study. This established a sound rationale for its utilization as the foundation for this study's work stressor measurement.

The Stress Audit has also been utilized as the basis for other stress measures. Kelly and Cross (1985), for example, used the variables from the Stress Audit to compare stressors in non-intensive care and intensive care nurses. The only apparent drawback is that it does not acknowledge the significance of perception in the measurement of critical care nursing stress.

Perception of Stressful Events

> "Stress is endemic to modern life; many highly rewarding activities involve stress - from vacations, to a career change, to going through a divorce" (Holahan & Moos, 1985, p.746).

Perception, or cognitive appraisal of stressful events, has been identified as central to the proposed study. Most studies, however,

> ...use traditional rating scales in a way which rather than actually measure demand simply imply that a particular situation or event has been rated as demanding. In other words the reporting of a stressor is more often than not simply assumed to mean that stress was experienced. Few attempts are made to consider the way in which different aspects of a demanding event are perceived other than requiring a respondent to either comment on the frequency of

> potentially stressful situations or to agree or disagree that such events are present in work settings (Dewe, 1989, p.309).

In other words, different perceptions of stressful events are not really being measured. From personal experience and observations, the author has also found that the presence of a situation that has been labelled as stressful by one nurse, does not necessarily mean it is a perceived stressor to another. For example, work space in intensive care units is generally limited. Some nurses perceive this to be a stressor, however, others do not. Hence, to simply ask nurses to agree or disagree that it is crowded would produce erroneous results. Furthermore, because one may be slightly or extremely affected by this potential stressor, simply measuring frequency would also be inappropriate.

The definition and subsequent measurement of stress perception are largely dependent on the theoretical underpinnings of the research project. For example, perception of stress has been measured by asking participants to indicate the degree of stressfulness of an event and the frequency of its occurrence (Cross & Fallon, 1985; Leatt & Schneck, 1980; Spoth & Konewko, 1987). However, based on Shirom's (1982) conceptualization of organizational stress, Dewe (1989) purports that, in addition to frequency, the outcome measures of tension and tiredness should be considered as indicators of excess demand.

Gannon and Pardie (1989), on the other hand, measured chronicity and controllability of stress in the context of the stress-illness relationship. Although frequency was found to be the best indicator of illness, "for women, chronicity and controllability of stress accounted for a significant amount of the variance in health outcomes over and above that accounted for by the number of stressors endorsed" (Gannon & Pardie, 1989, p.357). An important and timely comment at this point is the author's observation of inconsistency in stress language in the literature. These authors, for example, have used the terms of stress and stressors interchangeably. The confusion that results because of this capricious use of terminology is a limiting factor, not only in the interpretation, but also in the generalizability of research results. Although easily avoided by clearly stated definitions of terms in the conceptual framework, this problem is recurrent in stress research.

Suls and Mullen (1981) examined the role of perceived control and desirability in life change and psychological distress. Their findings were that only events perceived as both uncontrollable and undesirable correlated positively with symptoms of psychological distress. Similarly, Vinokur and Selzer (1975) found that the quality of life events in terms of their desirability, rather than simply the life change produced by the events, was the crucial determinant of stress and mental distress.

The measurement of stressor perception in critical care nurses was pioneered by Cassem and Hackett (1972). Their sample of 16 coronary care unit (CCU) nurses was asked to rate potentially stressful situations, not only in terms of frequency of occurrence, but also in terms of intensity (ie. mild, moderate, severe). In addition to frequency and stressfulness, Rosenthal and associates (1989) measured perception of stressors in neonatal ICUs (NICUs) by questioning the perceived controllability of common NICU situations.

Although the first two hardiness studies published by Kobasa and her associates (Kobasa, 1979; Kobasa, et al. 1979) did, in fact, contain measures of stress perception, the role of perception in these studies was a minor one, with little attention paid to the perception-related results. Hence, Rhodewalt and Agustsdottir's (1984) study is noteworthy, because it is the first published investigation to focus on the relationship between hardiness and the perception of stressful life events. In addition to measures of Type A behaviour, hardiness, and psychological distress, they administered an adapted version of the Holmes and Rahe (1967) Schedule of Recent Life Events (SofRLE) to a mixed sample of undergraduate college students. Participants were asked to report each event experienced within the past 12 months, as well as to rate its desirability, controllability, and foreseeability. They reported that hardy individuals do not experience events that are qualitatively different, but rather that they tend to perceive experienced life events as positive and within their control. In the context

of Lazarus' theory of stress appraisal, these events may have been interpreted as challenging, rather than threatening.

Similarly, Rhodewalt and Zone (1989) reported that "it is possible that benign appraisals cushioned hardy women from experiencing levels of negative life change sufficient to be disruptive" (p.86). The component of foreseeability was, however, eliminated from their measure of stress perception. Their study is particularly relevant, because not only did it involve a population of adult women, but similar to this study, it also examined the impact of hardiness on "stressful life change through the appraisal and interpretation of life experiences" (Rhodewalt & Zone, 1989, p.81).

Because multiple regression analysis reflected no significant interaction between hardiness and stress in the prediction of illness, Roth and his associates (Roth, Wiebe, Fillingim, & Shay, 1989) used structural equations to assess other possible mediator effects. LISREL VI analysis results suggested that the positive health effects of the hardiness characteristic may be the result of the interpretation of the stressful life event.

Lazarus' conceptualization of cognitive appraisal of a stressful event was a guiding force in Pollock's (1989a) study of adaptive responses to chronic illness. With the Stress Questionnaire (Folkman & Lazarus, 1985), she was able to assess

not only the primary or anticipatory appraisal of threat and challenge, but also the outcome alternatives of harm or benefit. This instrument utilizes a Likert scale to indicate the extent to which the subject has experienced the 15 anticipatory and outcome emotions listed. Although Pollock found a significant relationship between total hardiness and the outcome appraisals of harm and benefit ($r=-.49$. $p<.05$), there were no significant relationships between hardiness and the anticipatory appraisals of threat and challenge. Given that Lazarus' definition of challenge differs from Kobasa's, may, in part explain the absence of a correlation between hardiness and challenge in this context.

Pagana (1989) modified the Stress Questionnaire (Folkman & Lazarus, 1985) by adding five items/emotions to the instrument. The resulting Clinical Stress Questionnaire (CSQ) was "more specific to the stressor of a clinical nursing experience" (Pagana, 1989, p.170). Although this instrument included scales of harm and benefit, Pagana eliminated these outcome emotions in a subsequent study, in which she explored the relationship of stress appraisal in nursing students' initial clinical nursing situation to hardiness and social support (Pagana, 1990). Using Lazarus' theory that a stressful situation is appraised as either a threat or a challenge, "a statistically significant, but low, positive correlation was found between challenge and hardiness" (0.23, $p<.001$; Pagana, 1990, p.259). Similarly, results of an investigation into the impact of a military air disaster on the health of assistance workers led to the conclusion by Bartone and his

associates (Bartone, Ursano, Wright, & Ingraham, 1989) that individuals high in hardiness "adjust more readily to the chaos and confusion of disaster situations, and are more apt to perceive challenges and opportunities for growth, where others see only threat and disruption" (p.324).

The purpose of Oskin's (1979) study was "to identify specific perceptions dealing with stress and coping in a group of intensive care nurses" (p.953). She utilized Lazarus' conceptualization of stress appraisal as the framework for her study, as well as in the development of her measurement instrument. Subjects were presented with 12 potentially stressful situations, and then asked if they perceived the situation as stressful. Based on Lazarus' contention that one's primary appraisal of a stressful event is not necessarily negative, Oskins also asked if they believed that the situation would be a threat or a challenge. This approach appears to be a more accurate reflection of one's cognitive appraisal of a stressful event because it does not assume that specific emotions are linked to the perception of threat versus challenge.

Perception of Global Stress

The nursing stress studies reviewed examined only work-related stressors, however, because stress is experienced in all aspects of one's life, it is important to explore personal life stress as well. This is supported by the findings of early nursing stress research that two-thirds of nursing resignations were motivated by

personal reasons (Diamond and Fox, 1958). Moreover, results of the Framingham Heart Study (Haynes & Feinleib, 1980) that working women experienced more daily stress, aging worries, and marital dissatisfaction than either housewives or men, led the investigators to conclude "that the dual roles of employment and raising a family may produce excessive demands on working women" (Haynes & Feinleib, 1980, p.139). Specific to nursing, it has been suggested that life event changes or personal stressors may contribute to burnout (Cronin-Stubbs, 1982).

Although numerous instruments have been utilized to measure life stress, the Schedule of Recent Life Events (SofRLE; Holmes & Rahe, 1967) is the classic and probably the most frequently used measure of stressful life events. Kobasa, for example, has employed this instrument in most of her hardiness studies. Although there are clear advantages to this objective measure of stressful events, the SofRLE is not without criticism. For example, Cohen, Kamarck, and Mermelstein (1983) argue that "the use of objective measures of stress implies that events are, in and of themselves, the precipitating cause of pathology and illness behaviour (p.386). Furthermore, this perspective does not consider that the cognitive appraisal of the stressful event may not be negative.

Additionally, the SofRLE contains only fairly major life changes and events. Kanner and his associates argue that everyday hassles are much more predictive of psychological symptoms (Kanner, Coyne, Schaefer, & Lazarus, 1981). Their

comparison study of daily hassles and uplifts versus major life events lends support to this contention.

The Life Experiences Survey (LES) (Sarason, Johnson & Siegal, 1978) is a 57 item self-report questionnaire which has been adapted from the SofRLE. The LES differs from the original scale in that it provides respondents with the opportunity to distinguish between the positive and negative personal life events experienced within the past year, as well as to rate the impact of these stressors on a 7 point scale ranging from -3 to +3. Although its psychometric properties are not discussed, several hardiness studies have used this measure of stressful life events (Banks & Gannon, 1988; Ganellen & Blaney, 1984; Roth, et al. 1989; Wiebe & McCallum, 1986).

In addition to the LES, Banks and Gannon (1988) employed a measure of daily hassles in their hardiness study. The interesting and relevant finding was that "hassles consistently accounted for a significant portion of the variance in somatic symptoms over and above that accounted for by life events" (p.36). They also found the relationship between life events and hassles to be positive and significant, therefore leading to the conclusion that assessing both daily hassles and stressful life events is imperative in studies of the stress-illness relationship.

The Perceived Stress Scale (PSS; Cohen, et al. 1983) is based on the assumption that the stress response "is not based solely on the intensity or any other inherent quality of the event, but rather is dependent on personal and contextual factors as well" (p.386). This 14-item scale measures the degree to which nonspecific situations in the respondents lives are appraised as stressful, that is, unpredictable, uncontrollable and overwhelming. Hence, the PSS taps emotions and cognitions related to general, or global stress, rather than specific stressful events or situations. In fact, according to Cohen and his associates (1983), this scale "is sensitive to chronic stress deriving from ongoing life circumstances, to stress from expectations concerning future events, to stress from events not listed on a particular life-events scale, and to reactions to the specific events included on any scale" (p.387).

The PSS was employed in a comparison study of job stress and mental well-being among American, Japanese, and Indian managers (DeFrank, Ivancevich, & Schweiger, 1988). Of particular relevance to this study, was the finding that this measure of global stress correlated highly with measures of tension, ill health, and dissatisfaction in all three groups. The PSS has also been found to correlate significantly with both depression and physical symptomatology (Cohen, et al. 1983; Gotlib & Whiffen, 1989).

Similarly, Kuiper, Olinger, and Lyons (1986) found that global levels of stress moderated the relationship between depression and negative life events. Their interpretation of these results in terms of Lazarus' work was that "individuals with a high level of global stress may perceive a general inability to cope with additional negative events and may view these events as completely overwhelming" (Kuiper, et al. 1986, p.153).

This measure of perceived stress is of particular interest because it has been employed in at least one hardiness study (Hills & Norvell, 1991). Although these investigators also reported that "the Perceived Stress Scale emerged as an important predictor of the outcome measures over the other stress-assessment measures... employed" (Hills & Norvell, 1991, p.37), this measurement tool has met with some criticism.

Lazarus and associates (1985) argue that the PSS is a confounding measure because although it is reported to correlate well with outcome measures of symptomatology, several items of the scale measure reactions to stress. Hence, "the antecedent and consequent measures seem to overlap entirely, making it questionable whether the correlation provides any gains in knowledge" (Lazarus, et al. 1985, p.771). Cohen, et al. (1983) acknowledged that there may be some overlap between their measure of depressive symptomatology (Center for Epidemiologic Studies Depression Scale; CES-D; Radloff, 1977) and what is

measured by the PSS, hence, partial correlations were calculated. This procedure revealed that "even with the very high correlation between the PSS and the CES-D, both scales still independently predicted physical symptomatology (Cohen, et al. 1983, p.391). Because Pollock's definition of stress is based on Lazarus' conceptualization of stress as a process which includes antecedents as well as consequences, this measure of global stress is, in fact in keeping with the Adaptation Nursing Model employed in this study.

In summary, although nursing literature is replete with the description of situational work stressors, particularly, in the critical care environment, seldom is the significance of perception, or cognitive appraisal of these stressors acknowledged. Furthermore, the impact of perceived personal life or global stress on the individual is at best inadequately measured, and more often simply overlooked. On the other hand, the effect of the individual's personality on the actual stressor or the perception of the stressful event must also be considered. This leads to a review of hardiness-related literature.

HARDINESS

Initial hardiness studies were done exclusively with male populations. Kobasa and her associates used male executives "in the hope of maximizing the chance of observing individuals high in stressful life events with a range of illness

scores" (Kobasa, 1982a, p.8). It was not long, however, before hardiness research expanded to mixed (male and female), as well as to female populations. Because the occupational stress experienced by the nursing profession is widely recognized and accepted, it would seem logical to select this predominantly female group as the complement to the male executive studies. There has, however, been a paucity of hardiness research in this population, particularly in the realm of critical care.

Kobasa's (1979b) dissertation study established the foundation for hardiness research with the initial empirical support for this personality characteristic as a stress resistance resource. In this retrospective study, highly stressed male executives (N=162) were divided into groups of high and low physical illness symptoms. As hypothesized, higher hardiness scores were found in the low illness group than in the high illness group. Several additional studies (Kobasa, 1979a; Kobasa, 1982a; Kobasa, et al. 1979; Kobasa, et al. 1981; Kobasa, et al. 1982; Kobasa, et al. 1985; Kobasa, et al. 1983) provided supplementary support for this hypothesis, however, it is important to note that the same subject pool, rather than independent data sets were utilized in all of these reports.

Although perception of stress in several areas of life (work, financial concerns, interpersonal relationships, family, social/ community involvements, and personal or inner life concerns) was measured with a 7-point Likert scale in

this original study, minimal differences were found between the high and low physical illness symptom groups. However, findings related to stress perception were that "for the same objective levels of stress, subjects who do not become ill feel less threatened subjectively than do subjects who do become ill" (Kobasa, et al. 1979, p.597). The implications of these results in relation to hardiness are not discussed, nor is perception of stress explored in Kobasa's subsequent work.

Kobasa and associates (1979) expanded on the original study with a prospective design. Consistent with earlier results, the overall (Pearson product) correlation between stress and illness was found to be moderately low (0.24; $p < .025$). Furthermore, in a comparison of the high stress/low illness and high stress/high illness groups by discriminant function analysis, the high stress/low illness subjects were found to possess more of the control, commitment, and challenge characteristics of hardiness. The overall and work stresses rose steadily over the course of the three year study, with the sizeable amount of non-work stress being attributed to family, social, and personal factors (Kobasa, et al. 1979). Although these results are consistent with Kobasa's original study, it is important to infer correlation and not causation from these descriptive results.

In a prospective effort to support causal inferences, Kobasa and her associates (Kobasa, et al. 1981) investigated the roles of hardiness and constitution on stress resistance. Analysis of variance and covariance supported the hypothesis

that hardiness functions prospectively as a resistance resource. Constitutional predisposition (measured by parents' illness) and stressful life events, on the other hand, were found to increase vulnerability to disease.

Although results of the prospective extension of the previous study to five years (Kobasa, et al. 1982b) lends support to earlier results of the stress buffering effect of hardiness, a revised and shorter measure of hardiness was utilized. Further efforts to improve the tool itself, as well as its applicability to different populations, have resulted in several versions and variations of hardiness instruments. Moreover, in addition to the composite, numerous authors have reported results of the individual subscales for control, commitment, and challenge.

The relationship between hardiness and Type A behaviour in male populations has been the focus of several studies. Findings of a retrospective study by Kobasa and her associates (1983) support the empirical independence of these two personality orientations, with hardiness protecting health and Type A behaviour increasing the likelihood of illnesses such as coronary heart disease. Furthermore, persons high in Type A behaviour and low in hardiness demonstrated the greatest health deterioration when faced with mounting stressful events. Howard, Cunningham, and Rechnitzer (1985) and Contrada (1989) achieved comparable results with male populations, however, measurement

instruments varied across all three studies, as did the actual research designs. Inconsistency in design and data collection threatens the external validity of research results.

Rhodewalt and Agustsdottir (1984) and Nowak's (1986) findings also coincided with those of Kobasa and her associates, however, their populations were mixed, and psychiatric distress rather than physical illness measures were utilized. In addition, Rhodewalt and Agustsdottir (1984) employed an abridged version of Kobasa's (1982a) Hardiness Instrument. Their study is noteworthy because they acknowledge the significance of stress perception: "Whereas hardiness appears to mitigate the effects of stress on health status through perceptual factors, the Type A seems to increase health risk through responsiveness to the control dimension of life events" (Rhodewalt & Agustsdottir, 1984, p.221). In other words, hardy individuals tended to perceive events as positive and within their control. Type A's on the other hand, were more disrupted by situations perceived as not within their control.

The findings of the aforementioned hardiness/Type A studies are of particular interest because Type A behaviour is commonly regarded as an inherent characteristic of critical care nurses (Levine, Wilson & Guido, 1988). However, conflicting results that neither hardiness, nor Type A is related to illness (Schmied & Lawler, 1986) and that hardy Type A's experience significantly

less burnout than their non-hardy Type A counterparts (Nowak, 1986), simply reinforce the need for further research in this area.

