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THE EFFECT OF JOB STRAIN IN THE HOSPITAL ENVIRONMENT:
APPLYING OREM'S THEORY OF SELF-CARE

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Public Affairs Program
in the College of Health and Public Affairs
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ABSTRACT

The purpose of this research was to evaluate the causal relationships between job strain, the practice environment and the use of coping skills in order to assist in the prediction of nurses who are at risk for voluntary turnover. It was conducted at the level of the individual nurse employee in order to better understand the health consequences associated with job strain, the factors in the professional practice environment which may contribute to the propensity to leave and the influence of coping behaviors in response to workplace stressors. It was undertaken with the intention of identifying intervention strategies which will promote a healthy workforce and the retention of nurses in the workplace.

An exploratory cross-sectional survey of 1235 staff nurses employed on the intensive, progressive and general medical-surgical nursing units of seven hospitals associated with a major Central Florida healthcare network tested a client-centered model in an effort to identify nurses vulnerable to the health consequences of job strain using structural equation modeling. Human subject protection was assured. An 82 item questionnaire was used to collect demographic data and measure responses to items associated with the constructs of health status, autonomy, collaboration, decentralization, coping, satisfaction, absenteeism and intent to leave. A variety instruments that were previously demonstrated as valid and reliable were used in the construction of the instrument. Subjects were also given the option of including additional written comments. A total of 325 surveys were returned, of which 308 met inclusion criteria, for a response rate of 25%.

Data analysis determined that the measurement of job strain as a function of self-assessed generic health status was predictive of propensity to leave ($\gamma = -.21$). The experience of job strain shared a strong association with indicators of mental health status. Job strain was significantly influenced by coping behavior ($\gamma = .56$) which targeted activities associated with sustaining and balancing. Anecdotal remarks suggested that the need for balance influenced perceptions regarding stressors in the workplace.

The professional practice environment was associated negatively with the propensity to leave ($\gamma = -.58$). Those staff nurses who experienced higher levels of autonomy expressed a greater degree of satisfaction and lower intent to leave. The variables of collaboration and decentralization contributed minimally to the construct of professional practice. Anecdotal remarks suggested that the low contribution of collaboration and decentralization contributed to a sense of powerlessness and frustration with work related circumstances.

The influence of job strain, coping and the professional practice environment upon staff nurses suggests that health promotion strategies, efforts to enhance coping behavior and promotion of a professional practice environment will increase employee satisfaction and reduce intent to leave. Adoption of policies and procedures which support the health and well-being of individual staff members will benefit employees, strengthen the organizations in which they practice and promote the overall retention of nurses in the face of looming nurse shortages.

To my husband, Thomas W. Andrews, whose love and steadfast support made
completion of this undertaking possible.

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I am also grateful to my family, friends and colleagues who championed my efforts and forgave my shortcomings. I am especially thankful for the love and support of my husband, Tom, and my children, Christine and Charles. Finally, I would like to express appreciation to the Theta Epsilon Chapter of Sigma Theta Tau, Inc., and the Southern Nursing Research Society, both of which supported my research through small research grants.

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LIST OF ACRONYMS/ABBREVIATIONS

AACN	American Association of Colleges of Nursing
AGFI	Adjusted Goodness of Fit Index
AHA	American Hospital Association
ANA	American Nurses Association
AONE	American Organization of Nurse Executives
BLS	Bureau of Labor Statistics
BP	Bodily Pain
BSN	Bachelor of Science in Nursing
CAT	Computerized Adaptive Testing
CFA	Confirmatory Factor Analysis
CN	Hoelter's Critical N
df	Degrees of Freedom
DSCPI-90©	Denyes Self-Care Practice Instrument
EFA	Exploratory Factor Analysis
FHA	Florida Hospital Association
GAO	General Accounting Office
GFI	Goodness of Fit Index
GH	General Health
HIPPA	Health Insurance Portability and Accountability Act
HSRA	Health Resources and Services Administration
ICU	Intensive Care Unit
IRB	Institutional Review Board
KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
MCS	Mental Component Summary
MH	Mental Health
N or n	number of subjects
NFI	Normed Fit Index
nl	normal
NORC	National Opinion Research Center
NSSRN	National Sample Survey of RNs
NWI-R	Revised Nursing Work Index
p	probability
PCS	Physical Component Summary
PF	Physical Functioning
RE	Role Emotional
RMSEA	Root Mean Square Error of Approximation
RN	RN
RP	Role Physical
S-CDTN	Self-Care Deficit Theory of Nursing
SEM	Structural Equation Model
SF	Social Functioning

SF-12
SF -12v2™
SF-36
TLI
VT
WHO
x²

Short Form – 12
Short Form – 12 version 2
Short Form – 36
Tucker Lewis Index
Vitality
World Health Organization
Chi-square

CHAPTER ONE: INTRODUCTION

In spite of recent improvements in nurse vacancy rates (Buerhaus, Staiger & Auerbach, 2003), the U.S. Bureau of Labor Statistics projects that more than 1 million nurses will be needed by 2010 to replace those leaving the profession and to meet the 25.6 % anticipated increase in demand (Hecker, 2001). This shortage will expand to crisis proportions by 2015 when the United States will experience a 20% shortage of available nurses (Health Resources and Services Administration [HRSA], 2002). The demand for nurses will continue, exceeding the available supply by over 800,000 nurses in 2020.

In response to this pending crisis, Federal and state agencies, legislatures, professional nursing organizations, the health care industry, labor organizations and private philanthropies have all responded with analysis, recommendations, and in some cases resources (Kimball, O'Neil and Health Workforce Solutions, 2002). This marshalling of forces has produced a myriad of suggested responses. But the question remains, what does this mean to the nurse executive who is trying to make sure that enough staff are available and appropriately prepared to meet the needs of the individuals who are currently in need of safe and effective nursing care?

Market Forces

This shortage began when labor market conditions worsened and the earnings of Registered Nurses (RN) declined with the advent of managed care in the early 1990's (Buerhaus & Staiger, 1999). After growth statistics for the profession that were nearly double those for all occupations between 1983 and 1994, Buerhaus and Staiger noted a

sharp drop in the employment rate for RNs, accompanied by a 1.5% annual decrease in earnings from 1995 to 1997. These data are positively associated with figures that show a 28.7 % decline in the number of nurses taking the professional licensing exam between 1995 and 2001 (American Association of Colleges of Nursing [AACN], 2002). Earnings only began to improve in 1999 as hospitals began to respond to the shortages in available nursing staff by increasing salaries (Bauer, October, 2001). Enrollment in nursing education programs began to demonstrate corresponding increases in enrollment in 2000 (AACN, 2004). However, the AACN reports that due to a limited number of faculty, clinical sites and classroom space, colleges of nursing have been unable to expand to adequately respond to this growing need. During 2004, 32,797 qualified students were turned away from baccalaureate and graduate nursing programs (AACN, 2005).

Nursing faculty shortages present additional challenges. Current vacancies in baccalaureate and graduate programs exceed 700 positions and those same institutions report the need for 122 additional positions to meet student demand (AACN, 2003). In addition to experiencing difficulty due to an inadequate supply of faculty, educational programs are facing difficulty recruiting potential faculty members as they must compete with private sector jobs. In 2003 a master's prepared nurse practitioner earned an average salary of \$80,697 in contrast to that of a master's prepared nurse professor who earned \$60,357 (AACN, 2004). An aging nursing workforce has also contributed to faculty shortages. According to the AACN (2004), the median age of full-time nurse faculty is 51.5 years. An insufficient number of qualified faculty was identified by the AACN (2005) as the reason why 76.1% of nursing programs were unable to accept qualified students. This situation becomes more alarming when coupled with a report

from Buerhaus, Needleman, Mattke and Stewart (2002) that nursing school enrollment would need to increase by 40% immediately to meet projected needs.