Hardiness was hypothesized by Hills and Norvell (1991) to moderate the relationship between the perception of stress and its consequences in male highway patrol officers. The results, however, reflected that the main effects of hardiness were more pronounced than the moderating influences in predicting the outcome of burnout. Although this distinction, between the moderating or buffering effect versus the main effect of hardiness in the stress-illness relationship is an important one, it is often overlooked. In Pollock's Adaptation Nursing Model, for example, hardiness acts as a buffer by its influence on the perception of the chronic illness and successful coping. Thus, indirectly it reduces the impact or outcome variable of adaptation. The main effect of hardiness, on the other hand, is best described as a direct effect on the outcome variable.

Of particular relevance to this study is that Hills and Norvell (1991) employed a measure of perception of stressful work events, as well as the Perceived Stress Scale (PSS). The PSS emerged as a significant predictor of the outcomes of burnout and physical symptoms over the other stress assessment measures employed in their study. Results suggest that the PSS may provide an accurate assessment of perceived stress in and of itself.

Several researchers have investigated the relationship between the resistance resources of hardiness and social support. Qualitative (structured interviews) and quantitative (questionnaires) measures were utilized in a recent study of 103 gay and bisexual men with acquired immunodeficiency syndrome (AIDS) and AIDS related complex (ARC; Zich & Temoshok, 1987). Positive correlations between social support and hardiness were discovered in the overall data analysis. When hardiness was analyzed by its components, commitment was most and challenge least consistently correlated with social support. This lends support to Kobasa's depiction that "committed persons feel an involvement with others" (Kobasa, 1979a, p.4). Whereas, based on Kobasa's conceptualization of challenge as the propensity for change, it is not surprising that this concept would not correlate with social support. These results reinforce the importance of examining not only the composite, but also the component parts of hardiness. Finally, although the results of this study are well supported, the generalizability to diverse populations is limited because of the homogeneity of its population.

Consistent with earlier work, Kobasa and an associate (Kobasa & Puccetti, 1983) utilized composite scores to measure hardiness and a three way (stressful life events, hardiness, and social resources) analysis to test their hypothesis. The prediction of less illness in highly stressed male executives with high hardiness and social resource scores was confirmed with respect to perceived support from their superiors but not to other social support variables in this ex-post-facto

approach. This modest buffering effect of social support coincides with the findings of a subsequent study led by Kobasa (Kobasa, et al. 1985).

Although Kobasa and her associates have not utilized mixed populations, numerous other researchers have selected male and female populations. For example, convenience samples of male and female subjects have been utilized to examine relationships between health behaviours and hardiness (Daniel, 1987; Nagy & Nix, 1989; Roth, et al. 1989; Wiebe & McCallum, 1986). Although different data analysis methods (path versus multivariate) were utilized, Wiebe & McCallum (1986) and Roth, et al. (1989) both found that hardiness did not appear to have a stress buffering effect on illness, but rather that its effects on illness were independent of its effects on stress. In other words, although hardiness was found to be related to health status, this relationship was not based on the impact of hardiness on stress. These results, which are contrary to previous studies, may be due to differences in research design and populations.

Although correlations between the variables of hardiness and exercise were only 0.12 in Daniel's (1987) study, Nagy & Nix (1989) reported a correlation of 0.38. This contrasts with previous findings of no correlations ($r = 0.009$) between hardiness and exercise (Kobasa, et al. 1982b), but rather an additive buffering effect, in that hardy persons who exercise are the healthiest. Kobasa and her associates (Kobasa, et al. 1985) found that the addition of social support as a third

resistance resource offered further protection to a person's health (Kobasa, et al. 1985), thus supporting the importance of multiple resistance resources. However, the buffering effects of social support and exercise were "relatively small compared to the contribution of hardiness" (Kobasa, et al. 1985, p.531).

Significant correlations between hardiness and measures of happiness (MUNSCH scores of -0.35, $p < .001$ and -0.23, $p < .001$) were found in a one year longitudinal study of older adults (McNeil, Kozma, Stones & Hannah, 1986). The dual intent of this study was to test a twenty item short form of Kobasa's (1982) Hardiness Instrument. The hierarchical structure, high test-retest reliability and evidence of concurrent validity were encouraging, however moderate internal consistency estimates (alpha= 0.64 & 0.67) were of some concern (McNeil, et al. 1986).

In a recent Canadian study (Hannah & Morrissey, 1987), this same measurement tool was utilized with an adolescent population. Results indicated that hardiness is clearly perceptible and measurable by the age of early adolescence. It is also interesting to note that they found females to be significantly more hardy than males ($t [315] = 3.97$. $p < .001$). This is the reverse of previous findings (McNeil, et al. 1986) of hardiness being higher in males ($p < .01$), in an older adult (>60 years) population.

Although unpublished, Kobasa and Hill have tested the generalizability of previous hardiness and stress resistance findings in the homogenous female population of gynecology outpatients (Kobasa, 1982a). The high stress/low symptom group of forty women reported higher levels of commitment, control, and challenge than did the sixty high stress/high symptom group. Although these results support the findings of previous studies, it is important to note that psychiatric and not physical symptoms were measured.

Findings by Ganellen & Blaney (1984), who also selected a female population and a psychiatric measure of symptoms, suggested a differential relationship between the three components of hardiness and social support. Specifically, they found a strong correlation between commitment and challenge, but no relationship between the control component and social support. This raises the question of whether information is lost when hardiness is analyzed solely as a composite measure.

Secretaries (N=82) were selected by Schmied & Lawler (1986) as representative of the general female population. Stress, illness, Type A behaviour, and hardiness (utilizing Kobasa et al.'s 1983 revised composite scale) were measured with structured interviews and questionnaires. Although lower hardiness scores were associated with experiencing more stressful life events ($r=0.39$, $p \leq .0001$), contrary to numerous previous reports, hardiness did not

demonstrate a buffering effect on the stress-illness relationship. Furthermore, higher levels of hardiness correlated with being older ($r = 0.39$, $p = .003$), more educated ($r = 0.21$, $p = .06$), and married ($r = 0.26$, $p = .02$), which contrasts with consistent findings by Kobasa of no relationship between hardiness and demographic variables. These results led the authors to question the generalizability of hardiness to females.

Rhodewalt and Zone (1989), however, found hardiness effects to be similar for women. Furthermore, the demographic characteristics of their study population appear to be more consistent with the current study population. They recruited 212 former college students to investigate whether hardiness buffered individuals against life change through their appraisal and interpretation of life events. 74.4% of their exclusively female population were college graduates, 53% were between the ages of 30 and 35, and 88% were currently in the work force. Their "findings revealed that although there was no association between hardiness and the likelihood of reporting any particular life event, hardy and non-hardy individuals differed dramatically in both the number of events they appraised as negative and the average amount of adjustment required for each event" (Rhodewalt & Zone, 1989, p.86).

Pagana (1990) examined stress appraisal of female nursing students' initial clinical experience and its relationship to hardiness and social support. Based on

Lazarus' theory of cognitive appraisal of stress, she assessed the students (N=246) primary appraisal of this stressful situation (with the CSQ), as well as the mediating role of hardiness (with the third generation hardiness test) and social support (with the Norbeck Social Support Questionnaire; NSSQ). Although the hypothesis that students who appraised the initial clinical experience as a challenge would have higher hardiness scores was weakly supported ($r=0.23$, $p<.001$), there was less support for the hypothesis of a negative relationship between hardiness and threat ($r=-.11$, $p=.04$). The assertion, however, was that because of the large sample size the differences were in fact significant. Pagana's recommendation was that further hardiness research be done with patients, students, and nurses.

There is a growing interest in the potential significance of hardiness to nursing practice (Lee, 1983; Lambert & Lambert, 1987; Bigbee, 1985), however, few studies have examined this personality characteristic in nurses. In a questionnaire study of 100 female nurses (Rich & Rich, 1987), using the Staff Burnout Scale for Health Professionals (SPS-HP) and Kobasa's (1982a) Hardiness Instrument, only one difference was apparent in comparison with Kobasa's (1979a) study of male executives. The nurses scored higher on external locus of control ($x = 9.15$) than did the executive sample ($x = 5.92$). Furthermore, regression analysis revealed that low hardiness and young age best predicted high burnout scores.

Using a revised Hardiness Instrument (Kobasa, Maddi, Donner, Merrick, & White, 1984), the Tedium (burnout) Scale, and the Nursing Stress Scale (NSS), McCranie, Lambert and Lambert (1987) also found that nurses who reported more burnout exhibited less hardiness. The moderating effect of hardiness in the prevention of high levels of job stress, was however, not observed. This discrepancy with previous studies may be related to the utilization of different measurement instruments. Moreover, unlike Kobasa's studies, a female population was utilized and job stressors (versus general life event stressors) were measured.

There is an ongoing controversy as to whether nursing in the critical care/ICU environment is more stressful than in non-intensive care areas. Although some authors argue that ICU nurses are under considerably more psychologic and emotional stress than their non-ICU counterparts (Cassem & Hackett, 1975; Gentry, et al. 1972; Hay & Oken, 1972; Huckabay & Jagla, 1979; Oskins, 1980), there appear to be as many arguments to the contrary (Maloney, 1982; MacNeil & Weis, 1987). Still others have found "little difference between the specialized and non-specialized groups of nurses in the degree of stress experienced" (Hipwell & Tyler, 1989, p.71).

In a comparison study of hardiness in non-intensive care and intensive care nurses (Maloney & Bartz, 1983), mixed results on the hardiness components suggested some degree of stress tolerance in both groups. In addition to

supportive findings by Keane, et al. (1985) of little difference in levels of burnout between ICU and non-ICU nurses, increased levels of burnout were found to correlate with decreased levels of hardiness ($r = .56$; $p < .001$).

Topf (1989) investigated personality hardiness (Kobasa's 1982 Hardiness Scale) occupational stress (NSS) and burnout (Maslach Burnout Inventory - MBI & SBS-HP) in a convenience sample of 100 (91% female) critical care nurses. Hardiness was found to be predictive of occupational stress and burnout, however, convincing evidence of the stress buffering effect of hardiness was not established (the interaction term of external locus of control x occupational stress accounted for a 1% variance in SBS-HP scores). Moreover, dissimilitude of results across the three hardiness dimensions suggests "that different processes may be involved in each dimension and that future research should emphasize these processes rather than the composite scores" (Topf, 1989, p.184)

Conversely, in a recent study of hardiness, ways of coping, social support, and burnout in critical care nurses, the composite of hardiness ($r=-0.43$, $p<0.001$), as well as the challenge ($r=-0.33$, $p<0.001$), control ($r=-0.23$, $p<0.01$), and commitment ($r=-0.47$, $p<0.001$) components were all found to be negatively related to burnout (Boyle, Grap, Younger, & Thornby, 1991). Boyle and her associates also found hardiness to be positively related to social support. A negative relationship between hardiness and emotion-focused coping but not

problem-focused coping effected partial support for Kobasa's (1988) contention that "hardiness might mitigate the harmful effects of stress by facilitating more appropriate ways of coping" (Boyle, et al. 1991, p.855).

In summary, the reviewed studies shared several common elements. All were non-experimental and/or descriptive correlational in design, therefore, causal inferences of the buffering effect of hardiness in the stress-illness relationship cannot be drawn. Self-reporting measures, which can impact on a study's validity, were also common to all studies reviewed. Relatively large sample sizes and homogenous groups were utilized in most studies, which contributes to their validity. However, samples were not selected randomly and therefore may be less representative of the population.

There was also considerable variation across hardiness studies in terms of populations, measurement instruments, and data analyses. This has produced variable and sometimes disconsonant results. With few published studies of hardiness in critical care nurses, it is paramount that further research be completed on this population. Furthermore, because appropriate instrument selection is the key to credible research, one must understand the many variations of hardiness measurement before selecting the most appropriate version.

Measuring Hardiness

Originally defined by Kobasa (1979a) as the antithesis of the existential neurosis described by Maddi (1967), it followed that the presence of hardiness could be inferred by the absence of this existential disorder. Hence, on the earliest composite questionnaire (Kobasa, 1979a), hardiness was determined exclusively by negative indicators. Thus, a lower score was reflective of a hardier individual.

In order to encompass all three aspects of the hardy personality, Kobasa selected all or parts of five standardized instruments based on "their theoretical relevance and empirical reliability and validity" (Kobasa, 1979a, p.5). Control was measured by the Internal versus External Locus of Control scale (Rotter, et al. 1962), the powerlessness versus personal control and nihilism versus meaninglessness scales of the Alienation test (Maddi, et al. 1978), the achievement and dominance scales of the Personality Research Form (Jackson, 1974), and the leadership orientation scale of the California Life Goals Evaluation Schedules (Hahn, 1966). Commitment was measured by the alienation versus commitment to work, social institutions, interpersonal relationships, family, and self scale of the Alienation test, as well as a role consistency scale. The challenge component of the composite included measures of preference for interesting experiences versus security (Hahn, 1966), the vegetativeness versus vigorousness and adventurousness versus responsibility scales of the Alienation test, and the need

for cognitive structure and need for endurance scales of the Personality Research form.

Although the original test contained eighteen subscales, it has been revised to abbreviated variations of six (Kobasa, et al. 1981) and five subscales (Kobasa, Maddi & Puccetti, 1982), with the latter being the most frequently used instrument in hardiness studies to date. Many other versions of the hardiness scale have also been utilized (see Appendix G).

Kobasa designed the original questionnaire to measure hardiness as a composite because she conceived it as a unitary phenomenon, however, it is easily divided into the subscales of control, commitment, and challenge. Although numerous authors have reported results on various subscales in addition to the composite score, psychometric analyses of these measures, either as separate entities or as a composite, are seldom discussed. Controversy over the unity of hardiness as a construct, as well as the psychometric properties of the three components being less than equal, establishes a sound argument for examining the composite and its subcomponents in future hardiness studies.

Investigations into the psychometric properties of the first generation hardiness tests (Funk & Houston, 1987; Hull, Van Treuren & Virnelli, 1987) resulted in concern related to the measurement of hardiness. Because the use of

negative indicators poses conceptual and empirical difficulties, it has been suggested that the inclusion of positive control, commitment, and challenge indices may improve the instrument's validity (Funk & Houston, 1987).

Although few studies have used the Personal Views Survey (PVS), developed by the Hardiness Institute (1985), the psychometric properties for internal stability and consistency have been improved. Additionally, "items are constructed to be conceptually relevant to the concepts of hardiness, unlike past items, which were selected from other instruments on the basis of empirical correlations and factor-loadings" (Adaskin, 1987, p.85). The main advantage of this refined third generation hardiness measure, however, is that is contains both negative and positive indicators for each of the three subscales.

The most recent hardiness measure (Hardiness in AIDS Volunteers, hereafter termed Personal Views Survey II; PVS2, 1991), was developed for a longitudinal study of AIDS volunteers and evolved from the PVS (S.C. Ouellette & J.B. Cassel, personal communication, May, 1991). Instead of the 4-point Likert scale of the PVS, which measures responses from 0 (not at all true) to 3 (completely true), a 6-point (-3 to +3) scale was selected to increase the variance for each of the items. In addition, 15 items were dropped from the PVS, resulting in a more succinct test of the hardiness characteristic.

To further complicate the measurement issue, at least two other hardiness scales have been developed. Nowak's (1989) 30-item Cognitive Hardiness Scale evolved partly as a result of the criticisms of previous measures and "partly as a result of encouragement from other researchers...to explore alternative measures of hardiness that will not obscure the independent contribution of its subcomponents" (Nowak, 1989, p.148). Although an internal consistency of .83 is reported by Nowak, no other tests of reliability or validity are discussed. Moreover, no other studies, to date, have used this instrument.

The Health Related Hardiness Scale (HRHS) was developed by Pollock (1984) to measure hardiness in the chronically ill. Although Pollock asserts that this scale has also been used to assess hardiness in healthy populations (S. Pollock, personal communication, 1992) these studies have not been published.

The inconsistency in hardiness measurement has effected variability in research results and subsequent scepticism related to the role of this personality characteristic in the stress-illness relationship. Replication studies, utilizing consistent definitions, terminology, methodology, and data analysis are essential to the verification of the hardiness concept's significance. Hence, this study will establish a sound foundation for future research in this area.

DEMOGRAPHIC VARIABLES

Age, Education & Experience

Investigators of stress and hardiness have explored relationships between these concepts and numerous demographic variables. Among the more common attributes examined in nursing populations are: age, experience, and education.

Several studies have found age and nursing burnout to be inversely related (Bartz & Maloney, 1986; Chiriboga & Bailey, 1986; Robinson, Roth, Keim, Levenson, Flentje, & Bashor, 1991; Rosenthal, et al. 1989). In addition to younger age, lower level of education has also been found to be predictive of turnover in ICU nurses (Dear, Weisman, Alexander, & Chase, 1982).

Conversely, Anderson and Basteyns (1981) found that "regardless of educational background, nurses identify the same factors as highly stressful in the intensive care unit (ICU)" (p.31). Although Olsen (1977) similarly found no direct relationship between the level of formal education and the OR nurses' perception of stress, as length of experience increased, the perceived stress decreased.

Sources of stress and coping strategies were found to change as a function of experience in Gribbons and Marshall's (1982) study of stress and coping in

neonatal intensive care unit staff nurses. Inverse correlations of -0.35 (p=.05) between years of ICU experience and stress in an additional study (Huckabay & Jagla, 1979) lends support to these findings. Huckabay and Jagla (1979) explanation of these results was that acquisition of knowledge may decrease anxiety.

Although Rosenthal, et al. (1989) did not find stress to be related to experience or education, the findings of another study of nurses in a critical care setting revealed that "experience is associated with reduced burnout and an enhanced sense of personal accomplishment, and the more educated the nurse, the less likely he/she is to consider critical care incidents as stressful and threatening" (Stone, Jebson, Walk, & Belsham, 1984, p.209).

Kobasa and her associates have generally not found significant correlations between hardiness and the demographic variable of age (Kobasa, et al. 1982b; Kobasa & Puccetti, 1983: Kobasa, 1982b). However, Nowak (1986) found age to be negatively related to hardiness (-0.16, $p<0.05$), as did Parkes and Rendall (1988) ($F(1,84)=4.10$, $P=0.046$). Moreover, Rich and Rich (1987) found that the combination of young age and low hardiness scores best predicted burnout scores in staff nurses.

In addition to age, several of Kobasa's studies (Kobasa, et al. 1981; Kobasa, et al. 1982a; Kobasa, et al. 1983) have explored the relationship between hardiness and education. No significant correlations were found between hardiness and either age or education. Conversely, Hannah and Morrissey (1987) found age and grade to be significantly associated with hardiness. In this recent Canadian study, adolescents were the focus of correlates of psychological hardiness. Interestingly, the result of exploratory path analysis led the authors to conclude that the causal path linking hardiness, age, and grade was through a combined effect, rather than the independent action of age and grade. Findings of significant correlations of hardiness with being older, more educated, and married led Schmied and Lawler (1986) to a similar conclusion that hardiness may be the result of a developmental continuum.

This review of research exploring the relationships between the concepts of stress and hardiness and the selected demographic variables of age, education and experience is by no means an exhaustive one. These inconsistent results do, however, serve to reinforce the paramount importance of further analyses of these variables, because it is only with consistent research evidence that the theoretical foundation of hardiness will be established and knowledge of the stress-illness relationship will unfold.

Employment Status

There is an additional demographic variable which is rarely acknowledged, either in nursing stress, or in nursing hardiness studies. Simply by virtue of their employment status, full-time nurses are exposed to more work-related stressors, hence, it is often surmised that full-time nurses are more susceptible to the hazards of stress and burnout. This hypothesis was, in fact, supported by the author's pilot study (Sawatzky, 1991), which revealed a significant correlation between coping and part-time employment status. Numerous respondents reported that decreasing their employment status from full-time to part-time was a significant factor in their ability to cope with the stressors at work. Moreover, of particular interest, was that many of these nurses still worked 70-80% of a full-time position. Their comments reflected that even one less shift within a two-week period increased their ability to cope with work stress. Part-time nurses may, however, have additional stressors in their personal lives, such as children and other family responsibilities. Hence, further investigation of the impact of employment status on the perception of work stressors as well as of life stress is needed.

Although several researchers reported the inclusion criterion of full-time employment (Cronin-Stubbs & Rooks, 1985; Huckabay & Jagla, 1979; The bulk of nursing stress studies reviewed did not specify the employment status of their populations. Bailey and associates (1980), reported that 43% of the sample in the

Stress Audit had been full-time employees for at least 3 years, however, no comparisons between the two groups were documented. Similarly, although several nursing hardiness studies have reported the percentage of full-time nurses in their samples, none have documented any kind of analysis of this variable, a variable which may in fact be significant in the stress-illness relationship for female critical care nurses.

RESEARCH QUESTIONS

The following research questions evolved from the foregoing discussion of the proposed study's conceptual framework, as well as the review of related literature.

1. Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and actual stressful work events in female critical care nurses?

2. Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and perception of stressful work events in female critical care nurses?

3. Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and perceived global stress in female critical care nurses?

4. Is there a relationship between perception of stressful work events and perceived global stress?

5. Is there a relationship between actual stressors and perception of stressful work events?

CHAPTER III: METHODOLOGY

"One of the most critical decisions a researcher must make is the selection of an appropriate design for a study" (Alexander, 1981, p.113). Research designs act as blueprints - as basic plans for making the observations, as well as for collecting, organizing and analyzing the data.

THE RESEARCH DESIGN

The purpose of this study was to examine the relationships between the variables of stressful work events or stressors, perception of global stress and stressful work events, and hardiness. This, according to Brink and Wood (1989) places the research questions at the second level of inquiry. Although the phenomena of interest have already been explored, named, and described, the relationships are lacking in clarity. Hence, the theory must be tested. Because quantitative research is most often a theory testing and deductive approach to the research hypothesis or question, it was deemed to be an appropriate choice for this study.

Although, there are numerous possible options under the umbrella of non-experimental designs, the survey is most often chosen. "All survey designs specify the relationship of two or more variables without any experimental manipulation of the independent variable" (Brink & Wood, 1989, p.87). Because there is no control of the independent variable, surveys lack the internal validity required to infer causality. Their external validity is, however, a strength in that they provide the means to examine variables within large samples of target populations and to draw conclusions about those populations from the data collected (Brink & Wood, 1989). A survey design was, therefore, selected for this study.

The correlational design has a conceptual framework, however, it differs from the comparative design in that its theoretical base is not as well defined. Hence, because Pollock's (1989a) theoretical framework could be strengthened through the exploration of relationships, a correlational design was the most appropriate alternative. To further substantiate this choice, another critical feature of comparative surveys was examined: "To use this design, it must be possible to find already-existing groups that differ on the independent variable" (Brink & Wood, 1989, p.89), thus facilitating the prediction of dependent variable variation between these groups. The theory base of hardiness is not well developed in terms of degrees or levels of hardiness, hence, it would be difficult to divide a sample into high and low hardiness groups. Furthermore, a fairly recent version of the hardiness scale was utilized in this study. Consequently, because this scale

has not been well tested, nor has adequate reliability and validity been demonstrated, it could not be utilized to identify distinct levels of hardiness.

"A correlational design is used when investigators have reason to suspect a relationship among variables and can support their suspicions through literature or previous research" (Brink & Wood, 1989, p.104). Research related to the stress-buffering effect of hardiness has produced mixed results, hence, additional studies are necessary to substantiate the nature of this relationship. Moreover, few researchers have investigated hardiness in critical care nurses. Therefore, it was the intent of this study to contribute to the theoretical underpinnings of hardiness with a correlational study design.

Correlational surveys typically utilize research questions rather than hypotheses because this approach "supports the tentative nature of the framework and does not give it the appearance of unwarranted strength" (Brink & Wood, 1989, p.109). Because of the inconsistent methodology and results of previous hardiness studies, additional investigations are necessary to elucidate the theoretical foundation. Subsequent studies will then be able to focus on theory and hypothesis testing.

The study design also had descriptive and predictive qualities. "The accurate portrayal of the characteristics of persons, situations, or groups and the

frequency with which certain phenomena occur" (Polit & Hungler, 1987, p.528) constituted the descriptive component of this study. The goal of predictive designs is to forecast the value of the dependent variable based on the value of the independent variable. Inferences of hardiness being predictive of perceiving stressors less negatively were, for example, gleaned from the data. However, it is of paramount importance to recognize the limitations of non-experimental research, in that one cannot confirm causality.

THE SAMPLE/SETTING

"Sampling is an indispensable step in the research process" (Polit & Hungler, 1987, p.206). Sound rationale for the selection of critical care nurses as the target population has been established. A female sample was selected for reasons of homogeneity. This inclusion criterion was also considered appropriate because of the small number of male critical care nurses. Hence, there was a strong likelihood that male category data would be too small to analyze. Thus, this sampling decision facilitated the data analysis as well as the generalizability of the results to the vast majority of critical care nurses.

Although comparison of the results of nursing stress studies in neonatal/pediatric intensive care and adult critical care areas reveals many similarities, there are also marked differences in dealing with sick infants and

children (Cronin-Stubbs & Rooks, 1985). Hence, the decision was made to exclude neonatal and pediatric ICUs from this study. This exclusion criterion also served to foster the homogeneity of the study population. Thus, for the purposes of this investigation, adult medical and surgical intensive care units were included in the definition of critical care areas.

According to Polit and Hungler (1987), "the researcher should seek to make the conditions under which the data are collected as similar as possible for every participant in the study" (p.186). Hence, the sample was drawn only from those members of the target population who had been employed in a critical care area for at least one year. The rationale for the exclusion of novice ICU nurses is based on personal experience, as well as the fact that "many studies have shown that employees feel anxiety when they enter an organization" (Stoner & Wankel, 1986, p.337). For novice critical care nurses, in particular, there is often an overwhelming sense of inadequacy when they are faced with having to integrate newly acquired cognitive, psychomotor, and decision-making skills to provide competent and safe care to the critically ill (Dunn, 1992). The stressful work experiences of the novice would therefore be expected to be different, if not greater, than those of the more experienced ICU nurse. Thus, in an effort to control for extraneous variables, the novice was excluded from the sample.

The settings for the data collection were limited to tertiary care hospitals in Manitoba. This decision was based on the fact that these large institutions are generally the referral center for patients with high acuity levels. Hence, nurses in the critical care areas at St. Boniface General Hospital (SBGH) and Health Sciences Centre (HSC) would tend to be exposed to similar stressful work situations. Moreover, these institutions strongly support the hiring of nurses with the advanced education of the University of Manitoba Intensive Care Nursing Program offered exclusively through the two tertiary care facilities in the province. Thus, the setting of the study contributed to the homogeneity of the sample.

In summary, the sample was homogeneous in that all were females with at least one year of critical care experience and who were currently employed in adult critical care areas of tertiary care hospitals in Manitoba. The sample was, however, heterogeneous on numerous other factors, such as age, education, experience, and employment status. Because the literature reflected disparity as to the relationship of these variables with hardiness, this information was requested on the demographic form.

INSTRUMENTATION

Defined by Carmines & Zeller (1979) as the "process of linking abstract concepts to empirical indicants" (p.10), measurement plays a central role in the research process. "An ideal measuring instrument is one that results in measures that are relevant, accurate, unbiased, sensitive, unidimensional and efficient" (Polit & Hungler, 1987, p.313).

As the following discussion will demonstrate, instruments to measure each of the variables identified in the research questions were selected and evaluated, with a view to establishing appropriate and useful operational definitions of the four major components of the conceptual framework: hardiness, stressful work events, perceived global stress, and perception of work stressors. Additionally, a demographic information form was utilized to elicit relevant baseline data from the subjects.

Hardiness

The Personal Views Survey II (PVS2; see Appendix H) questionnaire is the most recent hardiness measure. Derived from the third generation hardiness test, or Personal Views Survey (PVS), the PVS2 is reflective of the ongoing efforts to refine the operational definition of this personality characteristic.

Although major concerns voiced about previous hardiness measures were addressed in the development of the PVS, it was not without problems. For example, "following a review of distributions, missing data, and face validity of the items for the volunteer group, 15 items from the PVS were dropped from further analysis..." (Ouellette & Cassel, personal communication, May, 1991). The remaining 35 items of the PVS2, however, effect a balanced measure of control, commitment, and challenge. Additionally, Cassel, et al. (1991; cited in Ouellette & Cassel, personal communication, May, 1991) report that a single factor was delineated for each of the three components in a confirmatory factor analysis, thus providing support for the plan to analyze each of the subcomponents, as well as the composite hardiness score in this study.

Construct validity of the PVS2 is supported, in that correlations with demoralization (r=-.54) and perception of support from others (r=+.39) are reported (Ouellette & Cassel, personal communication, May, 1991). Moreover, it was found that the PVS2 did not correlate with the number of experienced negative stressful events (Ouellette & Cassel, personal communication, May, 1991). Although predictive validity of the PVS2 has not been tested, findings of a negative relationship between hardiness and illness, (Contrada, 1989; Kobasa, 1979; Kobasa, et al. 1983; Nowak, 1986; Rhodewalt & Agustsdottir, 1984) as well as hardiness and burnout (Keane, et al. 1985; Maloney & Bartz, 1983; McCranie,

Lambert, & Lambert, 1987; Rich & Rich, 1987; Topf, 1989) are recurrent in the literature, despite the use of numerous variations of hardiness measurement.

Reliability is not reported on this latest hardiness measure, however, stability has been consistent in its precursors. Similarly, with most previous Cronbach's alpha coefficients reported as greater than 0.80, hardiness composites are generally considered to be internally consistent.

A major criticism of the various hardiness measures has been the use of negative indicators. Although the PVS employs some positive indicators, there is still a "lack of balance between positively- and negatively-worded items" (Parkes & Rendall, 1988, p.788). Ouellette and Cassel (personal communication, May, 1991) have increased the response scale from 4 to 6 points and have also changed the scale to one in which the respondent can either agree or disagree with the statements. The possible responses ranging from -3 to +3 increase the variance of each item. Moreover, in keeping with the other changes to the scale, the modifiers on most items in the PVS, such as "usually" and "really" were dropped. Sexist language has also been corrected.

The total hardiness score is intended to be reflective of the subject's overall hardiness. Additionally, because each of the 35 items in the PVS2 measures a

specific subcomponent, scores of the individual's control, commitment, and challenge can also be calculated.

Stressful Events (actual and perceived)

The Critical Care Nursing Stress Scale (CCNSS; Sawatzky, 1992; see Appendix I) evolved from the author's pilot study (Sawatzky, 1991), as well as the Stress Audit (Bailey, et al. 1980). It was utilized as a measure of actual and perceived stressful events experienced by female critical care nurses in the work environment.

The original Stress Audit was modified to measure frequency of stressful events. To this end, a 5-point Likert scale ranging from 0 (never/not at all) to 4 (very often/a great deal) was utilized. This resulted in an overall frequency of occurrence score, which was reflective of the actual number of stressful events encountered (the assumption being that each stressful event is inherently the same in terms of potential stressfulness).

To measure the female critical care nurses' perception of the work stressor, a measure of threat and challenge emotions was appended to the Stress Audit. An amalgam of the Stress Questionnaire (Folkman, et al. 1986) and the Clinical Stress Questionnaire (CSQ; Pagana, 1989) was originally considered to be an ideal measure of threat and challenge in the context of this study. However, close

scrutiny of the emotions utilized to reflect threat and challenge in these measures resulted in scepticism regarding their relevance to the stressors in the Stress Audit. For example, it is doubtful that any nurse would be happy about the inability to meet patients' needs.

It may not be appropriate to list any supposed threat and challenge emotions because threat and challenge will be appraised differently by each person. One nurse, for example may find a hopeful situation to be challenging, whereas the next nurse may not. Hence, Oskin's (1979) approach was deemed to be more appropriate. This study, however, took her strategy of asking subjects to state (yes/no) whether a situation is a threat or a challenge, one step further. A 5-point Likert scale (0=not at all; 4=extremely) was added to produce a more precise measure of the individual's perception of the stressful situation. It was also believed that this method would encourage more honest responses. For example, it is more likely for subjects to feel that they are being inconsistent by saying that "yes" a situation is both threatening and challenging. However, it may seem less contradictory for a situation to be somewhat threatening and at the same time extremely challenging.

A 5-point stressor intensity Likert scale (0=not at all stressful; 4=extremely stressful) was also appended to the original Stress Audit. This served, not only as an additional way to measure perceived stress (frequency x intensity), but also

as a means to validate/refute the threat/challenge measure of perceived stress. Frequently cited in the literature as an accurate measure of stress perception, it was felt that valuable information would be gleaned from this strategy.

Perceived Global Stress

The Perceived Stress Scale (PSS; Cohen, et al. 1983; see Appendix J) was utilized to measure the subjects' perception of global stress. This scale is unique, in that it taps emotions and cognitions related to perceived general stress rather than specific stressful events or situations. Hence, it served as a means to examine the relationship between hardiness and perceptions of global stress (research question #3), as well as the relationship between the perception of stressful work events and global stress (research question #4).

Reliability of the PSS is supported by coefficient alphas between .84 and .86 in each of three samples in the original psychometric analysis (Cohen, et al. 1983). Cronbach's alpha of .87 in a recent assessment of the PSS (Gotlib, et al. 1991), provided further rationale for its use in this study. Cohen and associates (Cohen, et al. 1983) have also reported adequate short-term test-retest reliability (.85) of the PSS.

Concurrent validity of the PSS is reported by Cohen, et al. (1983). Although correlations of the PSS with the number of stressful life events were not

consistently significant (between .17 and .39, $p<.01$), Cohen and associates (1983) argue that the significant correlations between the impact of the life events and the PSS supports the validity of this scale. Predictive validity of the PSS is substantiated by its significant correlations ($p<.05$) with both depression and physical symptomatology (Cohen, et al. 1983; Gotlib & Whiffen, 1989), as well as with tension, ill health and dissatisfaction ($p<.001$; DeFrank, et al. 1988).

Demographic Data

Review of the literature related to hardiness and stress revealed inconsistency in the findings related to certain demographic variables. The demographic data form in this study, therefore, consisted of questions related to age, length of nursing experience, employment status, and level of education (See Appendix K). Significant information was gleaned from this data in that it not only identified the sample, but it also established the type of population to which the results could be generalized. This was particularly important because a convenience, rather than a random method of sampling was employed, thereby increasing the possibility that the demographic characteristics would be unevenly distributed. Moreover, given an adequate distribution of respondents in each category, correlations of hardiness with each of these factors would have been possible. Thus, the demographic data could contribute to the theory base of the hardiness concept, as well as the Adaptation Nursing Model.

THE DATA COLLECTION

Following the application for, and approval of access to the critical care areas at SBGH and HSC, the proposed study was discussed in detail with the administration staff (head nurses) of the target areas for the purpose of eliciting their support. A copy of the study's proposal was made available to them. Permission was requested to introduce the proposed study at the next scheduled general staff meeting, however, this was either not deemed appropriate by the head nurses or such a meeting was not scheduled for some time.

Input from senior staff and administrators was then solicited to determine the most practical (convenient and appropriate) times and dates for the informational meetings to be held in each unit. Hence, these sessions were held prior to the change of shift report in both units at SBGH. At HSC, these informational meetings were regarded as inservices and as a result, were held during the course of the working shift. These sessions were held on all shifts, as well as on weekends, to facilitate optimal participation by rotating staff as well as permanent evening and night shift staff. Data collection took place over approximately three weeks in each of the institutions.

Approximately one week prior to the commencement of the study in each facility, a poster was placed in each of the critical care areas within that facility

(see Appendix L). This served to inform the staff of the dates and times for the informational sessions. The head nurses or nurses in charge were also asked to remind their staff about the informational sessions on the scheduled days/shifts. At their discretion, this was either in the form of a reminder note attached to the nurses' assignment sheet or an announcement at the change of shift report.

All informational sessions were held in the staff lounges of the respective units. When the prospective participants arrived at the informational session, they were encouraged to help themselves to doughnuts. The provision of refreshments by the investigator served several purposes. For nurses on a break, it saved time because they did not have to go to the cafeteria for their snack; it encouraged participation in the study; and, it was a way to thank prospective participants for their time and effort.

The content of the informational sessions was essentially the same as the cover letter of invitation and explanation included in each questionnaire (see Appendix M). The proposed study was briefly described, focusing on its purpose and significance to the population. The "cost" to the prospective subjects was clearly outlined, by telling them the approximate time it would take to complete the questionnaire. Examples of the type of questions asked were given as well.