Meanwhile, nurses are leaving the profession in record numbers. Research from the University of Pennsylvania suggests that graduates are leaving the profession within the first four years at increasing rates (Sochalski, 2002). From 1992 to 2000, rates for men leaving the profession rose from 2% to 7.5% and for women the figures increased from 2.7% to 4.1%. Between 1996 and 2000 nearly 175,000 nurses left the licensure pool (Spratley, Johnson, Sochalski, Fritz & Spencer, 2001). When these data are compared to previous National Sample Survey of Registered Nurses (NSSRN) measurement periods, the rate of individuals who gave up the license to practice nursing is six to seven times greater than the rate of those leaving the profession during earlier measurement periods (Spratley et al., 2001). Meanwhile, the number of nurses who are licensed and not employed in nursing grew from 52,000 in 1996 to 490,000 in 2000. The net result is a national vacancy rate of 126,000 nurses (American Hospital Association [AHA], 2001). By 2020 the anticipated percentage for the shortage of available nurses as related to the care needs of the population is expected to reach 29% (HRSA, 2002).

In the past, nurse executives would have responded to such a shortage in a fairly typical manner. Retention efforts would be intensified through improved compensation packages and creative scheduling options until aggressive recruitment efforts by educational programs could increase the supply of available nurses (Tanner & Bellack, 2001). However, by all accounts, this is a shortage unlike any other (Kimball et al., 2002). Managed care has contributed to a significant increase in the acuity of hospitalized patients (Buerhaus, 2000a), and the aging population is causing an increased

demand for patient care services (Quinless & Elliott, 2000). It is projected that this sharp increase in demand will overwhelm conventional strategies to increase the supply of available nurses (HRSA, 2002). Figure 1 demonstrates the degree of this disparity as projected by the Bureau of Health Professions.

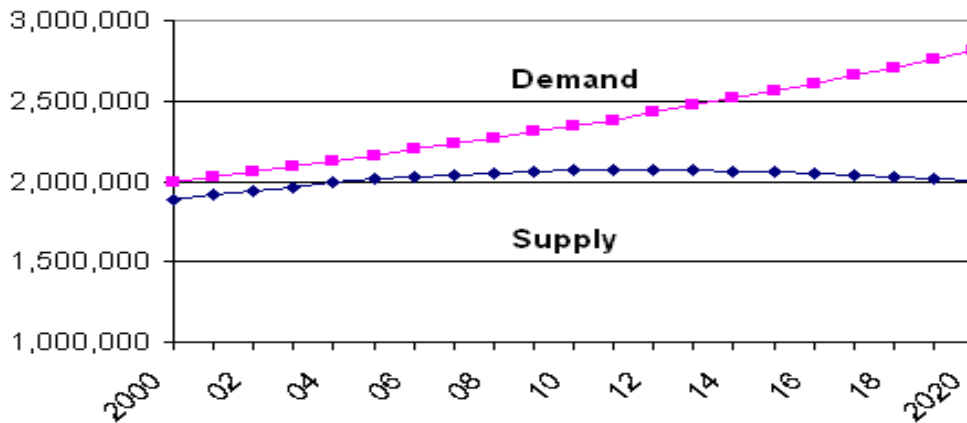


Figure 1: National Supply and Demand Projections for Full-Time Equivalent RNs, 2000 to 2020. (Source – Bureau of Health Professions, RN Supply and Demand Projections)

The demographics associated with the nursing workforce provide evidence of additional influences that complicate implementation of traditional strategies to respond to the projected increase in demand. The nursing workforce is aging. In 2000, two-thirds of all RNs were over the age of 40, and nurses under the age of 30 declined by 41% between 1983 and 1998 (General Accounting Office [GAO], 2001). The available workforce from which to draw potential nurses continues to weaken as there are fewer potential workers to follow the “baby boom” generation that provided a dramatic increase in the U.S. labor pool between 1970 and 1980 (AHA, 2002). This is compounded by what Staiger, Auerbach and Buerhaus (2000) report as a declining interest in a nursing

career due to expanding career opportunities for women. The AHA suggests that fewer potential workers are pursuing health careers and that current workers are experiencing low levels of job satisfaction.

Nursing recruitment efforts are also faced with challenges due to the failure of past efforts to attract a diverse workforce. Traditional recruitment efforts for nursing students have been largely directed towards white females (Dower, McRee, Briggance, & O'Neil, 2001). The result is that 86.6% of practicing nurses are white as compared to a general population percentage of whites that measures 71.6% (Spratley et al., 2001). These figures are in stark contrast to the figures provided for other racial and ethnic groups. Of particular concern are the low numbers ascribed to the black and Hispanic population. Among blacks only 4.9% of a population that is measured as 12.2% of the general population practice nursing, and for Hispanics just 2% out of a population percentage of 11.4% seek nursing as a career.

The figures associated with gender are even bleaker. Of the 2.7 million nurses in the United States, only 6% are men (Spratley et al., 2001). Moreover, a national poll indicates that only 10% of men would consider nursing as a career choice (Linkous, 2002). The inability of the nursing profession to successfully recruit male candidates and candidates from under-represented populations severely limits the pool from which future nurses might be secured (AHA, 2002).

The combination of these factors creates a scenario that is different from previous cyclic shortages. While researchers acknowledge previous failures to fully address nursing recruitment and retention issues as contributory to the current situation, this shortage is described as “quantitatively and qualitatively different from past shortages”

(Kimball et al., 2002, p. 6). An examination of reports, white-papers and issue briefs indicates that past, market-driven solutions will fall short, while the burdens of providing patient care will place new challenges on recruitment and retention efforts resulting in the potential for patients to be placed at increased risk for illness and death. Public concern about the seriousness of this suggested outcome is reflected in the results of a Johnson and Johnson poll that indicates that 65% of Americans see the shortage as a “major problem” or “crisis” and that 93% believe that the shortage places the quality of health care in jeopardy (Nursing Shortage, 2002).

Intervention Strategies

The Robert Wood Johnson Foundation undertook a comprehensive evaluation of the nursing shortage in an effort to support an informed response by the Foundation to the pending crisis (Kimball et al., 2002). Consideration of broad-based intervention strategies intended to abate the shortage as proposed by professional nursing organizations, the health care industry, labor organizations, legislatures, government entities, nursing education, and organizations associated with health care delivery, staffing and philanthropy lead the researchers to conclude that only a “re-envisioning of the nursing profession itself” will result in a satisfactory outcome (Kimball et al., 2002). The California HealthCare Foundation (2001) corroborates this finding, warning that California faces a public health crisis “unless major changes are made immediately in nursing practice, education, recruitment, and retention” (p.1). Kimball et al. identified the following general categories for suggested action:

- More effective recruitment.

- Expand education capacity and opportunity.
- Make positive changes in the work environment.
- Make the contributions of nurses evident.
- Improve compensation and opportunities for advancement..
- Legislative intervention.
- Use workplace data to support planning.
- Empower nursing leadership.

Each of these solutions contains strategies that promote long-term remedies intended to change the way that the nursing profession goes about recruiting and retaining its membership. They do little to assist the nurse executive with strategies designed to identify and address the individual issues facing nurses who are struggling to adapt to the current conditions. This perspective takes on additional significance when one considers that the decision to enter the profession and remain an active practitioner is made on an individual level. This suggests the need to develop an intervention strategy that takes into account the influences upon the individual which have the potential to impact decision-making.

Nurse Retention and Job Satisfaction

Considerable attention has been given to the role of job satisfaction and nurse retention. This relationship has particular significance as the percentage of nurses who report low satisfaction in the work environment are at levels as high as 40% (Aiken et al., 2001). This is in contrast to percentages reported in the General Social Survey of the National Opinion Research Center (NORC) from 1986 to 1998 which indicate that the

general population reports less than 8% job dissatisfaction (NORC, 1998). Numerous studies tie low levels of nurse job satisfaction to turnover and intent to leave (Hart, 2001; Irvine & Evans, 1995; Larrabee, Janney, Ostrow, Witbrow, Hobbs & Burant, 2003; Mark, Salyer & Wan, 2003; Rambur, Palumbo, McIntosh & Mongeon, 2003; Taunton, Boyle, Woods, Hansen & Bott, 1997).