Ethical considerations were also addressed. In addition to the consent to participate being assumed by filling out the questionnaire, privacy, anonymity, and confidentiality were ensured. The subjects were asked to refrain from signing their names to the questionnaires and to note that although their names were on the outer envelope, the inner return envelope could only be identified by the investigator's name. They were also told that the coded number on the form enabled the primary investigator to identify respondents by name and unit. Prospective participants were assured that no one other than the investigator would have access to the coded numbers and that this information would be destroyed once the data collection period ended. Moreover, they were assured that only the investigator, her thesis committee, and a statistician would have access to the data and that reporting of the results would in no way identify the individual respondents.

Prospective participants were encouraged to complete the questionnaires on their own time and in the privacy of their own homes. The rationale for this strategy was that this would decrease the chances of the responses being affected by the activity in the unit on that particular day. The nurses were then given the opportunity and encouraged to ask questions of the investigator.

In addition to the essential information included in the verbal description by the primary investigator, the cover letter of the questionnaire also included the

telephone number of the primary investigator, to facilitate contact in case questions should arise. A convenient place for a "drop-off box" for completed questionnaires was arranged with the head nurse of each unit.

The deadline date for submission of completed questionnaires was included in the informational session. As a further reminder of the impending deadline, a reminder poster with the deadline dates was placed in each area (see Appendix N). In addition, the head nurses, who were all very supportive of the study, periodically encouraged their staff to participate, as well as reminded them of the deadlines.

Preparation of the Data for Analysis

Once the data were collected, the questionnaires were reviewed to determine if they could be used. Although there was no evidence of obvious noncompliance, there were several forms with blank entries on the CCNSS. Valuable information could, however, still be gleaned from these questionnaires because the other segments were completed in full. The data were then coded for entry into the SAS computer program.

PROTECTION of the RIGHTS of HUMAN SUBJECTS

The research proposal was submitted to the University of Manitoba Faculty of Nursing Ethical Review Committee prior to the initiation of data collection. That participation by subjects in the study was voluntary was reinforced verbally at the meetings with potential participants, as well as in writing, on the cover letter of the questionnaire. Consent to participate in this research was assumed by the return of completed questionnaires. The informed nature of the consent was ensured by the primary investigator's verbal informational sessions about the study to potential subjects. Additionally, this same information was reiterated in the cover letter of the questionnaires.

Physical risks to the participants were considered to be nil because there was no experimental manipulation or exposure to potentially harmful situations. Similarly, the psychological risks related to participation were considered to be minimal. Because participation was emphasized as being voluntary, anyone who was uncomfortable with answering the questions could simply withdraw from taking part in the study.

Anonymity and confidentiality was ensured, and the participants' names did not appear anywhere on the completed questionnaire. The only method of identifying the subject was by a coded number on the completed form.

Prospective participants were advised that only the primary investigator, the thesis committee, and the statistician would have access to the raw data. The coded identities of the subjects were destroyed at the end of the data collection period. A summary of the results will be presented to interested participants.

SUMMARY

In summary, an ex-post-facto, descriptive, correlational design was utilized to examine the relationship between the personality characteristic of hardiness and the perception of stressful events in female critical care nurses. Instruments which operationally define the variables of hardiness (PVS2), perceived global stress (PSS), and actual and perceived work stressors (CCNSS) were selected and distributed in questionnaire form to a convenience sample of the population. Relevant demographic data were also requested. Ethical considerations, as they applied to this investigation have been addressed. The findings of this study are presented and discussed in the following two chapters.

CHAPTER IV: RESULTS

The purpose of this study was:

1. to describe the personality characteristic of hardiness, personal life and work stressors, and the perception of stress in female critical care nurses, and

2. to explore possible relationships between hardiness, stressors, and perception of stress in this population.

Data for this study were collected over a six week period in February and March, 1993. Completed questionnaires from each of the 96 respondents were hand scored, coded, and transferred to a computer file by the investigator. Under the direction of a statistical consultant, the SAS computer package was used to analyze the results.

Demographic information was summarized using descriptive statistics. Scores for each of the three instruments were analyzed with inferential statistics. The level of significance for all analyses was set at the .05 alpha level. This level of significance is typical of most nursing research... "because of measurement error, threats to validity, and various confounding variables, we must run a 5

percent risk if we want ever to obtain statistically significant results" (Shelley, 1984, p.429).

Parametric analysis has more power and sophistication than nonparametric inquiry, but it also has certain requirements that must be met before it can be used. "Parametric statistical tests make assumptions about the population from which the sample was drawn and demand interval level measurement" (Shelley, 1984, p.439). Although the Likert scales used in this study technically produce ordinal level data "the distortion introduced by treating them as interval measures is too small to warrant an abandonment of powerful statistical analyses" (Polit & Hungler, 1987, p.344).

Parametric tests assume a normal distribution of the variables in the population. Univariate analysis revealed distributions within normal range ($p<.05$) for the key variables of this study. These variables, however, were also divided into various strata/subgroups, many of which had small cell sizes. Because these subgroups may not have represented a normal distribution within the population, nonparametric analysis, using the Kruskal-Wallis test was also done to lend support to the parametric results.

This chapter describes the results of the data analysis. Following a description of the sample characteristics and the demographic data, each of the

research questions will be addressed. Relationships between the study's key variables and the demographic data will then be examined. The chapter will conclude with a discussion of additional information gleaned from the study results.

SAMPLE CHARACTERISTICS

During the six weeks of data collection, a total of 96 of the 145 members of the target population voluntarily agreed to participate in the study. According to Polit and Hungler (1987), if a response rate is greater than 60 percent the risk of serious response bias is considered to be negligible. Hence, with a response rate of 66%, this study's sample may be regarded as representative of the target population.

DEMOGRAPHIC DATA

Given the inclusion criteria for participation in the study, all subjects were females who had been employed in the area of critical care for at least one year. Ages were grouped into four categories (see TABLE 1) with the majority (50 percent) falling into the 30-39 years range, followed by 30.2 percent in the 20-29 years, 16.7 percent in the 40-49 years, and 3.1 percent in the greater than 49 years categories.

TABLE 1

Demographic Data: Age

AGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE FREQUENCY (%)
20-29 YEARS	29	30.2	29	30.2
30-39 YEARS	48	50.0	77	80.2
40-49 YEARS	16	16.7	93	96.9
>49 YEARS	3	3.1	96	100.0

Most of the sample reported working more than 40 percent of a full-time position (see TABLE 2); 55.2 percent worked between 50 and 90 percent and 40.6 percent worked full-time.

TABLE 2

Demographic Data: Employment Status

EMPLOYMENT STATUS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE FREQUENCY (%)
10-40%	4	4.2	4	4.2
50-90%	53	55.2	57	59.4
FULL TIME	39	40.6	96	100.0

Years of nursing experience were fairly evenly distributed (see TABLE 3), with the lowest frequency being reported in the 1-5 years (16.7 percent) and the highest being reported in the 6-10 years (33.3 percent) categories.

TABLE 3

Demographic Data: Experience

NURSING EXPERIENCE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE FREQUENCY (%)
1-5 YEARS	16	16.7	16	16.7
6-10 YEARS	32	33.3	48	50.0
11-15 YEARS	23	24.0	71	74.0
>15 YEARS	25	26.0	96	100.0

Although all participants were registered nurses (RNs), only 20 percent were prepared at the baccalaureate level and none were master's prepared. Eighty three percent of the subjects had completed an ICU program, however, only seven percent reported any additional education, such as certificates or other courses.

In summary, the typical female critical care nurse in this study was a registered nurse who had completed an ICU educational program. She was between 20 and 40 years old, worked at least half-time, and had more than five years of nursing experience.

RESEARCH QUESTIONS

Research question #1:

Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and actual stressful work events in female critical

care nurses?

Data analysis. This research question was addressed by assessing the relationship between the hardiness composite scores, as well as each of the subcomponents, with the total frequency scores of the Critical Care Nursing Stress Scale (CCNSS). Univariate analysis established that the distribution of these variables was normal, therefore, parametric analysis in the form of Pearson Product-Moment Correlation Coefficient (Pearson's *r*) was deemed an appropriate method of analysis (see TABLE 4).

TABLE 4

Research Question #1
Correlations (Pearson's *r*) of Hardiness & Stressful Work Events

	HARDINESS	CNTRL	CMTMT	CHLNG	FREQ	INT
HARDINESS (COMPOSITE)	1.00	0.76O***	0.851***	0.773***	-0.154	-0.242*
CONTROL (CNTRL)		1.00	0.630***	0.318**	-0.086	-0.050
COMMITMENT (CMTMT)			1.00	0.419***	-0.272**	-0.201*
CHALLENGE (CHLNG)				1.00	-0.018	-0.281**
FREQUENCY (FREQ)					1.00	0.505***
INTENSITY (INT)						1.00

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

With the established level of significance for this study set at .05, only the commitment component of the hardiness composite was found to be negatively correlated (-0.272, $p<.01$) with frequency, or actual stressful work events. Although this was a significant relationship, correlations of psychosocial variables must generally be greater than .50 to be considered quite strong (Wilson, 1987).

Research Question #2:

Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and the perception of stressful work events in female critical care nurses?

Data Analysis. This research question was addressed by assessing the relationship between the scores from the hardiness composite, as well as each of the subcomponents, the calculated perception of stressful work events (frequency x intensity; FxI) scores and the perception (threat/challenge) of stressful work events scores. Because univariate statistics reflected a normal distribution for the variables in question, the use of parametric analysis was justified. The results, therefore, are reported as Pearson *r* coefficients (see Table 5).

TABLE 5

Research Question #2
Correlations (Pearson's *r*) of Hardiness & Perception of Stressful Work Events

	HARDI	CNTRL	CMTMT	CHLNG	FxI	THRT	CHAL
HARDINESS COMPOSITE	1.00	0.76O***	0.851***	0.773***	-0.219*	-0.352***	-0.052
CONTROL (CNTRL)		1.00	0.630***	0.318**	-0.057	-0.171	0.024
COMMITMENT (CMTMT)			1.00	0.419***	-0.298**	-0.368***	-0.045
CHALLENGE (CHLNG)				1.00	-0.138	-0.274**	-0.083
FREQ x INT (FxI)					1.00	0.708***	0.262*
PERCEIVED THRT (THRT)						1.00	0.299**
PERCEIVED CHAL (CHAL)							1.00

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

The relatively weak, but nonetheless significant, negative correlation (-0.219, p=.040) between perceived (FxI) stressful work events and the hardiness composite was similar to that of the commitment subcomponent (-0.298, p=.005). However, the relationship between perception of work stressors with challenge, as well as with control, was not significant. On examining the intensity as a separate entity, it was found to correlate significantly with the hardiness composite, commitment, and challenge, but not with control (see Table 4).

Although the relationship between the hardiness composite and perceived threat of stressful work events was significant at -0.352 ($p<.001$), the relationship between the composite and perceived challenge of stressful work events was not (-0.052, $p=.614$). perceived threat scores also correlated significantly with commitment (-0.368, $p<.001$) and challenge (-0.274, $p=.007$), but not with control (-0.171, $p=.095$). There was no significant relationship between perceived challenge and any of the hardiness subcomponents.

Of interest, was the difference in correlational scores of the perception of stressful work events with perceived threat (0.708, $p<.001$) and with perceived challenge (0.262, $p=.013$). In addition, the relationship between perceived threat and perceived challenge was also statistically significant at 0.30 ($p=.003$). A paired comparison *t*-test supported the difference in the perceived threat and perceived challenge scores ($t=-5.293$, $p=.0001$). This raised the question of whether stressful work events were generally perceived as more threatening or challenging. To this end, each perceived challenge score was subtracted from the corresponding perceived threat score. Thus, negative totals reflected overall higher perceived challenge scores and positive totals indicated overall higher perceived threat scores. These figures were then entered as total and percentile scores for univariate procedures in the SAS program. A plot graph revealed that 75 of the 96 respondents (78%) perceived stressful work events as more of a challenge than a threat.

Research Question #3:

Is there a relationship between hardiness (composite/ control/ commitment/ challenge) and perception of global stress in female critical care nurses?

Data Analysis. This research question was addressed by correlating the scores from the hardiness composite, as well as each of the subcomponents, with the sum score from the Perceived Stress Scale (PSS). Because of the normal distribution curve for the hardiness as well as for the PSS scores, correlational analysis with Pearson *r* coefficients was performed (see Table 6).

TABLE 6

Research Question #3
Correlations (Pearson's *r*) of Hardiness & Perception of Global Stress

	HARDINESS	CNTRL	CMTMT	CHLNG	PSS
HARDINESS (COMPOSITE)	1.00	0.76O***	0.851***	0.773***	-0.341***
CONTROL (CNTRL)		1.00	0.630***	0.318**	-0.216*
COMMITMENT (CMTMT)			1.00	0.419***	-0.389***
CHALLENGE (CHLNG)				1.00	-0.203*
PSS					1.00

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

Although modest, negative correlations between the Hardiness composite, as well as each of its subcomponents, with perceived global stress, as measured with the PSS, were all statistically significant at the .05 alpha level. Commitment produced the strongest relationship with the PSS (-0.389, $p<.001$), however, the hardiness composite followed closely with a Pearson r of -0.341 ($p<.001$).

Research Question #4:

Is there a relationship between the perception of stressful work events and perceived global stress?

Data Analysis. This research question was addressed by correlating the data from the calculated perception of work events score (frequency x intensity) and the perception or cognitive appraisal of stressful work events (threat/ challenge) with the score from the PSS. Given the relatively normal distribution of the variables in question, parametric analysis vis a vis the Pearson Product-Moment Correlation Coefficient was once again utilized (see Table 7).

TABLE 7

Research Question #4
Correlations (Pearson's *r*) of Perception of Work Stressors & Global Stress

	PSS	FxI	FREQ	INT	THRT	CHAL
PSS	1.00	0.296**	0.223*	0.187	0.220*	-0.035
FREQ x INT (FxI)		1.00	0.859***	0.807***	0.708***	0.262*
FREQUENCY (FREQ)			1.00	0.505***	0.447***	0.132
INTENSITY (INT)				1.00	0.800***	0.260**
PERCEIVED THRT (THRT)					1.00	0.300**
PERCEIVED CHAL (CHAL)						1.00

*p<.05
**p≤.01
***p<.001

Correlational analysis revealed a significant relationship between the perception of global stress (PSS) and the calculated (frequency x intensity) perception of stressful work events (0.296, p=.005). Similarly, the correlation between the PSS and the perception of stressful work events as threatening was statistically significant at 0.220 (p=.031). There was, however, no significant correlation between the PSS and the perception of stressful work events as challenging (-0.035, p=.737).

Analyzing the relationship between the calculated (frequency x intensity) perception of work events and the cognitive appraisal of those same situations as threatening and/or challenging revealed significant results. Although the correlation between the summed frequency x intensity scores with perceived challenge was moderate (0.262, p=013), the correlation with perceived threat was notably stronger (0.708, p<.001). Examining the frequency and intensity scores separately, the intensity correlations with perceived threat and challenge closely correlated with the aforementioned results, however, the frequency scores reflected a much weaker relationship with the variables of perceived threat and perceived challenge.

Research Question #5:

Is there a relationship between actual stressors and perception of stressful work events?

Data Analysis. This research question was addressed by correlating the data from the frequency scores with the intensity scores of the Critical Care Nursing Stress Scale (CCNSS). Parametric analysis with Pearson's *r* (see Table 6) revealed a significant relationship between these variables (0.505, p<.001).

ANALYSIS OF DEMOGRAPHIC DATA

Although the demographic data have been described, it is important to examine the relationships between each of the demographic characteristics and the key variables of the study. Because this information was elicited from nominal and ordinal scales of measurement and several of the cell sizes were quite small, a nonparametric (Kruskal-Wallis; K-W) test was calculated in addition to the parametric analysis of variance (ANOVA).

Employment Status

The cell sizes for each of the categories related to employment status varied from four in the 10-40% to 53 in the 50-90% categories. 39 of the respondents reported working full-time. Differences between the categories did not approach statistical significance for any of these variables. Because of the wide variation of frequency x intensity scores between the 10-40% and full time employment status groups, these strata were entered separately for analysis of variance. Although the results confirmed that there is no difference between the groups (ANOVA: $F=1.24$, $p=.272$; Kruskal-Wallis: $p=.267$), the small cell size limits the power of the analysis.

Education

ANOVA and Kruskal-Wallis testing was utilized to assess whether there were differences between those who reported having advanced educational preparation (ie. BN, ICU Program, other courses or certificates) and those who did not, in terms of their levels of hardiness, perception of global stress and perception of work stressors.

Twenty percent of the sample (N=19) reported having a baccalaureate degree in nursing (BN). Respondents with a BN had significantly ($p<.05$) higher Hardiness scores than those without a BN, however, there was no significant difference in the between group scores on perception of work or global stressors (see Table 8).

TABLE 8

ANOVA & Kruskal-Wallis (K-W) Analysis of Education (BN) & Selected Variables

	BN		ANOVA		K-W
	YES	NO	F value	p value	p value
HARDINESS	76.4 (n=19)	71.7 (n=77)	4.25	.042	.036
PSS	19.4 (n=19)	20.7 (n=77)	0.53	.468	.399
FREQ x INT	182.0 (n=17)	195.4 (n=71)	0.53	.466	.572

The sample was then divided into those who reported having completed an ICU Program of education (86%; n=83) and those who had not. Table 9 exhibits the results of analyzing the variation between the two groups for hardiness, perceived work stressor, and perceived global stressor scores. No significant differences were found.

TABLE 9

ANOVA & Kruskal-Wallis (K-W) Analysis of Education (ICU Program) & Selected Variables

	ICU program YES	NO	ANOVA F value	p value	K-W p value
HARDINESS	72.8 (n=83)	71.7 (n=13)	0.169	.682	.860
PSS	20.7 (n=83)	18.6 (n=13)	1.16	.283	.397
FREQ x INT	194.2 (n=77)	183.7 (n=11)	0.23	.634	.668

Response by participants to the question of whether they had any education other than a BN or an ICU Program revealed that only 7 percent (N=7) had completed other courses or certificates. No degrees other than the BN were reported. ANOVA and Kruskal-Wallis Tests were, nonetheless done on these groups as well (see Table 10).