Research reports regarding sources of low job satisfaction in nursing are also numerous (Hoffman & Scott, 2003; Ma, Samuels & Alexander, 2003; McNeese-Smith, 1999; McNeese-Smith & Crook, 2003; Sochalski, 2002). Although many methods of categorizing these attributes have been offered, the list by Sengin (2003) is representative. The attributes listed include autonomy, interpersonal communication/collaboration, professional practice, administrative/management practices, job/task requirements, opportunity for advancement/promotion, working conditions/physical environment, pay, and fairness. Each of these variables is described by the author as contributing to job satisfaction and the impact is described in terms of organizational consequences.

In a separate literature review, McVicar (2003) identified many of the preceding attributes and labeled them as workplace stressors. The author concluded that in addition to the limitations of the studies which seek to characterize work-related stress and their relationship to retention, that there are issues with the consistency of the nurse's perception of the sources of work related stress and the nature of the nurse's response. The finding of inconsistency in response to stress on an individual level is in agreement with the analysis of Sapolsky (1998) who emphasizes the personal nature of the stress response. Individuals respond to stress based upon a broad variety of physical,

psychological and social stimuli with a corresponding physiologic response distinct to each person.

Larrabee et al. (2003) investigated nurse attitudes (empowerment and hardiness) as they related to job satisfaction, job structure (support services, collaboration and autonomy) and job context (organizational task environment). The researchers determined that control of practice and feelings of empowerment were significant negative predictors of intent to leave. However the authors cautioned that the “verifiable external reality” (p. 279) of these findings is the influence of a nurse’s interpretive style or attitude in response to the organizational environment. Simply creating an environment that supports empowerment with the hope of improved job satisfaction is still subject to an individual’s response to that environment. Laschinger, Finegan & Shamian (2001a) support this conclusion in research that finds that once psychological empowerment, described as an employee’s adaptive response to the conditions of the work environment, is taken into account, that the relationship between job satisfaction and job strain become insignificant. This suggests that general characterizations of response to stress, based upon job satisfaction, are not easily achieved. In this vein, while global measurement of job satisfaction may suggest an individual’s propensity to experience job stress, it may not serve as an indicator of an individual’s ability to respond to that stress.

Personal Health

What then does serve as an indicator? Research reports suggest that the answer may be related to personal health. Sapolsky (1998) identifies three sources of stress. (1)

Acute physical stressors are extremely demanding events that require an immediate physical response to ensure survival. (2) Chronic physical stressors require a long-term adaptation to sustained stressful events. Both of these categories of stressors are considered the adaptive coping response of an individual to the environment. However, (3) physiological and social stressors are those events that are described as elemental to stress related disease because instead of being adaptive they actually provoke stress related physical responses that cannot be disengaged. They are often associated with lack of predictability and loss of control. They are the stressors that are described as able to actually make an individual sick.

In evaluating the influence of stress upon health, Marmot, Siegrist, Theorell and Feeney (1999) directly associate the psychosocial environment at work with the health of the worker. The authors caution that such determinations are more difficult to make as the “stressors cannot be identified by direct physical or chemical measurements” (p. 109). Measurement requires sound theory that allows the components that produce health altering stressors to be identified and the effects quantified. One theory offered as promising is the demand-control model originally associated with the work of Karasek (1979). Using a two dimensional approach, Karasek proposed that high levels of psychological demands coupled with low levels of decision latitude predicted stress resulting in physical illness. Marmot et al. analyzed the relevant literature that considered the relationship between cardiovascular disease and job strain, as conceptualized using the demand-control model, and demonstrated that job strain was predictive of physical illness as measured by the experience of cardiovascular events.

The effect of job strain on nurses has been studied primarily in the nationalized Canadian and European health care systems (Landerweerd & Boumns, 1994). In this environment, the experience of job strain has been tied to low back pain (Gonge, Jensen & Bonde, 2002), low self-rated health and increased absenteeism (Lindholm, Dejin-Karlsson, Ostergren & Uden, 2003). In the United States, Cheng, Kawachi, Coakley, Schwartz and Colditz (2000) used data from 21,290 working nurses participating in a longitudinal national health study to complete a prospective study of the relationship between psychosocial work characteristics and changes in health. The conclusions supported a finding that nurses who experienced adverse psychosocial work conditions were more likely to experience diminished health and demonstrate a greater decline in health status over time.

There are also direct health consequences associated with the work environment. Between July 11, 2001 and August 15, 2001 a total of 4,826 nurses responded to an online survey conducted by the American Nurses Association (ANA) (2001). A key finding of this study was that 87.9% of the respondents stated, "...that health and safety concerns influence decisions about the kind of nursing work performed and their continued practice in the field of nursing" (pg. 6). Fewer than 20% of the respondents stated that they feel very safe at work, with 56.9% reporting threats or verbal abuse and 17% reporting that they had experienced physical assaults at work in the last year. Job related injuries were reported by 40% of the respondents, although fewer than 26% stated that they notified their employer of the injury.

The preceding data are supported by reports from the Bureau of Labor Statistics (BLS) (2004) that indicates that hospital workers experience job related injury and illness

at rates that are among the highest in the workforce. These statistics and other related data lead the Institute of Medicine to conclude that “nursing is a hazardous occupation, and nursing personnel are exposed to a wide variety of health and safety hazards” (Wunderlich, Sloan, and Davis, 1996, p. 187). Taken together these multiple potential sources of diminished personal health suggest that nurses are at risk for health related consequences associated with employment.

Coping

Shaw (1999) describes the personal experience of a health threat as related to the individual’s “perception and interpretation of the symptoms in their own terms” (p 1247). Whether nurses perceive a health threat as a result of direct workplace hazards, job strain or a combination of the two, Shaw suggests that solutions are unique to the individual and dependent upon both the person and the nature of the situation. While many factors may influence the perception of a health threat, once that threat is identified, coping skills become important in the resolution of that threat. Coping strategies are proposed to either involve active health-seeking behavior or an emotional response of passive avoidance. Through appraisal and choice of action, based in part upon coping skills, the outcome will be physical and psychosocial well-being or distress. If the chosen behavior is adaptive it will result in better health and well-being. Maladaptive responses will produce distress and illness. This is consistent with Sapolsky’s (1998) description of a response to stress that either moderates the experience of that stress or provokes illness due to physical responses that cannot be disengaged. Cramer (1998) further differentiates this response and considers coping mechanisms a “conscious, purposeful effort,” and the

emotional component a defense mechanism that occurs “without conscious effort and without conscious awareness” (p. 921).

Such descriptions call heavily on the work of Lazarus and Folkman (1987) who conceptualized the relationship between person and environment as a dynamic referred to as transactional stress theory. According to this theory, those who appraise situations as less threatening are more likely to experience challenge rather than threat and seek to manage or alter the source of the stress. Those who sense threat or harm are more likely to invoke an emotional response and engage in avoidance behavior. Coping is described as a human function that seeks an adaptive outcome of health and a sense of well-being.

Ceslowitz (1989) tested this approach in a nursing population and concluded that such a differentiation was evident and significantly associated with burnout. Burnout is identified as stress that occurs when an individual is unable to moderate the negative effects of the professional work environment through the use of personal coping strategies (Laschinger, Almost & Tuer-Hodes., 2003). Jackson (1999) describes it as a “cumulative process leading to the loss of physical and mental energy, and to emotional exhaustion and withdrawal” (p. 587). Ceslowitz determined that those nurses who experienced lower burnout levels were identified as using coping behaviors that included strategies described as planful problem solving, positive reappraisal, self-controlling and seeking social support. Those who had higher burnout scores relied upon escape-avoidance, self-controlling and confronting. Burnout has been associated with stress induced health consequences (Sortet & Banks, 1996; Tummers, Landerweerd, & van Merode, 2002). Therefore it would appear that nurses attempt to manage stress through

application of coping strategies. It is the selection of coping strategies that is related to health outcomes.

Professional Practice

Coping skills may be influenced by the professional practice environment. Karasek (1979) postulates that it is jobs with high demand and low control that are most likely to result in adverse health consequences. High demand jobs stimulate an active physiological response to the work environment. The worker is unable to moderate this response though the use of adequate coping skills as a result of low control. Therefore, considerable attention has been directed to the issue of job control.

Job control relates to the manner in which the nurse is able to moderate the environment through use of discretion or decision-making (Karasek, 1979). De Rijk, le Blanc, Scaufeli and de Jonge (1998) determined that individuals who engaged in active problem solving were better able to moderate the effect of burnout though management of the demand-control imbalance. Both Laschinger et al. (2001a) and Mark et al. (2003) determined that professional practice environments in which the nurses perceived higher levels of autonomy-control, decision latitude and collaboration with physicians also experienced higher levels of satisfaction that in turn have been associated with a diminished experience of job strain as hypothesized by the demand-control model (Laschinger et al., 2001a). Therefore, the nature of the professional practice environment is perceived to have an influence upon coping strategies adopted by the individual nurse.

Self-Care

Orem (2001), while conceptualizing a framework for nursing practice, identified self-care as “the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well-being” (p. 43). This closely parallels the discussion on the influence of coping and the definition of coping provided by Lazarus and Folkman (1987). Orem also proposes that persons exist in an interactive relationship with their environment and use appraisal to consciously determine a suitable course of action in order to achieve a goal. According to Orem, health influences behavior, with diminished health states causing individuals to engage in behaviors intended to support physical and psycho-social health and well-being.

Orem’s Self-care Deficit Theory of Nursing (S-CDTN) is considered a classic nursing theory and is widely applied in practice, education and research (Hartweg, 1991). It is the subject of numerous books and resulted in over 20,000 responses on a common non-academic search engine and over 1,200 responses in a common nursing oriented academic search engine. Applying the construct of self-care to efforts to understand the impact of the health consequences of job strain on individual nurses and their adaptive response patterns provides a particularly useful analogy in this population. It also provides the basis for analysis of self-care response patterns in a manner especially meaningful to nurse managers as they try to determine appropriate intervention strategies.

As has been discussed, much of the research on nurse retention places the environment in the center of the model. Conclusions drawn from analysis of these research findings suggest alteration of environmental conditions to increase nurse empowerment (Laschinger et al., 2001a), support for control in the practice environment

(Cheng et al. 2000) and modification of the organizational structure to support professional nurse practice (Mark et al., 2003). Evaluating self-care as the ability of the person to cope with those environmentally related influences emphasizes the dynamic nature of nurse response to job strain. While environmentally oriented strategies to improve nurse retention are necessary, consideration of the ability of the nurse to cope supports the importance of the individual as central to any solution.

Therefore, it is the purpose of this study to evaluate the effect of job strain, a latent endogenous construct operationalized through the measurement of self-assessed health status of RNs, on coping. It is proposed that data collected through a cross-sectional survey be subjected to analysis via structural equation modeling in order to determine the influence of job strain on coping as conceptualized by Orem (2001). As research demonstrates that this model is influenced by the professional practice environment, those influences will be considered in model construction.

CHAPTER TWO: LITERATURE REVIEW

There is no scarcity of experience with nursing shortages. Difficulty finding enough adequately trained nurses to serve during the Civil War was the impetus behind the creation of the first schools of nursing in the United States (Donahue, 1985). The creation of a permanent nurse corps for the U.S. military similarly followed an inadequate supply of trained personnel during the Spanish American War. The arrival of *social consciousness* in the twentieth century gave rise to a need for individuals to provide care for those in society who were considered dependent – the children and the poor. From this need came the inception of public health and visiting nurse programs. Professional nurse midwifery resulted from an inadequate supply of caregivers in isolated communities and frontier regions. War again raised the consciousness when it became apparent that there was an insufficient supply of nurses to meet both military and civilian needs during World War I. The nation similarly responded to a need for more nurses during World War II.

World War II dramatically changed the way that medical care was provided with the emergence of specialty care units. Patients who could have faced an ominous prognosis were treated with technically advanced medical interventions. Optimism regarding an oversupply of nurses due to the build-up necessitated by World War II quickly faded as it became apparent that even more, highly-trained nurses were necessary to provide care to those acutely ill patients. The need to provide more highly educated nurses and uniformity in accreditation of their skills was detailed in the *Brown Report* that was issued in 1948 (Donahue, 1985). These recommendations lead to the unification

of state licensure exams in 1950, and the creation of an Associate Degree in Nursing in 1952.

By 1963, the Surgeon General issued a report again noting a shortage of nurses and linked this to the absence of financial support to pursue a nursing education. The result was the passage of The Nurse Training Act in 1964, which for the first time made Federal funds available to increase the supply of nurses. The allocation of funds for this purpose closely paralleled the cyclic shortages experienced in each decade since.

Buerhaus (2000a) describes the response to each of these shortages as following a classic economic model – the demand for health care increased and the system accommodated by providing more nurses.

The advent of managed care interfered with this classic response when insurance companies and the Federal government changed the dynamics within the health care delivery system from a cost-based model to a cost-managed model. The hospital's reimbursement for services were predicated upon managing costs that in patient care delivery systems were in part managed by altering personnel practices (Buerhaus, 2000a). The demand for nurses abated as evidenced by the falling salaries and employment opportunities documented after 1994 (Buerhaus & Staiger, 1996). At the same time, The Pew Health Professions Commission, in an effort to characterize and transform the current health care system to meet future needs, published a series of reports that included within its recommendations for nursing a need for a reduction in the number of nursing education programs by 10% to 20% (Schwirian, 1998).

However, the projections regarding employment strategies forecast as a result of managed care proved false, and the need for highly trained nursing personnel actually

increased (Buerhaus, 2000a). Supply had not followed demand, but had been limited by an artificial measure. The health care industry found itself facing an immediate shortage of nurses, especially in critical care facilities, and it found itself facing a future shortage due to a dwindling supply of appropriately educated personnel and a diminished emphasis on expanding education programs. Again the Federal government stepped in to provide funds to increase the supply. The Health Education Partnerships Acts of 1998 was signed into law on November 13, 1998. As projections regarding the severity of the shortage worsened, additional steps were taken to provide funding. On August 1, 2002, President George Bush signed into law the Nurse Reinvestment Act (2002) which provides funding for nursing education. Similar actions are being taken by many states (Kimball et al., 2002).

Current Circumstances

Evidence suggests that the current nursing shortage is broad-based. Serious staff vacancies exist in hospitals, nursing homes and home health care (GAO, 2001). The national staff vacancy rate for hospitals in 2000 averaged 10.2%, with suburban hospitals (12.7%) and hospitals with more than 350 beds (13.4%) experiencing higher rates (American Organization of Nurse Executives [AONE], 2002). Certain areas of the country are experiencing worse shortages than others. Vacancy rates in California, Florida and Nevada are reported to be as high as 20%, 16% and 13%, respectively (GAO, 2001). Vacancy rates also vary widely by department (AONE, 2002). The highest rates are found in medical surgical care (16.3%), critical care (15.5%) and emergency care

(15.2%). While some reports suggest that these rates may be falling in the short term, long term projections remain ominous (Buerhaus et al., 2003).

Reports also indicate that turnover rates are increasing (Heinrich, 2001). Hospital staff nurses exhibited a turnover rate of 15% in 1999. This is up from 12% in 1996. In 2000, the rate had increased to a national average of 21.3% (AONE, 2002). The highest turnover rates were found in specialty hospitals (25.2%) while hospitals using an integrated delivery system model reported the lowest rates (14.6%). In a study of 693 valid responses to a July 2001 survey mailed to the Director of Nursing at 4,711 hospitals listed in the most recent AHA directory of registered hospital in the United States, the AONE determined that the primary reasons noted for RN resignations were relocation (65%), more money (57%) and the desire for another nursing position (54%). Job satisfaction accounted for 20% of the resignations and retirement was listed by 16% of the administrators surveyed.

Educational programs are also experiencing faculty shortages, which are expected to grow more critical in the future (AACN, 2003). Enrollment in educational programs is not projected to meet the anticipated demands of either the practice or academic environment (AACN, 2004; Auerbach, Buerhaus & Staiger, 2000). Meanwhile, a significant percentage of nurses report low satisfaction in their work with indications that they are considering leaving the workforce (ANA, 2001; GAO, 2001).