TABLE 10

ANOVA & Kruskal-Wallis (K-W) Analysis of Education (other) & Selected Variables

	Other Education YES	NO	ANOVA F value	p value	K-W p value
HARDINESS	73.1 (n=07)	72.6 (n=89)	0.019	.891	.810
PSS	26.7 (n=07)	20.0 (n=89)	6.93	<.01	<.01
FREQ x INT	186.3 (n=07)	193.5 (n=81)	0.07	.790	.723

Significant differences ($p<.01$) were noted only for perception of global stress, with those reporting "other education" scoring significantly higher on this variable. These results, however, warrant caution because of the small cell size.

Experience

The question of whether there were differences in mean hardiness, perceived work stressor, and perceive global stress scores across the four categories of nursing experience was addressed by analysis of variance (ANOVA) and verified with the Kruskal-Wallis Test (see Table 11).

TABLE 11

ANOVA & Kruskal-Wallis (K-W) Analysis of Experience & Selected Variables

	EXPERIENCE (in years)				ANOVA		K-W
	1-5	6-10	11-15	>15	F values	p values	p value
HARDINESS	77.1 (n=16)	74.0 (n=32)	70.3 (n=23)	70.2 (n=25)	2.71	.049	.048
PSS	20.4 (n=16)	21.0 (n=32)	19.8 (n=23)	20.5 (n=25)	0.13	.943	.942
FREQ x INT	200.6 (n=15)	219.5 (n=28)	168.7 (n=21)	178.2 (n=24)	2.94	.038	.035

Differences in hardiness were statistically significant, with those who had the least nursing experience rating the highest and those with most experience rating the lowest on the mean hardiness scores. The differences on the perceived work stressor scores were also statistically significant, reflecting that those with less than ten years scored higher on their perception of work stressor scores than those with more than ten years of nursing experience. The perceived global stress scores, on the other hand, did not vary significantly between the four groups.

Age

There was a wide variation in the cell sizes for each of the four age group categories. The results of the analysis of variance must be considered in the context that only three participants reported being greater than 49 years of age. No statistically significant differences between the groups were demonstrated in the parametric or in the nonparametric analysis.

ADDITIONAL ANALYSIS OF KEY VARIABLES

Hardiness

Subcomponents. Correlations between the hardiness composite and the subcomponents were also analyzed (see Tables 4, 5 & 6). Although all correlations were significant ($p<.05$), a particularly strong relationship between the composite and each of the subcomponents ($p<.001$) was demonstrated. Relationships between challenge and the control and commitment subcomponents were weaker at 0.318 ($p=.002$) and 0.419 ($p<.001$) respectively.

Subgroup comparisons. Analysis of variance (ANOVA) done to compare the mean hardiness scores of the four groups involved in the study (HSC-Medical, HSC-Surgical, SBGH-Medical, SBGH-Surgical Intensive Care Units) revealed no significant differences. Given the small cell size (N=14) for one of the groups, Chi-square approximation with the Kruskal-Wallis Test was also performed and revealed a significant difference between the groups. Because the mean hardiness scores varied from 69.38 at SBGH-medical to 76.62 at HSC-Surgical, separate analysis of variance testing was done on these two groups. Although these results reflected support of a difference between the two groups, because of the small cell size of the HSC-Surgical group conclusions remain tentative.

The sample was then categorized according to location (SBGH vs HSC). With similar mean hardiness scores of 71.1 at SBGH and 74.5 at HSC, ANOVA results reflected no statistically significant difference between the categories ($p=.07$). This was not supported by the Kruskal-Wallis Test ($p=.04$), however, because of the relatively large cell sizes and the normal distribution for mean hardiness scores, the analysis of variance results are considered to be more accurate.

Dividing the sample into categories of surgical versus medical intensive care nurses resulted in mean hardiness scores of 74.5 and 71.4 respectively. ANOVA and Kruskal-Wallis testing concurred that there was no significant ($p<.05$) difference between these categories.

Work Stressors

Ranking. Work stressors were ranked according to frequency of response in each of the categories of the CCNSS. The overall top six stressors for frequency, intensity, threat, and challenge are listed in Table 13.

TABLE 12

Ranked Work Stressors

CATEGORY	STRESSOR
FREQUENCY	1. Routine Procedures 2. Responsibility, Decision Making 3. Noise 4. Emergencies, Transfers, Admissions 5. Critical, Unstable Patients 6. Unnecessary Prolongation of Life
INTENSITY	1. Unnecessary Prolongation of Life 2. Insufficient/Malfunctioning Equipment 3. Apathetic, Incompetent Medical Staff 4. Emergencies, Arrests 5. Uncooperative Patients 6. Inability to Meet Patients' Needs
THREAT	1. Apathetic, Incompetent Medical Staff 2. Unnecessary Prolongation of Life 3. Insufficient/Malfunctioning Equipment 4. Inadequate Knowledge 5. Apathetic, Incompetent Nursing Staff 6. Unavailability of Physicians
CHALLENGE	1. Emergencies, Arrests 2. Critical, Unstable Patients 3. Responsibility, Decision Making 4. Unfamiliar Situations 5. Emergencies, Transfers, Admissions 6. Inadequate Knowledge

Overall, *noise* and *routine procedures* ranked highly only for frequency of occurrence, whereas, *unnecessary prolongation of life* ranked highly in the frequency, intensity, and perceived threat categories. On the other hand, *emergencies, transfers, admissions, critical, unstable patients, and responsibility, decision making* ranked highly only for frequency and perceived challenge.

Examining the ranked stressors for the individual groups (units) revealed interesting trends. *Unnecessary prolongation of life*, for example, was ranked as the number one stressor for intensity and perceived threat in both medical intensive care units. This stressor was also in the top six for frequency in the medical, but not in the surgical units. Similarly, *chronic* and/or *uncooperative patients* ranked highly for frequency and intensity in the two medical units.

Although *apathetic, incompetent medical staff* did not rank in the top six for frequency in any group, this stressor ranked highly in all four units for intensity and in three of the four units for perceived threat. Interestingly, *unavailability of physicians* was among the top perceived threat stressors at SBGH, but not at HSC.

The physical work environment was reported as a significant stressor in that *noise* was in the top five frequency stressors for three of the four units. Moreover, *insufficient/malfunctioning equipment* was ranked highly for intensity in all four units and in three of the four for perceived threat. *Work space* ranked highly for frequency at SBGH, but not at HSC.

Inadequate knowledge and *unfamiliar situations* scored highly overall for perceived challenge. These stressors, related to knowledge and skills were, however ranked highly for intensity and perceived threat by only one unit. None of the groups ranked these stressors highly for frequency of occurrence.

Subgroup comparisons. The question of whether there were differences in perception of work stress (frequency x intensity) between the four groups was addressed by the ANOVA or Kruskal-Wallis tests. No significant ($p<.05$) variations were found. Similarly, no significant differences were found when the sample was split by type of unit (medical/surgical) and location (SBGH/HSC).

Perception of Global Stress

No statistically significant differences were found for perception of global stress between the four groups, type of unit, or location, through the use of the ANOVA or Kruskal-Wallis tests.

SUMMARY

The research questions for this study were addressed by using product moment correlation coefficient (Pearson's *r*) parametric analysis. Findings indicated that although the hardiness composite did not relate to actual (frequency) stressful work events, it did correlate with perception of stressful events (frequency x intensity). Correlations between the composite and perception of threat were significant, however, there was no significant relationship between hardiness and the perception of challenge. Perceived global stress correlated significantly with the hardiness composite and each of its subcomponents, perception of stressful work events (FxI) and perception of threat, but not with

perception of challenge. Finally, the frequency of occurrence of the stressful work events correlated significantly with the perception (intensity) of those events as stressful.

Demographic data were summarized with descriptive statistics. ANOVA and Kruskal-Wallis Tests were done to determine if there were difference in mean hardiness, perceived global stress, and perception of stressful work events scores between the categories within each demographic variable. Although no differences were found on many of the demographic variables, there was a significant difference in mean hardiness scores between those with and those without a baccalaureate degree in nursing, with the baccalaureate nurses scoring higher on this measure. In addition, perception of global stress was significantly higher in those who reported having additional courses or certificates ("other education"). Female critical care nurses with less experience scored higher on the hardiness scale, but this same stratum also had higher scores on the perception (FxI) of stressful work events.

The conditions and implications to be drawn from the data, as well as the additional information gleaned from the data analysis will be discussed in the next chapter.

CHAPTER V: DISCUSSION

Introduction

This ex-post-facto descriptive study was designed to examine the role of hardiness in the stressful experiences of female critical care nurses. More specifically, the purpose of the study was:

1. to describe the personality characteristic of hardiness, work stressors, and the perception of stressful work events and life stress in female critical care nurses, and
2. to explore possible relationships between hardiness, work stressors, and perception of stress in this population.

The conceptual framework which directed this investigation was based on the Adaptation Nursing Model (Pollock, 1989a). Although it was developed for the chronically ill, Pollock's model was easily adapted to this study. The variable of chronic illness was replaced with stressful life or work events. The contextual stimuli or intervening variables included selected demographics, such as age, level of education, employment status, and years of nursing experience. Like Pollock's model, the residual stimulus was defined as the hardiness characteristic. Although

the model's concepts of social support, successful coping, and adaptation were not examined in this study, a foundation for further research in this area has been established. Research instruments were selected to operationalize the variables of perceived global/life stress (Perceived Stress Scale), actual and perceived work stressors (Critical Care Nursing Stress Scale), and hardiness (Personal Views Survey II).

The target population included female critical care nurses, with at least one year of critical care experience, who were currently employed in tertiary care hospitals in Manitoba. In addition to the aforementioned three questionnaires, the research sample of ninety-six subjects completed a demographic information form.

This investigation employed a quantitative approach to study the five research questions. Although Pearson's product-moment correlation coefficient was the principal method of data analysis, frequency distributions, T-tests, analysis of variance, and the Kruskal-Wallis tests were utilized as well.

The results of this study indicated that although the hardiness composite did not relate to actual (frequency) stressful work events, it did correlate with the perception (frequency x intensity) of those events. Correlations between Hardiness and perception of threat were significant, however, there was no significant relationship with perception of challenge. Perception of global/life stress (PSS)

correlated significantly with the composite and each of its subcomponents, perception of stressful work events and perception of threat, but not with perception of challenge. Finally, a significant relationship was found between actual (frequency) and perceived (intensity) stressful work events.

Work stressors were also ranked according to the overall scores for frequency, intensity, threat, and challenge. Although stressors related to patient care, such as *unnecessary prolongation of life,* ranked highest for frequency, intensity, and challenge, management related stressors such as *apathetic, incompetent medical staff* ranked among the highest in the threat category. Overall, lack of control appeared to be a common element among those situations ranked as the most stressful.

In addition to analyzing the five research questions, the relationships between the key study variables and the demographic data were also examined. Baccalaureate nurses were found to be hardier, as were the less experienced nurses. The less experienced nurses also scored higher on their perception of work-related stressors. Perceived global/ life stress was higher in those who reported having taken additional courses or certificates. None of the key variables were significantly affected by the nurses' age or employment status. It is, however, important to note that small cell sizes on several of the demographic characteristics limits the power of the analysis of these variables.

These results have given rise to the following interpretations, implications for nursing practice, and recommendations for future research.

Discussion

The following discussion of the research findings has been organized to correspond with the study's theoretical framework. Hence, the results will be addressed in terms of the key concepts of stress and hardiness. Demographic characteristics will be discussed in relation to each key variable. The preceding review of the literature will provide the basis for comparison of this study's findings with those of previous research.

Stress

Actual stressors, as measured by the frequency component of the Critical Care Nursing Stress Scale were ranked according to the overall scores (see Table 13). Although management related stressors such as workload (Bailey, et al. 1980; Cassem & Hackett, 1972; Gentry & Parkes, 1982) and lack of reward (Harris, 1984; Robinson & Lewis, 1990) have previously been reported as the primary sources of stress, four of the six most frequently reported stressors in this study were related to patient care. These differences may be geographically related, in that the studies reviewed were done in the United States, where the shortage of nurses is well documented. Moreover, the differences may be situation specific, in that

each hospital, in each city, in each state or province would probably rank stressors differently. This is supported by the fact that when the ranked scores for the individual groups/units were examined, there was considerable variation between units and also between types of units (ie. medical versus surgical).

Statistical analysis revealed a significant relationship between actual (frequency) stressors and the perception (intensity) of stressful work events. Although relatively strong, the correlation of 0.505 ($p<.001$) does not approach a perfect linear relationship. This simply reinforces that there is, in fact, a difference between actual and perceived stressors. The highest ranked stressors in both the frequency and the intensity categories were, however, predominantly patient care related situations. This concurs with previous research.

Numerous studies (Anderson & Basteyns, 1981; Huckabay & Jagla, 1979; Vachon, 1984), for example, have reported care of the dying patient and the death of a patient to be particularly stressful for critical care nurses. Although *death of "special" patients* was not among the top stressors in any category, *unnecessary prolongation of life* was rated highly in the frequency, intensity, and threat categories. Vachon (1984) also reported slow deaths, or care of chronic patients to be stressful, which coincides with the results of this study that for both medical units *chronic patients*, as a situational stressor, was ranked highly for frequency and/or intensity. These findings support Vachon's (1984) contention that nurses

appear to find the death of patients less stressful than the trajectory of their illness.

The previous finding by this author and others (Lewis & Robinson, 1986; Oskins, 1979; Sawatzky, 1991) that inadequate and unqualified medical and nursing staff are significant stressors for ICU nurses was supported by similar results in this study. While *apathetic, incompetent nursing staff* ranked highly for perceived threat, *apathetic, incompetent medical staff* ranked highly in both the threat and the intensity categories. That critical care nurses are so threatened by the competence level of their colleagues may simply be a reflection of their caring and concern for the well-being of patients and families.

The physical environment of critical care areas is generally such that nurses work in very close physical proximity to each other. Hence, they are keenly aware of the type of care that their nursing colleagues are providing. They know who is competent and who is not. Moreover, an apathetic attitude, especially toward patients and families does not go unnoticed. Clearly, these situations would be perceived as stressful to the vast majority of critical care nurses... nurses who care.

The participants in this study are well-prepared to work in the area of critical care, as was evidenced by the data that 83% of the sample have completed

an ICU program. In addition, because of the inclusion criteria, these nurses have at least one year of critical care experience. Hence, they are aware that many of the interns and residents, who are writing orders on their patients, have never set foot in and ICU before. They also know when medical staff is concerned only with curing, and not caring for their patients. Consequently, it is not surprising that critical care nurses would perceive the situation of *apathetic, incompetent medical staff* as stressful.

Unavailability of physicians was not ranked highly in the frequency category by any of the units involved in the study. This has positive implications for the medical coverage in these areas. Interestingly, however, this situation was rated as threatening by both units at SBGH, but not by either unit at HSC. One can only speculate the rationale for this discrepancy. Perhaps, for example, the socialization process in the HSC staff differs from that of SBGH, in that they learn to become more confident in their own decision-making abilities. This could result in less insecurity and perceived threat related to the physicians not being available.

Although the inability to meet patient/patient's family needs has previously been reported as a significant work stressor (Kelly & Cross, 1985; Spoth & Konewko, 1987), the current study found that it was not rated highly in the frequency category. This has very positive implications for the care being

given in these critical care areas, in that nurses are able to meet the needs of patients and their families.

The reason for the discrepancy with previous studies may be related to workload. The ability or inability to meet the needs of clients and their families is undoubtedly affected by the nurse's workload. If staffing is inadequate, for example, patients' needs cannot always be met. Like the inability to meet clients' needs, workload is often reported as a primary source of stress for critical care nurses. This, however, was not the case in the present study.

Previous studies have reported significant stressors in the area of interpersonal relationships (ie. role difficulties). Although this category did not emerge as significant overall in the current study, exploration of the ranked stressors for each unit revealed that communication difficulties were reported as severe and threatening by one unit and unresponsive nursing leadership was reported as threatening by another. These findings lend further support to the situation specific nature of work stressors. Although many of these stressors are pervasive, others are unique to the particular area.

Based on their research results, Huckabay and Jagla (1979) and Anderson and Basteyns (1981) conjectured that situations such as workload, death of a patient, and communication problems with administrators and/or physicians

were rated as particularly stressful because these events were not within the control of the nurse. Similarly, in a study of Canadian nurses (N=765), McLaney and Hurrell (1988) found perceived control to have a direct influence on job stress. In the current study, most of the highest ranked stressors, particularly in the categories of intensity and perceived threat (ie. unnecessary prolongation of life; apathetic, incompetent, medical staff; insufficient, malfunctioning, equipment) were also situations which would not be within the nurse's control. Thus, control appears to play a significant role in the stressful experiences of critical care nurses.

Although there was a stronger relationship between perception of stressful work events (frequency x intensity) and perceived threat (r=0.708, p<.001) than perceived challenge (r=0.262, p=.013), further analysis supported the deduction that participants in this study were significantly more challenged than threatened. Oskins (1979) also found intensive care nurses to perceive stressful work situations as a challenge rather than a threat. Similarly, Pagana (1990) reported that nursing students' initial clinical experiences were perceived as significantly more challenging than threatening. These results lead one to question whether the nursing profession, ICU nursing in particular, attracts individuals who by virtue of their dispositions tend to be more challenged than threatened by stressful events.

The review of stress and hardiness literature revealed that previous nursing studies have examined either work or life-related stress, but not both. Hence, the significant correlation between the perception of work (frequency x intensity) and global stress reported by this study is particularly meaningful. Although outcomes were not measured in the current study, Hills and Norvell (1991) found the Perceived Stress Scale (PSS) to be a strong predictor of burnout and physical symptoms in a sample (N=234) of highway patrol officers. Hence, the implication that perceived life stress impacts on one's work should not be ignored. In addition, the inference of these findings is that it may be appropriate to use the PSS as the sole measure of perceived stress in subsequent nursing stress studies. Alternatively, global measures may not be necessary when work stressor instruments are utilized.

Relationships between the stress variables and the demographic characteristics were also analyzed. The significant correlation of frequency and intensity of work stressors with less experience concurs with previous findings (Olsen, 1977; Huckabay & Jagla, 1979). The additional finding by Huckabay and Jagla (1979) of an inverse relationship between knowledge of situations and anxiety led them to conclude that "once the nurse has the knowledge and skill requirements, the degree of associated stress is reduced" (p.25).