Factors Influencing Nurse Retention

Those nurses who are at risk for voluntary turnover and abandonment of the profession are the focus of this analysis. Determination of those at risk individuals often

rests with the nurse executive. That charge is one of many faced by managers in an environment that is rapidly changing. Porter-O'Grady (2003) identifies a myriad of factors that affect today's work environment including changing patterns of providing patient care, alterations in payment models, staff shortages, alteration in the relationship of the worker to the work environment, influences of technology, temporary workers and increasing demands upon the nurse executive's time. In this environment the nurse executive is charged with "assuring a sustainable future for the organization, and ... advancing the value and the viability of those whose efforts lead to organizational success (Porter-O'Grady, 2003, p.109)." In this context, maintaining an effective workforce through employee retention efforts is critical to a successful management strategy. A variety of factors have been associated with nurse retention including job satisfaction, the opportunity to engage in professional practice, manager consideration, the influence of work related job strain upon an employee's physical and psychological well-being and the effectiveness of individual coping strategies. The following considers each of these factors.

Job Satisfaction

Nurses offer a variety of reasons for changing positions. In a study published by AONE (2002), these reasons included relocation, salary and benefits, desire for another position, job satisfaction, retirement, management conflict, work scheduling and personal lifestyle. Strachota, Normandin, O'Brien, Clary and Krukow (2003) studied the responses of all nurses from a major Midwestern healthcare system who voluntarily left or changed their employment status over a nine month period. Of a potential sample of

183 nurses, 84 met the criteria for inclusion in the study. This study's responses are similar to those found in the AONE survey. Hours worked, better opportunity, family reasons, pay and benefits, staffing, management issues, the work environment, relocation, personal health and stress were among the reasons listed by the participants. While the reasons listed appear fairly straight forward, the literature suggests that it is job satisfaction that is a common factor encompassing many of these work related attributes (Sengin, 2003).

The importance of job satisfaction to the issue of retention is reflected in the large body of literature that addresses the subject. It is also reflected in the sheer number of nurses who are estimated to experience low job satisfaction or who have changed employer or position. The NSSRN 2000 (Spratley et al., 2001) surveyed RNs on the subject of job satisfaction and determined that almost one-third of nurses were dissatisfied with their jobs, with the lowest levels found in the hospital setting. Aiken et al. (2001) reports that low job satisfaction in the hospital was experienced by 41% of over 13,000 U.S. respondents included in an international study on the nurse's work environment. Spratley et al. estimate that 494,800 RNs changed employer or position which reflects over 20% of the workforce. These figures are described as being in stark contrast with data found in the general population (NORC, 1998).

These figures are especially significant in light of the work of Lambert, Hogan and Barton (2001). In a study using data previously collected in a national sample representative of all employed adults (n=1,095), job satisfaction was determined to be the key variable associated with turnover intent. It was twice as predictive as tenure (length

of employment) and four times as predictive as the perception of alternative employment opportunities, age, gender and educational level.

Irvine and Evans (1995) conducted a meta-analysis of previously reported studies which reported correlation coefficients or difference scores that were designed to evaluate turnover behavior and nursing. The analysis revealed a significant positive relationship between behavioral intention and turnover and a negative correlation between job satisfaction and turnover. Furthermore, the relationship between job satisfaction and behavioral intentions demonstrated a stronger negative relationship than that between job satisfaction and turnover, possibly demonstrating the moderating effect of behavioral intentions. The authors also evaluated economic factors, structural factors such as work organization and psychological factors as they related to job satisfaction. The authors concluded that, while all variables were associated with job satisfaction, the correlation was strongest with job characteristics and the factors associated with the structure of the organization or work environment. The stronger relationship between job satisfaction and the work environment or work content point to variables over which nurse executives have more control – job design, leadership and human resource management. If, as the study's results suggest, behavioral intentions are subject to moderation, it would appear that the efforts of the nurse executive are especially important.

Professional Practice Environment

The importance of the RN practice environment on job satisfaction and turnover is further demonstrated by Mark et al. (2003). The authors used structural contingency

theory to analyze the responses of 1682 qualified RN participants from a sample of 2279 staff nurses who worked on one of 136 medical surgical nursing units in 68 randomly selected not-for-profit hospitals. The context of the work environment at both the unit and hospital level, the professional structure of the work design and effectiveness as determined by both organizational and patient outcomes were subjected to analysis using structural equation modeling techniques. The professional structure of the work was considered a latent construct represented by decentralization, autonomy and nurse/physician collaboration. The results indicated that on both the unit and hospital level that professional nursing practice was related to the experience of job satisfaction at a large and statistically significant level. In turn, hospitals that demonstrated high levels of job satisfaction experienced correspondingly lower levels of nurse turnover.

The importance of professional practice structure to the health of the organization, as illustrated by the effectiveness of organizational and patient outcomes, is also demonstrated in hospitals that have received recognition from the Magnet Recognition Program for Excellence in Nursing Service (American Nurses Association [ANA], 2003). Magnet hospital status, as conceived by the ANA, is recognition of a hospital environment that supports nursing excellence as measured by nursing indicators and patient outcomes (ANA, 1998). Central to this philosophy is the creation of an environment that supports autonomy, control of the practice environment and positive nurse-physician relationships (Havens & Aiken, 1999).

Laschinger et al. (2001b) were interested in determining if these characteristics (autonomy, control over the practice environment and good nurse physician relationships) were associated with the nurses' feelings of job satisfaction and perception

of patient care quality. The authors analyzed data collected as part of a larger study on the work environment, nurse staffing and patient care quality. They concluded that the positive association between the structure of the organization and feelings regarding job satisfaction and perceptions of patient care quality, as mediated by organizational trust and emotional exhaustion, was statistically significant. These findings are supported by Upenieks (2002) who considered satisfaction in magnet and non-magnet hospitals. Nurses in magnet hospitals demonstrated more autonomy and control over the practice setting and greater satisfaction than did nurses in non-magnet hospitals.

While research seems to point to the importance of the work environment in achieving high levels of staff satisfaction with resultant low turnover and to the nurse executive's ability to influence satisfaction through moderation of that environment, it does little to predict which nurses are more likely to find the work environment unsatisfactory. While there is a suggestion that this may be related to feelings of psychological empowerment, autonomy and control (Larrabee et al., 2003; Laschinger et al., 2001a; Mark et al., 2003), the only clear indicator of the failure of the work environment to meet the individual employee's need for those structural components is a stated intent to leave or voluntary turnover. This outcome leaves the nurse executive with a need to respond to the potential negative consequences of this failure. Of service to the nurse executive would be determination of a latent variable that might function as an indicator of an individual's response to the organizational environment. It would be especially beneficial if that indicator could be measured at a point in time when the nurse executive would be able to respond to the identified variable in a proactive fashion.

Manager Consideration

At issue then is the nurse executive's ability to predict in an efficient manner which nurses are at risk for diminished satisfaction within the work environment and ultimately with the employer-employee relationship. The ability to predict individual risk in a timely fashion will allow nursing leadership the opportunity to develop intervention strategies targeted at the needs of the individual employee. The importance of early and targeted intervention becomes key if, as Irvine and Evans (1995) suggest, an employee's behavioral intentions are subject to moderation, then it is the first line nurse executive who is likely to be most influential in effecting modification in a manner that will result in improved retention.

This contention is supported by Severinsson and Kamaker (1999) who administered a questionnaire to 240 nurses who comprised the entire staff of one Swedish public hospital. Of those nurses, 158 completed and returned usable forms which resulted in a 65.8% response rate. The researchers discovered significant differences between nurses with and without systematic clinical supervision. Nurses with supervision demonstrated significant improvement in the ability to manage moral stress, manage organizational change, and integrate theory and practice.

The influence of the nurse manager is also demonstrated by Taunton et al. (1997). The authors drew two primary samples from four hospitals in a Midwestern metropolitan area, one from nurse managers (n=95) and one from staff RNs (n=1171). The two samples were evaluated for retention, manager characteristics, organizational characteristics, work characteristics, and job satisfaction using questionnaires. Retention data and unit structure data were provided by the hospitals. The researchers were able to

determine that manager characteristics, especially influence over resources, consideration, and structure are important to staff beliefs about the fairness of rewards to performance, promotion, and control over practice. These factors were also linked to job stress, which is associated with job enjoyment and nurse satisfaction with administration. Furthermore, manager leadership behavior as exhibited by the manager's regard for the comfort, well-being, status and contribution of staff was significantly correlated with staff retention. Numerous other studies support the conclusion that the nurse manager is key to the nurse's experience of job satisfaction and the relationship of job satisfaction to turnover intent (Irvine & Evans, 1995; Kimball et al., 2002; McNeese-Smith, 1997).