Similarly, Stone, et al. (1984) found that with increased education there was a perception of stressors in ICU as being less stressful/ threatening. The current study, however, found no significant differences in work stressor scores related to baccalaureate degree, ICU program, or other courses or certificates. Small cell sizes may be responsible for these contradictory results. Another possibility is that it is not the formal knowledge, but rather the informal learning and acquisition of skills that are responsible for the decrease in perceived stressors in more experienced nurses. Furthermore, because of the nonprobability method of sampling, it may be that the nurses whose perceived work stressor scores would have been the highest chose not to participate in the study.

Significant differences in the perception of life stress were, however, apparent in one category of advanced educational preparation. The correlation between perceived global stress and "other education" may be reflective of the additional pressures that pursuing further education imposes on one's life. For example, there may be less time for friends and family; there may also be additional financial burdens. Prior responsibilities often remain the same despite the additional time and energy that is required to further one's education. Hence, the ensuing perception of stress may be overwhelming.

Given the findings of the author's pilot study (Sawatzky, 1991), it was surprising that the results of the current study revealed no significant difference

in the perception of work stressors for the various categories of employment status. It is important, however, to note that the cell size for one group was four. Hence, the power of the analysis related to this demographic variable is limited. Similarly, because the cell size for the oldest age group (>49) was only three, conclusions related to this variable are also tentative.

Hardiness

The finding of no significant relationship between the hardiness composite and actual stressful work events is inconsistent with previous nursing research. Topf (1989) and McCranie et al (1987), for example, found that less hardy nurses experienced more frequent job-related stress. Comparisons with these studies are, however, at best, tentative because the investigators used the Nursing Stress Scale to measure actual stressful work events, as well as different measures for hardiness. Differences in instrumentation may be, at least in part, responsible for the contradictory results.

Similarly, numerous non-nursing studies have found significant correlations between hardiness and actual stressful life events using various hardiness instruments and the SofRLE and the LES as measures of life stress (Banks & Gannon, 1988; Manning, Williams, & Wolfe, 1988; Roth, et al. 1989; Schmied & Lawler, 1986). Like this study, Rhodewalt and Zone (1989) found no correlation between the frequency of stressful events and hardiness, however, they also

measured life rather than work stressors. Similarly, their findings of a significant correlation between hardiness and the appraisal of life events as negative also concurs with this author's findings of a significant relationship between hardiness and the negative appraisal of work events. Once again, comparisons are made with caution because the operational definitions of the key variables were different in the two studies.

Previous studies have also supported the relationship between hardiness and threat. Wiebe (1991), for example, found hardiness to correlate with "evaluative threat." Hardier participants in her study rated the same objective stressor as less threatening. Allred and Smith (1989) found high hardy individuals to have more positive self-statements than the low hardy under threatening (stressful) situations. Their interpretation of these results was that hardy individuals have better adaptive cognitive responses to potential stressors. Although the specific variable of self-statements was not explored in this study, the finding that perception of stressors correlated negatively with hardiness would support this explanation.

Unlike Pagana (1990), who reported significant correlations between hardiness percentile ranking scores and both threat and challenge, no significant relationship between hardiness and perceived challenge was found in this investigation. Pagana was, however, examining nursing students' initial clinical

experience, a situation which could be perceived either positively or negatively. On the other hand, many of the stressful work situations in the CCNSS, such as the inability to meet patient/family needs, unnecessary prolongation of life, or insufficient/ malfunctioning equipment have little potential for growth or to elicit positive emotions. Hence, the inconsistency in the results may be related to the use of negative indicators or situations to measure positive perceptions (challenge). Consequently, the CCNSS may not accurately reflect perception of challenge. Concerns with this instrument must be addressed prior to further utilization.

Kobasa's virtually exclusive use of frequency measures of life event stressors has led many other hardiness researchers to follow her example. Nursing literature, in particular, reflects a paucity of hardiness research not only in the area of perception of work-related stressors, but of perceived life stress as well. Hence, because Pollock envisions a relationship of hardiness with stress perception, but not with actual stressors, it follows that there has been little tangible support for her Adaptation Nursing Model. Consequently, the findings that negatively perceived work stressors did, and actual work stressors did not correlate significantly with hardiness are especially meaningful. The results of a negative relationship between hardiness and perceived global stress lend added support to Pollock's theoretical framework.

The control component of hardiness did not correlate significantly with any of the work stressor criteria. The lack of a significant relationship with frequency, intensity, perceived threat, or perceived challenge may be explained by the fact that many, or most of the work stressors listed in the CCNSS, such as unnecessary prolongation of life, equipment that doesn't work, or physicians being unavailable, are not within the control of the critical care nurse. This opinion is supported by the findings of this study and others (Anderson & Basteyns, 1981) that the situations ranked the highest for perceived intensity and threat were those that were externally controlled.

The control component did, however, correlate significantly with the PSS. This finding lends support to the validity of this measure of global stress in that its intent is to measure the degree to which respondents find their lives to be unpredictable, overloading, and uncontrollable (Cohen, et al. 1984).

Significant (negative) correlations of the commitment component of hardiness with actual, as well as negatively perceived (frequency x intensity and threat) stressful work events, lends support to the Kobasa's definition of this concept. For example, according to Kobasa (1982b), committed individuals are able to exercise influence on situations in which they are involved. This would explain the negative relationship with actual stressful work events. Additionally, Lindsey and Hills (1992) description of commitment as "a belief system that

minimizes the perceived threat of any given stressful life event" (p.40) would explain the significant correlation between commitment and negatively perceived work stressors.

The results of this study revealed a negative relationship between the challenge component of hardiness and perceived threat, but no significant relationship with the perceived challenge of stressful work situations. Given that Lazarus defines challenge differently than Kobasa, one would not expect them to correlate. Although Kobasa does use threat as the antithesis of challenge in at least one study (1979), she uses it in the context of challenging versus threatening change.

The significant correlation of the challenge component with the perceived intensity of work stressors as well as with the perception of global stress, but not with actual (frequency) of stressful work events, lends support to the conceptual framework of this study. Thus, as a component of the hardiness concept, challenge effects successful coping through an optimistic appraisal of the perceived stressor, not by the stressful event itself.

Hence, what appeared, at first glance to be somewhat haphazard results, for the most part confirmed the conceptual definitions of hardiness and each of its components. Moreover, support is rendered for the delineation of hardiness

as a "latent variable," which Carver (1989) describes as one in which the components converge on a single underlying quality. Accordingly, each subcomponent is tested because "without testing each component separately, in addition to the test of the composite index, one cannot be sure of the bases by which the composite was associated with the outcome measure" (Carver, 1984, p.579). Thus, it is not surprising that correlations of the hardiness components with other variables were not always similar or significant. It is because they are measuring different aspects of the composite.

Previous hardiness research has produced mixed results related to the demographic variables of age and education, however, Schmied and Lawler (1986) found both age and education to correlate positively with hardiness. Although this study found no significant differences related to age, those with a baccalaureate nursing degree had significantly higher hardiness scores than those who did not hold this degree. This leads one to question whether advanced education actually makes one hardier, or whether hardier individuals simply strive for more knowledge because of this inherent personality characteristic.

Unlike Hannah (1988), who reported that hardiness appears to develop as a result of experience, this study found the less experienced to be hardier than the experienced critical care nurse. These findings are best explained by a concept

analysis of hardiness done by Lindsey and Hills (1992). Included in their empirical referents for hardiness were the following:

> -demonstration of considerable curiosity, as evidenced by: asking questions; reading related literature; seeking advice from experts.
>
> -demonstration of interest, as evidenced by: paying close attention; considering the experience important. (p.47)

These referents may also describe the typical less experienced nurse in critical care.

Given that the less experienced nurses also scored higher on their perception of work stressor scores (frequency x intensity), the question one is led to ask is whether this compels the less experienced nurse to become hardier as a self-protective mechanism. These results imply that hardiness may be something that one can use as a defense, rather than being an inherent personality trait. Although the components of hardiness were not examined in relation to the demographic data, the overall scores provided insight into this question.

Perception of work stressors was found to correlate significantly with the commitment, but not with the control or challenge component of hardiness. It may be that less experienced nurses are simply more committed to their work. At the same time, they may be feeling a lack of control because of their lower levels of knowledge and skills and are therefore also afraid of new and challenging

situations. This would explain the higher hardiness and higher perceived stressor scores in the less experienced group.

On the other hand, these results may be a reflection of a new generation. The feminist movement has resulted in the young women of today generally have more of a sense of autonomy, confidence, and control than their predecessors. Is feminism synonymous with hardiness? Conversely, is the more experienced female critical care nurse simply part of another era, a less hardy generation?

It is also conceivable that the more experienced ICU nurse is jaded by her years in the nursing profession. She may have lost her sense of commitment over time. She may have realized that she has no control over the stressful work situations and have learned to accept that. Finally, she may no longer be challenged by new situations. This would account for hardiness, as well as perception of work stressor scores, being lower in the more experienced group.

More than a decade ago, Grout, Steffen, and Bailey (1981) found that the most frequent professional reasons for leaving critical care were the desire for change, challenge, and experience. If this was still the case, it would explain the reason for the lower hardiness scores in the more experienced group...perhaps the hardier nurses get bored over time, and simply leave.

Unfortunately, however, today's experienced critical care nurse may not have the same options as her predecessor. In the past, nurses who completed an ICU course/program and worked in that area for a few years were almost guaranteed a "better job." In other words, ICU nursing was seen as a "stepping stone" to career advancement. This situation has changed dramatically in the past few years for a number of reasons. There are now more individuals in the work-force with these qualifications, because more nurses have completed ICU programs and they are working longer. The mandate for university education for all nurses by the year 2000 has prompted many individuals to pursue their baccalaureate degree in nursing (B.N.), a qualification which tends to carry more weight in the job market than an ICU program. Finally, nurses with the "better jobs" are keeping them. Whereas, in the past, nursing was often a brief interlude between school and marriage, now it is generally more of a life-time career.

Consequently, ICU nurses may feel as if they have nowhere to go. Rarely do these nurses want to make a lateral move within the system. For example, they usually do not want to go back to regular bedside/ward nursing. Moreover, with the recent health care reform, nurses with any amount of seniority are reluctant to change jobs because that seniority is their only job security. Most of the participants in this study also work 12 hour shifts, which makes it difficult to pursue further education, such as a B.N. Hence, the experienced ICU nurse often feels trapped, with little or no control over their work situation. The resulting

sense of "learned helplessness" would explain the lower hardiness score in this segment of the critical care nursing population.

In summary, the situation specific nature of actual and perceived stressful work events has been verified. A common thread, however, among most studies is the issue of control. The perception of control, or lack thereof, appears to play an important role in the stressful experiences of critical care nurses. Nonetheless, in spite of the negative perceptions of stressful events, these nurses are, overall, perceiving the workplace to be a challenging one. In addition, the relationship between stress and hardiness proposed by the theoretical framework was supported by the findings that hardiness related to perceived, but not to actual stressors. For the most part, the results also lent support to the conceptual definitions of hardiness and its subcomponents.

Limitations of the Study

Because of the descriptive and ex-post-facto correlational design of the proposed study, there was a "lack of manipulative control of the independent variables" (Polit & Hungler, 1987, p.142) as well as a lack of random assignment to an experimental treatment. Furthermore, the retrospective nature of the data collection meant that measurement took place after the stress occurred. Hence, because there was no knowledge of the variables in a before/after sequence,

causality cannot be inferred. Significant information was, however, afforded by correlational data.

Sampling was done by a nonprobability method. It is acknowledged that a convenience sample is less likely to be representative of the population than if a random sampling method would be utilized. Moreover, demographic data on the population with which to compare the sample was not readily available. Hence, it was important to report the results as representative of the sample. However, because a relatively large sample size was obtained, the results may be generalizable to the entire population. In addition, the normal distribution of the sample for each of the key variables lends further support to its generalizability.

Convenience sampling also brings with it the risk of systematic bias. It is acknowledged that those nurses who chose not to participate in the study may have been experiencing apathy and/or emotional exhaustion, which could have resulted in lower overall hardiness scores. Lack of this valuable information could then have negatively skewed the hardiness distribution. Nonparticipants may also have perceived their work and/or life stressors as overwhelming and viewed the study itself as a stressor that they could avoid. This bias would have been reflected by positively skewed scores on the work and/or global stress scale scores. Although the scores for these variables were assessed and found to be

normally distributed, not until substantially more data on the PVS2 is available will it be possible to generalize whether or not this is reflective of the population.

Although a self-reporting method of data collection is advantageous in that it allows for a direct means of gathering information from the subject, it is not without weaknesses. The question of validity and accuracy is the most serious issue of self-reports (Polit & Hungler, 1987). The possibility of social desirability response sets was a potential threat to this study's validity in that participants may have misrepresented their attitudes by giving responses that are consistent with prevailing nursing mores. For example, nurses often feel that they must have a positive outlook. Moreover, acknowledging that they are "stressed" is frequently perceived as a sign of personal weakness. Hence, there may have been a tendency to score situations as challenging and not threatening. Because anonymity and confidentiality was assured, it was felt that honesty and frankness by participants were encouraged, thus decreasing the risk of response bias.

There was also a threat of *history* on the study's internal validity. This was particularly significant because of such factors as the recent publicity related to health care reform. With this re-organization of the health care system in the province have come threats to job security and much uncertainty about the future for nurses in Manitoba. This most certainly impacted on the stressful milieu for this population, and is acknowledged as a possible limitation to the findings.

The environmental impact of the work day during which the participant was approached to participate in the study was also recognized as a possible limitation to the study. Although they were encouraged to take the questionnaires home, to be completed in a quiet and relaxed atmosphere, several respondents did complete the forms at work. These participants could have been influenced by what was happening during that work day. Furthermore, that they had the time to complete the forms at work may have led them to minimize the stressors in the unit. Finally, the atmosphere in participants' homes was not necessarily relaxed or quiet. This could also have impacted on their responses, particularly on the Perceived Stress Scale.

Because no appropriate instruments were found for the measurement of several of the variables in the proposed study, changes in an existing instrument were deemed necessary. Bailey and associates' (1980) Stress Audit was modified to include a frequency and intensity component, as well as measures of stress perception, namely the threat and challenge scales. Although the resulting Critical Care Nursing Stress Scale has not been psychometrically analyzed, it is felt that this study will provide a baseline of valuable information for future reliability and validity testing of this instrument.

Specific to the stressful work situations listed in the Critical Care Nursing Stress Scale, it is important to note that many of those stressors listed were very

general, if not vague. For the intent and purposes of the current study this was not an issue because it was the individual's perception of the stressful situation that was central to the investigation. However, if specific concerns are to be addressed, it would be important to have more precise definitions of the terms. For example, does medical staff mean interns, residents, staff physicians, or all three?

Implications for Nursing

> "Critical care nurses can use knowledge of stress, stressors and stress management to manage their own stress levels, to support each other, and to restructure critical care organizations to make them less dangerous areas to work." (Harris, 1984, p.84)

The correlational nature of the design necessitates that the recommendations be tentative, however, numerous implications for nursing have been gleaned from this study. The following discussion will focus on the administration, practice, and education domains of critical care nursing.

According to Huckabay and Jagla (1979), "if the true origins of stress in ICU can be identified and controlled, improved nursing performance will lead to a consistent level of optimal patient care" (p.25). Given that optimal patient care

is the primary goal of nursing, it is important to first identify, and then control work-related stressors.

Clearly, there was considerable diversity in the actual and perceived stressors between the four groups or units involved in this study. This is significant in that it reinforces the need to assess individual units and then select the most appropriate interventions for the specific areas. Therefore, the initial step for nurse managers is to identify the most significant stressors in their particular unit. The Critical Care Nursing Stress Scale would be a useful tool for the assessment of work stressors in this population. Management should be encouraged to use this instrument as part of an ongoing appraisal of nurses' needs.

The data from this study itself could be utilized in the decision-making process related to changing the critical care work environment. Although, for example, the frequency of such patient care related stressors as *routine procedures* are an inherent part of work in ICU and probably cannot be lessened, repeated visits by the charge nurse during stressful situations are recommended by Baldwin and Bailey (1980) as an effective means of "lending ego." This stress reduction strategy of support and acknowledgement of the stressor is thought to ameliorate the nurse's perception of the stressful situation.

Other stressors, such as *noise*, which was ranked as the third most frequent overall, should also be addressed. The "symphony of disturbing sounds" (Baj & Walker, 1980, p.44) created by man and technology is often accepted as normal in the intensive care units. However, according to Baj and Walker (1980), "the auditory pollution of hospitals can present untoward psychological effects on patients and staff" (p.44). This stressor should, therefore, not be ignored. Modification of noise can be accomplished at the individual level simply by being cognizant of one's own voice and actions. At the administrative level, consideration should be given making environmental changes such as carpeting and fabric surfaces to reduce the noise level in the unit.

Following the recognition of a problem, Wakefield (1992) suggests that the second step in managing stressors in the workplace is to gain an understanding of why the nurses are feeling stressed. Friedman (1982) recommends that nurses learn more assertive behaviors in an effort to gain a sense of mastery and control in the stressful ICU environment. Self-confidence, also viewed by Friedman as an antidote to stress, can be attained by increasing one's self-awareness and self-control. Weekly inservices involving minimal time and cost, have been found to be effective in increasing ICU nurses' self-awareness as well as their competence and confidence in relating to patients and colleagues (Stillman & Straner, 1980). Appropriate assertive responses can, for example, be enhanced by practicing these

behaviors in a safe environment. This can be accomplished through such avenues as role playing and viewing videotapes of self and others.

The findings of a significant relationship between the negative perception (frequency x intensity & threat) of stressful work events and global stress would suggest that an important aspect of self-awareness is the need to acknowledge the impact of personal life stress on one's work. This extends to the management level as well. Nurse managers who recognize that the perceptions of work stressors do not occur in isolation will have a much better understanding of their staff.

The third step, according to Wakefield (1992), is to attempt to change the perception of the stressor. In a prospective Canadian study, McFarlane, et al (1980) found that perceived control over events correlated negatively with strain. Similarly, Keane and associates (1985) reported increased burnout in those who perceived lack of control and powerlessness. Although the current study did not measure outcomes, the results also reflect the importance of changing the perception of powerlessness and inevitability to one of control. Because one mechanism for enhancing a sense of control is through increased knowledge and skill, the value of ongoing continuing educational programs in critical care cannot be over-emphasized.

Unnecessary prolongation of life, which is generally perceived as within the control of physicians, ranked highly in the categories of frequency, intensity, and threat. Additionally, *apathetic, incompetent medical staff* rated highly for intensity and threat. These findings reflect the need to develop more positive, collegial relationships with physicians. "Clear, direct communication can lead to collaboration with medical colleagues and colleagues from other disciplines. The overall effect will be more cohesive and comprehensive patient care" (Friedman, 1982, p.27). Participation by all members of the health care team in ethics rounds could do much to ease the tensions of life and death decision-making. Joint classes for medical and nursing schools would facilitate the learning of the "power-sharing" or participatory nature of the decision-making process. This, in turn, may also abate the critical care nurses' perceptions of *apathetic, incompetent* physicians.

The recent health care reform mandate in the province of Manitoba has resulted in an air of uncertainty for nursing. In these difficult times the only thing that is certain is that there will be changes in the health care system. Coping with change, according to Conboy-Hill (1989), is crucially related to control. Nurses will be better able to cope with change if they initiate and participate actively in change themselves... "and to do this they will have to take on the institutional system that tends to perpetuate itself rather than meet the needs of individuals

and to maintain traditional nursing practices that deprive frontline workers of the resources to control day-to-day patient care" (p.28).

Baldwin and Bailey (1980) acknowledge several important barriers to work-site interventions related to nursing stress. These include lack of time, the sense that experiencing stress is a sign of personal weakness, that it is impossible to change the stressors, and that if one is experiencing stress, it must be handled alone. Knowledge of these potential barriers could facilitate the nurse managers' role in planning work stress interventions.

Although hardiness is only one aspect of stress resistance, the implications for nursing are numerous. In recruitment, it has been suggested that "nurse executives may find hardiness measures a useful way to screen nurses who might be exposed to high stress in the work environment" (Lambert & Lambert, 1987, p.95). However, as this study has implied, if hardier nurses are drawn to nursing and to critical care nursing in particular, this may not be an issue.

In retention, nurses exhibiting symptoms of stress related illness may benefit from hardiness training programs (Fischman, 1987). Moreover, nurse managers should develop and nurture hardiness in their staff. Commitment, according to Wolf (1990), is initially fostered "by framing and communicating a vision of what can be" (p.10). Involving staff in developing a vision of what can

be accomplished in the workplace and then reinforcing that commitment by commenting on the value of their contribution will enhance a sense of purpose and direction. Although Wolf concedes that control is the most difficult aspect of hardiness to attain, empowering staff is possible through strategies such as involvement in decision-making. The focus on opportunity as an impetus for growth and envisioning change as a challenge can, according to Wolf (1990) be instilled in staff over time, primarily through role-modeling.

This study did not examine outcomes, however, its relationship with stress perception would support hardiness being viewed as an "inherent health promoting factor" (Bigbee, 1985, p.55). Hardiness may, therefore, play an important role in health promotion programs, for nurses and their clients.

> "An increasingly uncertain and turbulent future requires a strong power base within the nursing profession. Cohesive leadership, equal status with physicians in hospitals, flexible scheduling, professional training, and a sense of independence, energy, and responsibility are necessary ingredients in the wise use of authority, control, and influence " (Friedman, 1982, p.27).

Recommendations for Future Research

A number of recommendations for future research were derived from the foregoing discussion. These suggestions focus on the design, sampling, and instrumentation of further research in this area.

Coyne and Lazarus (1980) recommend that "a transactional perspective for the study of stress requires a relational conception of variables and a greater emphasis on process, fluctuation, and change." In other words, a longitudinal study may contribute to a better understanding of the stress process. The same may also be true for hardiness. Hence, a prospective stress/hardiness study established at the nurses' entry level into critical care would contribute a wealth of valuable information to this area of research. Based on this study's findings, it would also be of interest to evaluate hardiness in nursing students throughout their baccalaureate program.

The information gleaned from this study could also provide a baseline for comparison with other populations. Milazzo (1988) found the main difference between ICU and non-ICU nurses was that ICU nurses "often identified elements in their environment which appeared to counter the effects of stressors" (p.53). ICU nurses, for example, found their work to be challenging and satisfying. Similarly, Maloney (1982) found non-ICU nurses to have higher state anxiety

scores. His conclusion was that the two groups vary on their perception of anxiety provoking events. The question of whether intensive care units attract the hardier nurse could be answered by a comparison of the two groups. It would also be beneficial to compare stress perception and hardiness in critical care nurses from tertiary care institutions with those in community hospitals. Despite apparent differences in acuity levels of patients in the two types of hospitals, are perceived stressor and hardiness scores the same?

In keeping with the theoretical framework, subsequent studies in this area should also include outcome measures in order to evaluate the effect of the antecedent variables of stressors, stress perception, and hardiness on adaptation. For example, "one of the most important implications in the mediation of stress by cognitive appraisal is whether the consequences of perceiving a situational stressor as challenging or threatening can have different adaptational outcomes in terms of health and illness" (Grout, et al. 1981, p.317). Although Selye contended that whether a stressor is appraised as threatening or challenging, the response is the same, Kobasa and associates (1979) reported that "subjects who do not become ill feel less threatened subjectively than do subjects who do become ill" (p.597). Like most previous work in this area, theirs was not a critical care nursing population.

Because it is a key concept in Pollock's Adaptational Nursing Model, successful coping should also be explored in future critical care nursing stress studies. Call and Davis (1989), for example, found that hardy individuals cope with "information-seeking strategies, ie. are action oriented in their behavior toward finding solutions to problems" (p.187). Similarly, coping behaviors in the more or less hardy critical care nurse could be examined.

Factors other than hardiness may explain the individual differences in the perception of stressors, therefore, "a model of health also has to include other promising stress-resistance resources such as exercise, diet, family medical history, immunological functioning, and other psychological and social factors..."(Kobasa & Puccetti, 1983, p.849), Social resources are included in the conceptual framework of the Adaptation Nursing Model, hence, this stress-mediator in particular, should be addressed in future studies. Furthermore, because researchers have found that women are more likely to turn to others in times of stress (Holahan & Moos, 1985), it is especially important to include social support as a variable in studies with this population.

Subsequent studies in this area should strive for a larger sample of the population. Although the overall sample was quite large, the small cell sizes for several of the demographic characteristics limited the power of the analysis. A larger sample would also provide more insight into the actual and perceived

stressors and hardiness in the population of critical care nurses. If, however, the intent is to establish what is most stressful for a particular unit or group, that specific sample should be studied because the perception of stressors will vary between settings.

A national study that included multiple sites across the country would also be beneficial. More than simply adding to the knowledge base related to the key concepts, such an investigation could make comparisons between the provinces on very relevant and timely issues such as health care reform.

In terms of instrumentation, it is acknowledged that the Critical Care Nursing Stress Scale requires reliability and validity testing prior to further use. As previously discussed, the validity of the challenge component, in particular, is questioned with the prevailing negative wording of several situational stressors.

A replication study to validate the finding of actual versus perceived stressors and hardiness would lend further support to the conceptual model, however, the need to examine perception of stressful events has been established. Although this study did not evaluate the Perceived Stress Scale in terms of outcome variables, it was found to correlate significantly with the calculated (FxI) perception of work stressors. Based on these and previous findings, this measure

alone could be used as a measure of stress perception in future critical care nursing stress studies.

Further exploration of the components, as well as the hardiness composite, is central to a better understanding of this construct. For example, why the less experienced nurses had higher hardiness scores, in spite of generally perceiving work stressors as more significant, may have been explained by their scores on a particular component. Additionally, this study supported the contention that hardiness is a latent variable, however, hardiness has also been purported to be a synergistic construct, in which the value of one component builds on the others. Whether each component gains something from its association with the others can only be determined by testing the statistical interaction between and among the constituent variables which contribute to the construct. Although endless testing of the components may not be necessary, "one should show that no single facet is responsible for all the statistical effects obtained and that the composite index provides a better picture overall that do any of the facets" (Carver, 1989, p.584). This issue can only be resolved through further research.

Although locus of control has been central to much research in the social sciences, few critical care nursing studies have examined this concept. The results of this study alone, however, reflect the need for further research in this area. It

would be of interest, for example, to compare the perception of control of stressful work situations with adaptational outcomes.

> "In the foreseeable future nursing research should add to our understanding of stress and increase our knowledge of coping strategies, thus helping to close the link between health and behavior" (Fagin, 1987, p.41)

Summary

The relationship between hardiness and the perception of stressful events in female critical care nurses has been examined. Although there are implications for practice and education, the results of this study impact primarily on the domains of nursing administration and research. The empirical evidence related to hardiness and the perception of work-related stressors and personal life stress, as well as the ranked stressors, will provide nurse managers with valuable insight into the stressful experiences of critical care nurses. Moreover, awareness that control versus powerlessness, in particular, is central to those experiences will facilitate the stress-management process.

The data from this study lends support for the Adaptation Nursing Model, thus affording the impetus for subsequent research in this area. Further

investigation of the components of hardiness, for example, is integral to a clearer understanding of this concept and the model as a whole. In addition to antecedent variables, future studies should include the measurement of adaptational outcomes. Examining these variables in a prospective, longitudinal study, in particular, would do much to substantiate (or refute) Pollock's model.

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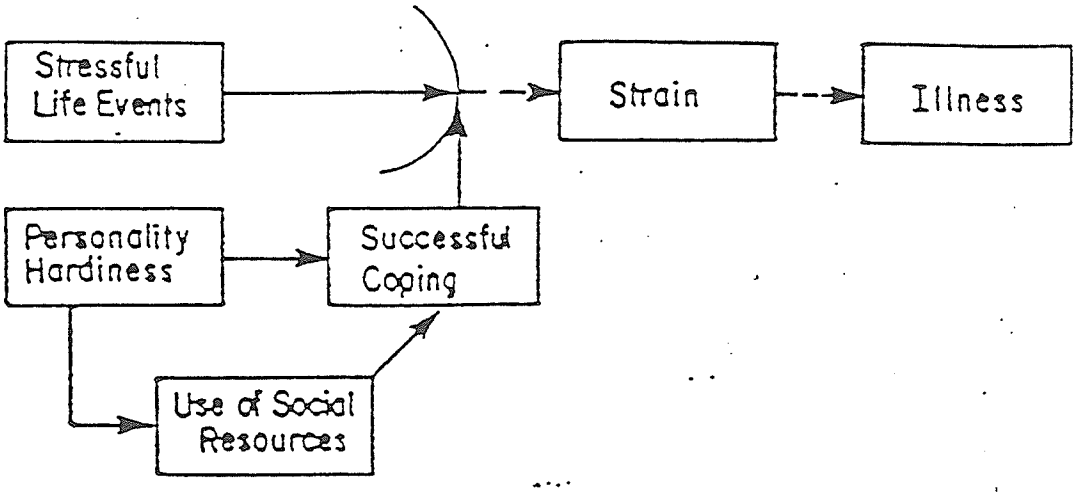
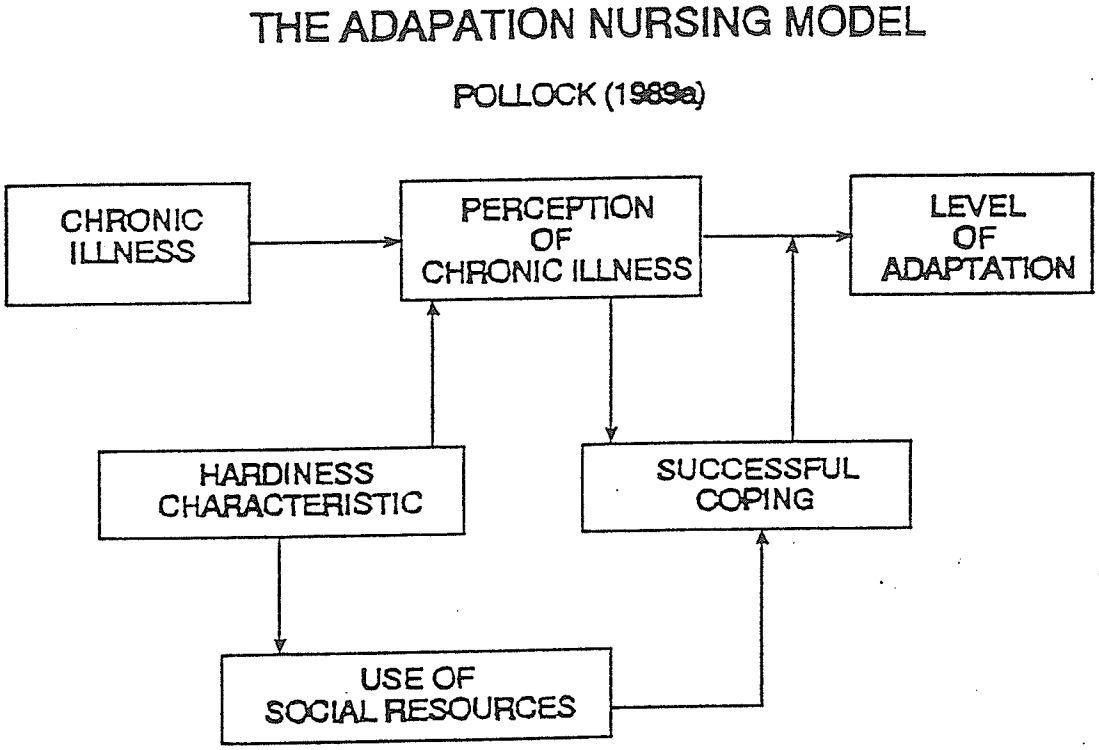
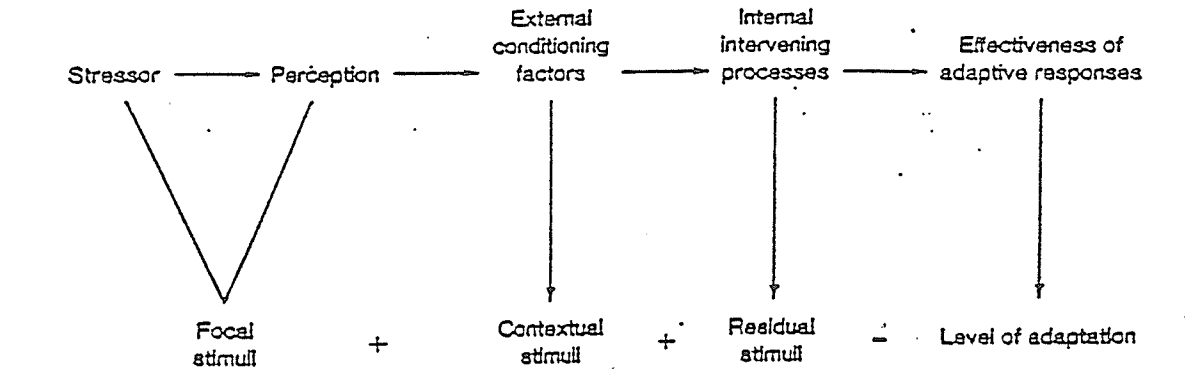
HARDINESS MODEL



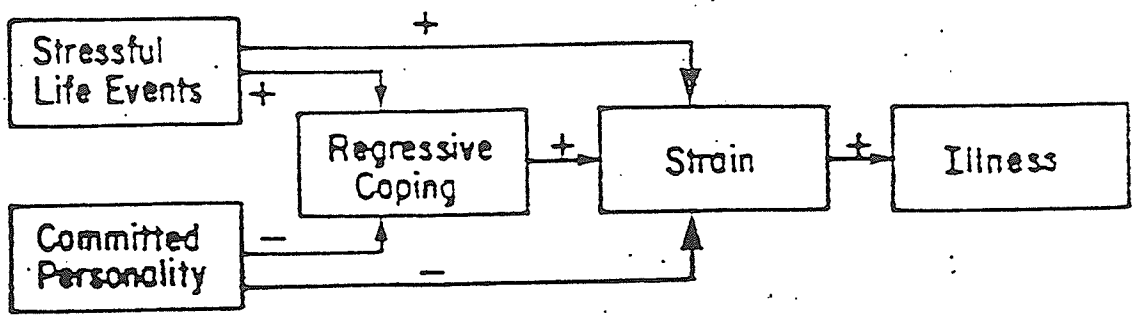
The buffering effect of hardiness: Kobasa & Puccetti (1983).



Adaptation Nursing Model: Pollock (1989a).

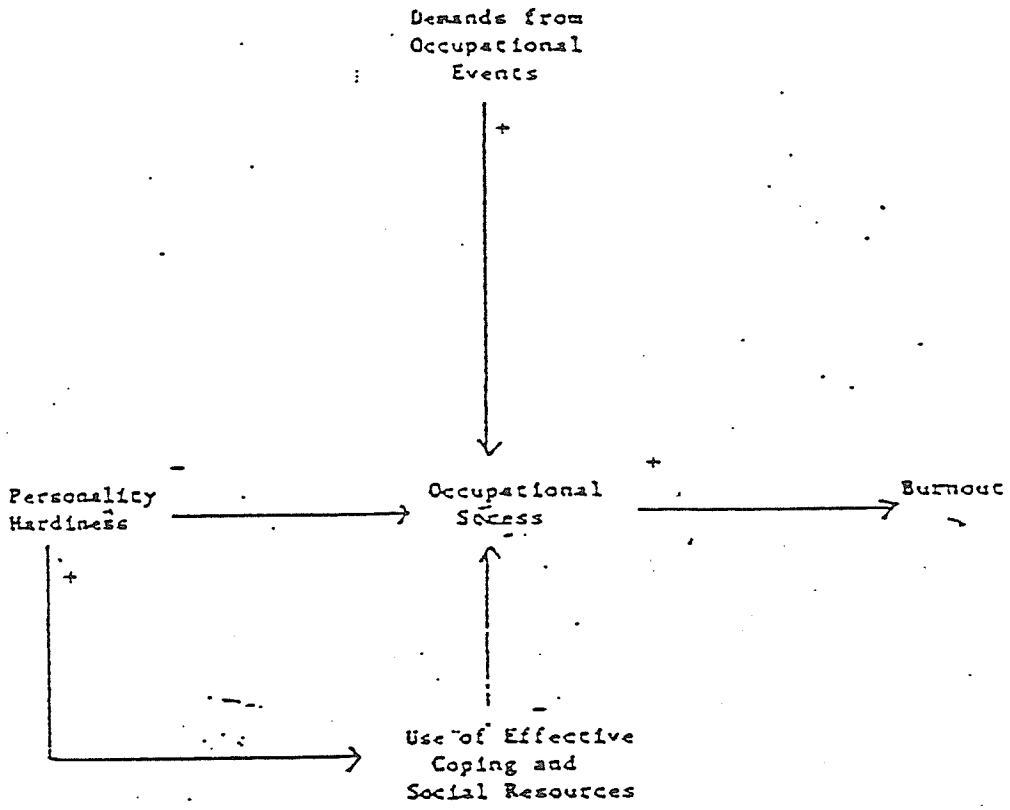


Pollock's original Adaptation Nursing Model: Pollock (1984).