Influence of the Work Environment on Health

There is ample evidence that the work environment presents a health and safety risk to RNs. In a study conducted by the American Nurses Association (2001) 40% of the participants reported that they had experienced job related injuries. These included back injury, needle stick injury, exposure to infectious diseases, chemicals and hazardous drugs and latex allergies. The Bureau of Labor Statistics (2004) reports that rates of injuries and illness for health care service providers, of which nurses comprise the single largest employment category, are more than double that expected in the service industry and equal to those for industries with the highest rates – transportation and manufacturing. Meanwhile nurses report threats of violence on the job at a rate of almost 60% with actual violence rates nearing 20% (ANA, 2001).

There may be additional health consequences as a result of mandatory or unplanned overtime and short staffing. Over two-thirds of nurses (67.4%) reported that

they were required to work beyond their scheduled hours (ANA, 2001) and among current and former nurses understaffing was identified as being the biggest problem with being a nurse by 39% and 37% respectively (Hart, 2001). Little research has been conducted to determine the direct health consequences to the RN as a result of these practices. However the current focus on the patient safety consequences of these practices has repeatedly demonstrated that patient safety is compromised as a result of the documented fatigue and emotional exhaustion that nurses experience as a result of working under these conditions (Page, 2003; Unruh, 2004).

These findings point to a work environment that has the potential to directly affect the health of the RN. This work environment also presents the potential for indirect health consequences as a result of the professional practice structure of the work environment. The literature on job satisfaction is closely tied to research that has sought to characterize the nature of the nurse's response to the professional practice structure of the work environment.

Kramer (1974) was one of the first to identify the potential for conflict between the process of professional socialization and the bureaucratic organization of the work environment. This phenomenon was labeled "role conflict" and the author described the subsequent retention issues that evolved from it as "reality shock." Resolution focused on re-socialization efforts for the graduate nurse that would be "acted upon by nurses so that the one goal that unifies us all – improvement both in individual patient care and in the health care delivery system – might be achieved" (Kramer, 1974, p. 233).

Ceslowitz (1989) investigated the relationship of role conflict as well as other related variables to the experience of burnout in RNs. Burnout is described as the

response to role conflict by an individual “who really doesn’t try to resolve the conflict but turns it inward” (Schmalenberg & Kramer, 1979, p. 7). Ceslowitz determined that an individual’s response to workplace stressors was significantly influenced by coping strategies. Ineffective strategies were tied to increased emotional exhaustion, increased depersonalization and decreased personal accomplishment. Conversely, those who demonstrated low levels of burnout used what were identified as coping strategies that did not produce similar adverse effects. These findings were used to explain the variance that had been observed in the psychological and physical responses of individual nurses to workplace stressors.

Burnout is also positively associated with low job satisfaction. Laschinger et al. (2001a) related positive work experiences to low burnout levels that were associated with high levels of job satisfaction. Kalliath and Morris (2002) reversed the analysis and considered the effects of job satisfaction on the experience of burnout. The authors considered job satisfaction a possible moderator to the stressors that are present in the work environment and contributory to burnout. It was determined that job satisfaction had both direct and indirect effects on burnout. Taken together these studies suggest that response to stressors in the work environment is highly individual and closely tied to the experience of job satisfaction.

Karasek and Theorell (1990) link psychosocial stress, the work environment, and individual personality differences to physiological consequences. The authors present a model which suggests that individuals who experience high psychological job demands with low decision latitude are at risk for psychological strain and physical illness. They support this model with a body of research which demonstrates that “psychosocial job

conditions are associated with biomedical risk factors and also have an independent association with heart disease risk” (p.156). This phenomenon has been labeled job strain and has been evaluated as a consequence of the work environment by numerous researchers since the concept was first introduced by Karasek in 1979. Evidence supports the authors’ contention the nature of the work environment can influence personal health (Marmot et al., 1999).

Cheng et al. (2000) tested job strain in RNs as part of an ongoing longitudinal national women’s health study. At the end of four years of measurement, a final sample of 21,290 subjects was available for analysis. The authors determined that job strain was associated with a decline in health status; and with a greater degree of job strain there was a greater the decline in overall health. This sample was also compared with a sample of 13,900 RNs excluded from the final sample due to major illness or retirement. The final sample was determined to be healthier than the excluded subjects, suggesting the likelihood that workers who experienced health problems relocated to positions with lower job strain or those nurses retired.

The experience of job strain is also tied to job satisfaction and structural empowerment. Laschinger et al. (2001a) describe structural empowerment as a work environment which ensures that “employees have access to the information, support and resources necessary to accomplish work and are provided ongoing opportunities for employee development” (p. 43). The authors hypothesized a causal model that linked work empowerment to job strain and job satisfaction. Drawing from a random sample of 600 RNs working in tertiary hospitals located in Ontario, Canada, the authors used structural equation modeling to demonstrate that conditions that promoted structural

empowerment strongly influenced the experience of job strain and job satisfaction. It was determined that structural empowerment had a direct positive effect on psychological empowerment. Job strain had a negative correlation with psychological empowerment while job satisfaction had a positive correlation with psychological empowerment. The author offered that as psychological empowerment increases, job strain is avoided as well as the negative health consequences associated with job strain.

Support for this conclusion is found in research conducted by Verhaeghe, Mak, van Maele, Kornitzer and de Backer (2003). When a study group of 315 nurses was compared with a control group of 316 non-nurses, job strain was determined to be higher in the nursing population. The effects of job strain were evident in the nurse study group. Nurses who demonstrated higher job demand correspondingly demonstrated a greater likelihood of job absence due to sickness and the duration of sickness. Social support was demonstrated to be a significant moderator to the both the frequency and duration of the absence in the study group. No similar correlations were discovered in the control group. Hackett and Bycio (1996), in a small study of nurses and nurse assistants, determined that absence from work was a potential means for the nurse to regain control over abnormal levels of emotional and/or physical fatigue.

These findings suggest that the effects of job strain have individual consequences for the RN in terms of diminished health. Lindholm et al. (2003) link this potential for diminished health to lower self-assessed health. In a study of 268 Swedish nurse managers, low self-rated health was significantly associated with high demand jobs. Those with lower levels of social support also demonstrated greater odds of elevated sick-time levels.

These findings of both direct and indirect health consequences to employment as a RN are linked to both the experience of job satisfaction and retention related decision-making. Hart (2001) reported that a less stressful and physically demanding job was listed by 35% of nurses as the reason for leaving the profession, and by 56% of those who were considering leaving. Landerweerd and Boumans (1994) in a study of 561 nurses revealed that nurses who scored higher on job satisfaction also experienced fewer health complaints, and Laschinger et al. (2001a) linked emotional exhaustion, as a characteristic of the work environment, to job satisfaction. The acute and chronic effects of stress and overwork were listed by 70.5% of the respondents as one of their top three health and safety concerns (Hart, 2001).

The health and safety concerns of nurse employees are not an issue isolated to a relatively small group of individuals. In the United States over 2.5 million individuals are identified as nurses, with over 83 %, or 2.1 million nurses, actively engaged in the work setting (HRSA, 2002). Nurses are the single largest group of healthcare providers, and the majority (59.1%) is employed in the hospital setting. Aiken et al. (2001) reported that more than 40% of those individuals express low levels of job satisfaction. If, as the literature suggests these low satisfaction levels are associated with a health risk for nurse employees, then at current employment levels, over a half a million RNs employed in the hospital setting are at risk for job related health issues. The health related consequences of the employment setting may be especially significant given the demographic characteristics of the RN population. In 2000, two-thirds of all RNs were over the age of 40 (GAO, 2001). The American Hospital Association (2002) has expressed concern

regarding the implications of an older workforce and the ability of the worker to manage the demands of a profession as physically demanding as nursing.