Direct and indirect effects of hardiness

Kobasa's original Hardiness Model: Kobasa (1982b)



Topf's variation of the Hardiness Model: Topf (1989).

Focal Stimuli + Contextual Stimuli + Residual Stimuli = Level of Adaptation			
Theoretical Level of Model			
Operational Level of Model			
Diabetes Mellitus + Intervening Variables + Hardiness Characteristic =			Effectiveness of Behavior (Adaptive or Maladaptive)
Stress Appraisal	Coping Styles	Control	
Anticipatory	Problem-Focused	Commitment	Physiological Adaptation
Outcome	Emotion-Focused	Challenge	
	Demographics		

Conceptual model of adaptation to diabetes mellitus: Pollock (1989b)

APPENDIX G

SYNOPSIS OF HARDINESS STUDIES

Author	Sample Size	Sex	Age	Population	Hardiness Measure
Banks & Gannon (1988)	39 58	M F	19.87	Undergraduate students	5 subscales (shortened)
Bartone (1989) et al	152 12	M F	22 - 51	Survivor Assistance Worker	45 Item (modified)
Contrada (1989)	68	M	18 - 22	Undergraduate students	5 subscales
Daniel (1987)	114 26	M F	40 - 60	Long Service Employees	36 Item
Funk & Houston (1987)	117	M		Undergraduate students	5 subscales
Ganellen & Blaney (1984)	83	F		Undergraduate students	LOC & Alienation Test
Hannah & Morrisey (1987)	160 157	M F	12 - 18	Junior & Senior High School students	20 Item (modified) (1982)
Howard, et al (1986)	217	M		Middle & Top Management	
Hull, et al (1987)	1004			Undergraduate students	Long & Short Forms 5 + 3 subscales
Kobasa (1979)	670	M	40 - 49	Executives	18 subscales Longest version
Kobasa (1982)	157	M	40	Lawyers	Committment only - with powerlessness & vegetativeness scales
Kobasa, et al (1979)	160		48	Managers	?
Kobasa, et al (1981)	259 same sample	M	32 - 65	Executives	6 subscales
Kobasa et al (1982 b)	259	M	32 - 65	Executives	6 subscales
Kobasa et al (1982 a)	137	M	52.1	Managers	5 subscales (1982)

Author	Sample Size	Sex	Age	Population	Hardiness Measure
Kobasa et al (1985)	70	M		Executives	5 subscales
Kobasa, et al (1983)	140	M	33 - 65	Executives	5 subscales
Kobasa & Pucetti (1983)	170	M	33 - $\frac{65}{48}$	Executives	5 subscales (1982)
McCranie, et al (1987)	102 5	M F	30.3	Registered Nurses	36 Item 6 subscales (abridged) 1984
McNeil, et al (1986)	67 223	M F	63	> 50 years	20 Item (modified)
Maloney & Bartz (1983)	68	F	22 - 36 28	Registered Nurses with degrees	Alienation Test LOC Calif. Life Goals
Nagy & Nix (1989)	56 151	M F	74% >20	Undergraduate students	36 Item (adapted) 1982
Nowack (1986)	48 98	M F	20 - 55	Supervisory Personnel	Alienation from LOC, Sensation Seeking
Rhodewalt & Agustsdottir (1984)	311 289	M F	17 - 57 21	Undergraduate students	20 Item
Rich & Rich (1987)	100	F	21 - 60	RN's with > 1 yr. experience	5 subscales (1982)
Roth, et al (1989)	163 210	M F	21.7	Undergraduate students	5 subscales (1982)
Schmied & Lawler (1986)	82	F	21 - 59 35	Secretaries	5 subscales (1982)
Topf (1989)	9 91	M F	23 - 59 35.5	RN's	59 Items Alienation from Work & Social Institutions
Wiebe & McCallum (1986)	26 60	M F	22	Undergraduate students	5 subscales (1982)
Zich & Temoschok (1987)	50 53		24 - 56 35 25 - 62 37	AIDS ARC	"abbreviated form"

APPENDIX H

PERSONAL VIEWS SURVEY II

Below are items with which you probably agree or disagree. Indicate how you feel about each one by circling a number from **-3 (STRONGLY DISAGREE)** to **+3 (STRONGLY AGREE)**. Please do not leave any items blank.

1. I wake up eager to take up my life, where it left off the day before.....	-3	-2	-1	+1	+2	+3
2. Politicians run our lives.....	-3	-2	-1	+1	+2	+3
3. Planning ahead can help avoid future problems.....	-3	-2	-1	+1	+2	+3
4. I feel that I can change what might happen tomorrow, by what I do today.....	-3	-2	-1	+1	+2	+3
5. I feel uncomfortable if I have to make changes in my everyday schedule.....	-3	-2	-1	+1	+2	+3
6. No matter how hard I try, my efforts will accomplish nothing.....	-3	-2	-1	+1	+2	+3
7. I find it difficult to imagine getting excited about working for a living.....	-3	-2	-1	+1	+2	+3
8. No matter what you do, the "tried" and "true" ways are the best.....	-3	-2	-1	+1	+2	+3
9. People who work for a living are just manipulated by their bosses.....	-3	-2	-1	+1	+2	+3
10. When you get involved in a relationship you lose your freedom of choice.....	-3	-2	-1	+1	+2	+3
11. No matter how hard you work, you never seem to reach your goals.....	-3	-2	-1	+1	+2	+3
12. I believe what happens in life is just meant to happen.....	-3	-2	-1	+1	+2	+3
13. It doesn't matter if you work hard at your job, since only the bosses profit from it anyway.....	-3	-2	-1	+1	+2	+3
14. I don't like conversations when others are confused about what they mean to say...	-3	-2	-1	+1	+2	+3
15. The most exciting thing for me is my own fantasies.....	-3	-2	-1	+1	+2	+3
16. When I make plans I'm certain I can make them work.....	-3	-2	-1	+1	+2	+3

17. It's exciting for me to learn something about myself..... -3 -2 -1 +1 +2 +3

18. It just doesn't pay to try hard, since things never turn out right anyway..... -3 -2 -1 +1 +2 +3

19. I enjoy being with people who are unpredictable..... -3 -2 -1 +1 +2 +3

20. It bothers me when something unexpected interrupts my daily routine..... -3 -2 -1 +1 +2 +3

21. When I make a mistake, there's very little I can do to make things right again..... -3 -2 -1 +1 +2 +3

22. I respect rules, because they guide me. -3 -2 -1 +1 +2 +3

23. One of the best ways to handle problems is just not to think about them... -3 -2 -1 +1 +2 +3

24. I believe that athletes are just born good at sports..... -3 -2 -1 +1 +2 +3

25. I don't like things to be uncertain or unpredictable..... -3 -2 -1 +1 +2 +3

26. My life gets wasted doing things that don't mean anything..... -3 -2 -1 +1 +2 +3

27. I don't really know my own mind..... -3 -2 -1 +1 +2 +3

28. I have no use for theories that are not closely tied to facts..... -3 -2 -1 +1 +2 +3

29. Ordinary work is just too boring to be worth doing..... -3 -2 -1 +1 +2 +3

30. When other people get angry at me, it's for no good reason..... -3 -2 -1 +1 +2 +3

31. Changes in routine bother me..... -3 -2 -1 +1 +2 +3

32. I find it hard to believe people who tell me that the work they do is of value to society..... -3 -2 -1 +1 +2 +3

33. I feel that if someone tries to hurt me, there's not much I can do to try and stop them..... -3 -2 -1 +1 +2 +3

34. Life just isn't very exciting for me... -3 -2 -1 +1 +2 +3

35. I like variety in my paid work..... -3 -2 -1 +1 +2 +3

APPENDIX I

CRITICAL CARE NURSING STRESS SCALE

On the following 3 pages, you will find a list of common critical care nursing stressors. Respond to each of the corresponding Likert scales using the following questions and definitions as your guide. Please do not leave any items blank:

Frequency: How often does this stressor occur?

never	almost never	some-times	fairly often	very often
0	1	2	3	4

Intensity: How stressful is, or would this stressor be for you?

not at all stressful				very stressful
0	1	2	3	4

Threat: Threatening situations are stressful. They are characterized by negative emotions and harm or loss is anticipated. How threatening is, or would this stressor be to you?

not at all threatening				very threatening
0	1	2	3	4

Challenge: Challenging situations are stressful. They are characterized by positive emotions. There is potential for growth or gain from the encounter. How challenging is, or would this stressor be to you?

not at all challenging				very challenging
0	1	2	3	4

Frequency: How often does this stressor occur?

never				very often
0	1	2	3	4

Intensity: How stressful is, or would this stressor be for you?

not at all stressful				very stressful
0	1	2	3	4

Threat: Threatening situations are stressful. They are characterized by negative emotions and harm or loss is anticipated. How threatening is, or would this stressor be to you?

not at all threatening				very threatening
0	1	2	3	4

Challenge: Challenging situations are stressful. They are characterized by positive emotions. There is potential for growth or gain from the encounter. How challenging is, or would this stressor be to you?

not at all challenging				very challenging
0	1	2	3	4

Stressor Category	Frequency	Intensity	Threat	Challenge
I. MANAGEMENT OF THE UNIT				
1. Inadequate staffing...	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
2. Apathetic, incompetent medical staff.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
3. Apathetic, incompetent nursing staff.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
4. Precepting students...	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
5. Emergencies,transfers, admissions.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
6. Unavailability of physicians.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
7. Shifts, scheduling....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
8. Interruptions, paper work.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
9. Patients not needing ICU.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
10. Charge position.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
11. Floating out of unit..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
12. Lack of continuity in patient assignments...	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
II. INTERPERSONAL RELATIONSHIPS				
13. Personality conflicts.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
14. Disagreements with MDs re patient treatment..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
15. Unresponsive nursing leadership.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
16. Lack of respect from physicians.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4

Frequency: How often does this stressor occur?

never				very often
0	1	2	3	4

Intensity: How stressful is, or would this stressor be for you?

not at all stressful				very stressful
0	1	2	3	4

Threat: Threatening situations are stressful. They are characterized by negative emotions and harm or loss is anticipated. How threatening is, or would this stressor be to you?

not at all threatening				very threatening
0	1	2	3	4

Challenge: Challenging situations are stressful. They are characterized by positive emotions. There is potential for growth or gain from the encounter. How challenging is, or would this stressor be to you?

not at all challenging				very challenging
0	1	2	3	4

CRITICAL CARE NURSING STRESS SCALE: Cont'd:

Stressor Category	Frequency	Intensity	Threat	Challenge
17. Lack of teamwork among staff.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
18. Communication problems	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
19. Lack of teamwork with other departments.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
III. PATIENT CARE				
20. Emergencies, arrests..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
21. Unnecessary prolongation of life..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
22. Critical, unstable patients.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
23. Death of "special" patients.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
24. Inability to meet patients' needs.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
25. Inability to meet family needs.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
26. Responsibility, decision making.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
27. Chronic patients.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
28. Uncooperative patients	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
29. Routine procedures....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
IV. KNOWLEDGE & SKILLS				
30. Inadequate knowledge..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
31. Unfamiliar equipment..	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
32. Lack of experience & skill.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
33. Unfamiliar situations.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
34. Inadequate continuing education.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4

Frequency: How often does this stressor occur?

never				very often
0	1	2	3	4

Intensity: How stressful is, or would this stressor be for you?

not at all stressful				very stressful
0	1	2	3	4

Threat: Threatening situations are stressful. They are characterized by negative emotions and harm or loss is anticipated. How threatening is, or would this stressor be to you?

not at all threatening				very threatening
0	1	2	3	4

Challenge: Challenging situations are stressful. They are characterized by positive emotions. There is potential for growth or gain from the encounter. How challenging is, or would this stressor be to you?

not at all challenging				very challenging
0	1	2	3	4

CRITICAL CARE NURSING STRESS SCALE: Cont'd:

Stressor Category	Frequency	Intensity	Threat	Challenge
V. PHYSICAL WORK ENVIRONMENT				
35. Insufficient/mal-functioning equipment.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
36. Work space.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
37. Noise.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
38. General work environment.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
39. Too many people.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
40. Lighting.....	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4

APPENDIX J

THE PERCEIVED STRESS SCALE

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate ***how often*** you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

never	almost never	some-times	fairly often	very often
0	1	2	3	4

1. In the last month how often have you been upset because of something that happened unexpectedly?
   0 1 2 3 4

2. In the last month, how often have you felt that you are unable to control the important things in your life?
   0 1 2 3 4

3. In the last month, how often have you been nervous or "stressed"?
   0 1 2 3 4

4. In the last month, how often have you dealt successfully with irritating life hassles?
   0 1 2 3 4

5. In the last month, how often have you felt that you are effectively coping with important changes that were occurring in your life?
   0 1 2 3 4

6. In the last month, how often have you felt confident about your ability to handle your personal problems?
   0 1 2 3 4

7. In the last month, how often have you felt that things were going your way?
   0 1 2 3 4

THE PERCEIVED STRESS SCALE: Cont'd:

never	almost never	some-times	fairly often	very often
0	1	2	3	4

8. In the last month, how often have you felt that you could not cope with all the things that you had to?
0 1 2 3 4

9. In the last month, how often have you been able to control irritations in your life?
0 1 2 3 4

10. In the last month, how often have you felt that you were on top of things?
0 1 2 3 4

11. In the last month, how often have you been angered because of thing that happened that were outside of your control?
0 1 2 3 4

12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
0 1 2 3 4

13. In the last month, how often have you been able to control the way you spend your time?
0 1 2 3 4

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
0 1 2 3 4

APPENDIX K

DEMOGRAPHIC INFORMATION

Please check the most appropriate response for each of the following questions:

1. Current employment status (percentage of a full-time position):

__ 10% - 40%

__ 50% - 90%

__ Full time

2. Level of nursing education achieved to date (check as many as correct):

__ R.N.

__ B.N.

__ M.N.

__ ICU Program

__ Other, please specify_____

3. Total years of nursing experience:

__ 1 - 5 years

__ 6 - 10 years

__ 11 - 15 years

__ > 15 years

4. Age in years:

__ 20 - 29 years

__ 30 - 39 years

__ 40 - 49 years

__ > 49 years

ATTENTION

All female critical care nurses
with at least one year of ICU experience

You are invited
to participate in
a

CRITICAL CARE NURSING STUDY

Informational sessions will begin
the week of
FEBRUARY 8th, 1993

for more information
please contact

Jo-Ann Sawatzky
@
774-1446

APPENDIX M

LETTER OF INVITATION AND EXPLANATION

Dear Colleague;

My name is Jo-Ann Sawatzky. I am a graduate student in nursing at the University of Manitoba. I am inviting you to participate in a research study that I am conducting as part of my thesis requirements. This critical care nursing study is designed to explore and describe the relationship between stressful events, perception of those events, and personality. The information obtained from this study will effect a better understanding of stress in critical care nurses. All female critical care nurses who have been employed in the medical or surgical intensive care units in either of Manitobas' tertiary care hospitals (St. Boniface General Hospital or Health Sciences Centre) for at least one year are being invited to participate in this study. Your assistance, therefore, would be greatly appreciated.

If you agree to participate in the study, it will involve completing a series of 3 questionnaires. It will take approximately 20 minutes of your time. If possible, please complete the questionnaire package at home, in a relaxed atmosphere. Although there will be no immediate benefits to participants, the study may produce valuable information about stress in female critical care nurses.

In addition to several basic/demographic questions about yourself, the following information will be elicited from the questionnaires. One questionnaire deals with common stressors in the critical work environment, while another deals with more global life stressors. The third questionnaire asks questions about your personal views on various topics. There are no right or wrong answers!

Although your name will appear on the outside envelope, it does not appear on any of the questionnaire forms and it will not be associated with the analysis or reporting of the study. To ensure confidentiality and privacy, I would ask that you discard the outer envelope and return the completed form in the envelope which is enclosed in the questionnaire package. The completed forms may be returned to me directly, or put in the designated drop-off box in your area. Questionnaires are coded

for clerical purposes, to facilitate keeping track of incoming completed forms. Hence, if you take a form and have not returned it within approximately 2 weeks, you may receive a reminder notice from me. Only my thesis committee: Annette Gupton (Professor, Faculty of Nursing, University of Manitoba), Dr. Eleanor Adaskin (Adjunct Professor, Faculty of Nursing, University of Manitoba), Dr. Diamond Kassum (Medical Director, Critical Care, St. Boniface General Hospital), a statistician, Dr. Jeff Sloane (Faculty of Nursing, University of Manitoba), and myself will have access to the data. These associates will not, however, have access to the identity of individual respondents.

Participation in this study is voluntary. By responding to and returning the completed questionnaire form, you will be giving consent to participate. Should you agree to participate, you are requested to answer all questions. Failure to answer questions may render the questionnaire invalid. You may also withdraw from the study at any time. There are no known risks to study participants.

The results will be based on group data, not individual responses. Thus, no one will know how you, as an individual, answered the questions. Based on the recommendation of the Medical Research Council, the data will be retained for 7-10 years. The results of the study may be published in a journal article. A summary of the study results will be available on request. Study findings will also be presented to your unit, as a group, on request.

If you have any questions that you would liked answered before making a decision to participate, or about the questionnaires, please call Jo-Ann Sawatzky at 774-1446 (please leave a message, and your call will be answered as soon as possible). Thank-you for taking the time to read this explanation.

Sincerely,

Jo-Ann Sawatzky, R.N.

JUST A REMINDER....

The Deadline for Submitting
Completed forms
for the

CRITICAL CARE NURSING STUDY

is

**FRIDAY*

**FEBRUARY 26th/93*

If you have any questions/concerns
please call

Jo-Ann Sawatzky
@
774-1446