The Impact of Coping Behavior

As was previously noted, there appears to be a relationship between coping styles and the experience of job strain (Ceslowitz, 1989). The work of Lazarus and Folkman (1984) figured prominently in the theoretical foundation for this research. According to Lazarus and Folkman, “psychological stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p.19). These same authors define coping as “constantly changing cognitive and behavior efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). As such, coping can be characterized as an adaptive process between a person and the environment.

Lazarus and Folkman (1984) offer a model for qualitative research, commonly referred to as transactional stress or coping theory, that considers the coping response to stress as comprised of (1) the relationship between the person and the environment; (2) a process that changes over time or across situations; and (3) the interactions of a variety of variables that comprise an emotional system. Given this approach, health is not a matter of how people cope with illness, but rather the “diverse routes through which the ways people cope with the events of daily living can affect their health” (p. 221). As such there is an interactive relationship among the variables that define the individual (values, commitments, goals and beliefs), the influences in the environment (demands, resources,

constraints and temporal aspects), the cognitive appraisal of information as it relates to one's well-being, the selection of a coping strategy and psychological and physiological effects. Returning to the concept of control, which has been demonstrated to be significant in resolving the demand-control imbalance (Karasek & Theorell, 1990), it appears that it is the appraisal of control and subsequent coping behavior related to that appraisal that influences health (Lazarus, 1991). This is referred to by Lazarus (1999) as *coping potential* which the author defines as “the personal conviction that we can or cannot act successfully to ameliorate or eliminate a harm or threat, or bring to fruition a challenge or benefit” (p. 93).

Determination of harm or loss, threat and challenge occurs during appraisal of the stress situation (Lazarus, 1999). According to Lazarus, harm or loss is damage that has already occurred. Threat is the fear of damage in the future, and challenge is an action oriented outlook intended to overcome the obstacle. Based upon the individual's primary appraisal of the event, a coping strategy will be determined. Those individuals who perceive the conditions of stress as within their control consider the situation a challenge and use problem focused coping. Those who consider the conditions unchangeable appraise the situation as a threat and utilize emotion oriented responses. While both processes may produce a therapeutic outcome in the short-term, it is action oriented solutions that are associated with long-term adaptation and physio-psychological health.

While useful from a theoretical perspective, the authors caution that empirical efforts to demonstrate a direct relationship between coping and health may be futile due to the multiple influences upon the person and the environment as well as the longitudinal challenges any study would encounter (Lazarus & Folkman, 1987). Given this

challenge, Lazarus (1998) offered that the process of coping needs to be placed in the “larger framework of a person’s life and ways of relating to the world” (p. 383).

Support for this appraisal is found in the research of Ekstedt and Fagerberg (2004). In a small, 12-month qualitative study of eight individuals in treatment for burnout, the authors sought to describe the “lived” experience of the time preceding burnout. The participants describe a downward spiral of strain, diminished physical and psychological health and isolation that persisted until a sense of balance and control was re-established. This allowed the participants the ability to take charge of self-care and health.

Self-Care and Coping Behavior

Placing the discussion of coping in the “larger framework” in order to understand how nurses respond to their environment finds a useful analogy in self-care theory as proposed by Orem (2001). Self-care is described by Orem as deliberate, learned behavior. It is influenced by the individual’s social and cultural environment. It requires knowledge and is directed towards maintenance of physical and psychological integrity. It is goal oriented and requires control of behavior and the environment. This definition is consistent with what Lazarus (1999) refers to as problem-focused coping. This form of coping involves seeking information and using that information to direct actions to change either the individual or the environment.

Orem (2001) considers self-care as a deliberate process requiring a number of requisites. The goal of self-care is to meet those requisites. These include maintenance of a sufficient intake of air, water and food; care associated with elimination of those

elements; balance between activity and rest, solitude and social interaction; the prevention of hazards; and the promotion of human functioning within social groups. When these actions are successfully performed, positive health and well-being is fostered. Lazarus (1999) also considers action at the core of successful appraisal and adoption of a coping strategy that leads to somatic health and psychological well-being. Using self-care as the “larger framework” suggests that individuals who initiate self-care behavior or practices are also maintaining a balance between the demands of the environment and that individual’s ability to control the effects of that environment.

Emotion focused coping is described by Lazarus (1991) as coping directed towards regulating the emotions that are tied to the stressful situation. This coping process seeks to change the way in which the environment-person relationship is attended (avoidance) or interpreted (denial). Instead of acting, this response involves thinking. It does not seek to change the relationship between the person and the environment, but to change the meaning of that relationship. Because this coping response pattern does not involve an action on behalf of the individual to correct the imbalance, application of Orem’s theory (2001) would suggest that that individual is failing to engage in self-care. In the triad of theories proposed by Orem to explain nursing practice, the failure to take action would indicate a self-care deficit. Orem postulates that it is the existence of a self-care deficit that requires either personal action to correct the deficit or the intervention of a nurse to assist in the correction of the deficit.

Coping, Self-Care and Satisfaction

Coping appears to be closely tied to what Lazarus (1991) refers to as subjective well-being. Subjective well-being is alternately described as avowed happiness, morale and life satisfaction. It is considered an important criterion to evaluate the quality of an individual's adaptation to appraised environment-person imbalances. Orem (2001) addresses well-being as an individual's beliefs about the meaning of life's experiences. It is contentment, pleasure, happiness, spirituality, fulfillment and personalization. Considered together, these two definitions appear to be addressing the same issue. Additionally, the ideas contained in defining well-being appear closely tied to the concept of job satisfaction.

Stamps (1997) states that "job satisfaction is deceptively easy to describe, since the most common definition is simply the extent to which employees like their jobs" (p. 13). However, the author points out that the definition of satisfaction is dependent upon how that definition is applied. According to the author, satisfaction may be more likely related to the concept of motivation. This, the author defines as the "needs, wants, impulses, or drives that influence people to certain behaviors or actions" (p. 10). This definition of satisfaction takes into account the action oriented or goal directed behavior that is characteristic of problem-oriented coping strategy. From this perspective, nurses like or dislike their jobs as a function of the opportunity that that job offers for the individual to engage in activities related to goal attainment. Goal or action directed behavior is also described as characteristic of individuals who engage in self-care practices. Through control of their environment, nurses achieve a sense of well-being that is alternately described as satisfaction.

As was previously discussed, satisfaction has been related to demand-control imbalance and the health of nurses experiencing that imbalance (Laschinger et al., 2001a). Research has suggested that an environment in which the demand-control imbalance is lessened due to modification of the environment contributes to an improvement in the degree to which nurses like their jobs. The foregoing re-assessment of satisfaction as related to motivation and goal directed behavior suggests that satisfaction may be more appropriately described as a reflection of an individual's ability to engage in problem-oriented coping or self-care due to a reduction in environmental stressors. When applied in this manner, satisfaction may not be an outcome measure of organizational success in structuring the professional practice environment in a manner that causes people to like their jobs. Instead, satisfaction may be the outcome measure of successful adaptation to an environment that supports the use of problem-oriented or action directed behavior resulting in a sense of well-being. This scenario proposes that the practice environment influences self-care practices by lessening the perceived demand-control imbalance. In this same vein, the opportunity for environmental control may also influence the experience of job strain and subsequent health status. This interaction may buffer the need for self-care.

The Role of Intent to Leave and Absenteeism

When one considers the other organizational measures used to suggest how much nurses like their jobs, two measures stand-out as more closely tied to coping/self-care behavior than organizational outcomes – intent to leave and absenteeism. Intent to leave has been determined to be significantly related to turnover (Irvine & Evans, 1995;

Mowday, Koberg & McArthur, 1984). It is described as an attitudinal variable predictive of an employee's likeliness to remain in the current position and is strongly related to organizational commitment. This description suggests an emotional response to the conditions present in the work environment consistent with what Lazarus (1999) identifies as emotional coping – the desire to change the way a relationship is attended to or interpreted. As such it would suggest that the individual is not taking action to resolve the imbalance between person and environment, but rather is appraising the situation as a threat. The solution is to change the nature of that relationship through withdrawal.

A similar argument may be offered regarding absenteeism. Hackett and Bycio (1996) offer a profile of absence as a coping mechanism. In a study of 20 nurses who met study criteria for inclusion based upon absence behavior, the author's concluded that absence behavior was associated with a need on the part of the nurses to reduce the effects of environmental stress. Study participants demonstrated a significant reduction in stress related variables (physical and emotional fatigue) upon returning from an unscheduled absence. Such behavior would be consistent with emotional coping (Lazarus, 1999). The response to the stress inducing environment was to temporarily change the nature of the relationship between person and environment through withdrawal.

Research Questions

The preceding review of the literature depicts the current circumstances faced by RNs working in the hospital environment as complex and subject to both personal and

environmental components. Much of the literature has addressed each component as contributing to the nurse's experience in a unique and independent fashion. Typically, the literature links components found in the environment to the job satisfaction of the RN. This environmentally oriented approach has provided many useful insights, but fails to consider the interaction between these components. It also addresses satisfaction as a variable predictive of the health of the organization. Orem (2001) proposes that self-care, as a human regulatory function, is the action taken to maintain and promote personal health. As such, self-care may be at the foundation of an individual's response to the effects of that environment as evidenced by job strain. This convergence of theory supports a hypothesis that the health consequences of job strain engages the nurse in behaviors related to self-care. These self-care behaviors may be moderated by the structure of the professional practice environment. Evidence of self-care may be determined by use of self-care practices, satisfaction, intent to leave and absenteeism. The problem to be addressed in this study is validation of a structural equation model that proposes to answer the following research questions:

1. What is the relationship between the job strain and self-care as theorized by Orem for RNs working in a staff nurse position?
2. What is the relationship the professional practice environment and self-care as theorized by Orem for RNs working in a staff nurse position?

CHAPTER THREE: THEORETICAL FRAMEWORK

Porter-O'Grady (2003) offers that through most of the 20th century the employee-employer relationship was characterized by an institutional model. Employees defined themselves in terms of the institution in which they were employed. They followed the rules created by the employer and the success of the organization was seen as contributory to the personal satisfaction and well-being of the employee. In today's health care environment Porter-O'Grady describes the employee as an independent contractor who considers the employer a market for his or her knowledge and the ability to use that knowledge to promote the success of the organization. Under this circumstance, the employee no longer achieves his or her identity at the behest of the employer. Instead the employee forges a partnership with the employer. As long as the employee achieves satisfaction in that partnership and the relationship is profitable for both the employee and the employer, the partnership is sustained. If circumstances change, the employee carries no commitment to the organization and markets his or her knowledge elsewhere. This contributes to overall staff shortages and creates a financial burden as organizations must recruit and train new employees (Jones, 2005; Kerfoot, 2000). Service also suffers due to increased workloads shared by the remaining employees as well as the presence of temporary, part-time and inexperienced employees (Aiken, Clarke, Sloane, Sochalski & Sibling 2002).

Under this scenario, a management model that promotes organizational success through aggregate RN satisfaction has the potential to lose valuable and qualified employees due to lack of attention to individual needs. Unfortunately, current statistics

suggest that the manager has little time to address the individual needs of each staff member (AONE, 2002). Therefore, if organizations need to maximize the effectiveness of managerial interventions – the ability to identify those individuals at greatest risk for low job satisfaction and high intent to leave becomes essential. The organizational impact of this situation is demonstrated by Mark et al. (2003) who determined that larger nursing unit size had a significant negative impact on professional practice which in turn corresponds to the experience of job satisfaction. These findings would suggest that organizations have the potential to experience negative consequences due to lack of attention to individual needs even as the organization is able to demonstrate aggregate job satisfaction for its RN employees.

The preceding literature review suggests that three key dimensions have significant influence upon the individual nurse – job strain as indicated by self-assessed health, the structure of the professional practice environment, and the ability of the nurse to take action through self-care practices in order to mediate imbalances between the environment and the needs of the person. Each of these constructs is difficult to observe directly and therefore requires the use of indicator variables, derived from the literature, that are directly observed and therefore measurable. The three latent constructs, job strain, professional practice and self-care demand, are each grounded in a theoretical framework that provides a foundation for the development of the proposed structural equation model. Figure 2 presents a hypothesized model of the three latent constructs and their indicator variables suggested by the literature.

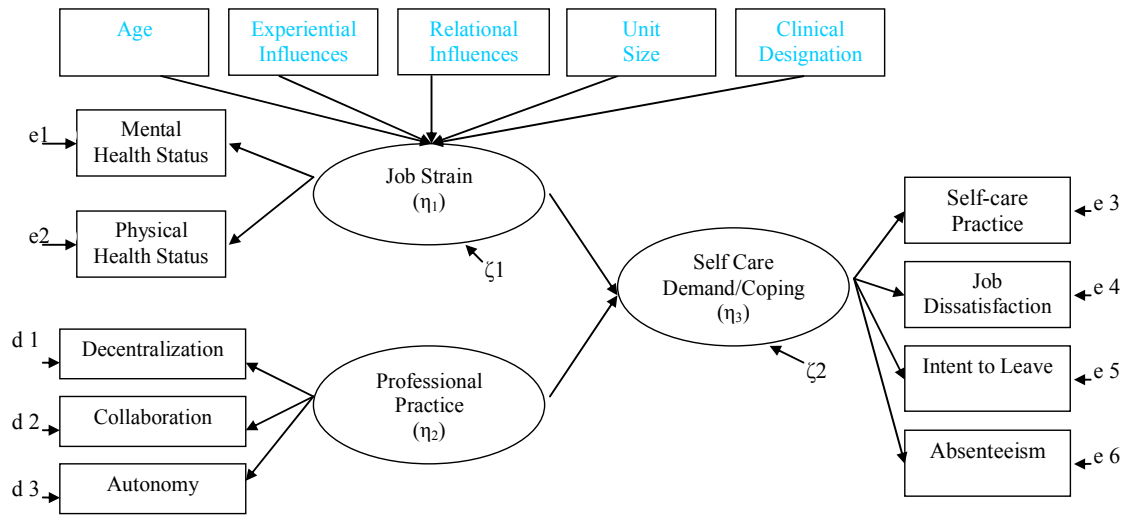


Figure 2: A Hypothesized Generic Model of the Effect of Job Strain in the Hospital Environment.

To support the development of hypotheses related to the proposed research questions, the latent constructs will be examined in light of the relevant literature.

Job Strain

Research on the interaction between organizations and the individuals who work within them has produced numerous reports which suggest that characteristics associated with the work environment influence the attitudes and behaviors of persons employed in those settings. Representative of suggested outcomes are previously discussed studies that link burnout, job satisfaction and health consequences to conditions in the work environment (Laschinger, Shaiman & Thompson, 2001b; Mark et al., 2003). Many of these reports can be traced to the research of Karasek (1979) who initially proposed that the interaction between job demands and employee latitude in decision-making created a

dynamic that had the potential to result in job related mental strain. The consequences of this job related strain was the expression of job dissatisfaction and increased absenteeism.

Karasek's demand-control model (1979) was supported by cross-sectional and longitudinal research executed on secondary data obtained from national surveys conducted in the United States and Sweden. The cross-sectional data from the US was collected from a national 1972 employment survey that randomly sampled housing units using a stratified technique. The Swedish data, both cross-sectional and longitudinal, was obtained from a survey of the full adult population of Sweden in 1968 and 1974. All surveys had response rates between 76% and 92% and resulted in a U.S. sample of 911 and a Swedish sample of 1866. Items were taken from the surveys to measure job demands and mental strain. The indicators of job demands were defined as "measures of output on the job" (p. 291) and job strain was conceptualized using common mental and physical illness symptoms. The scales were demonstrated valid and reliable. The scales were used to test a hypothetical multi-dimensional model that predicted that jobs with high workload demand and low decision latitude or discretion-control would result in symptoms of mental strain. Both the U.S. and the Swedish sample supported the hypothesis using regression and odds-ratio analytic techniques. The change in odds for the experience of depression and exhaustion as a result of job related demands increased and this change was determined statistically significant ($p = .05$). These findings were further supported in the analysis of the longitudinal data.

While Karasek (1979) stipulated that other factors including the impact of individual differences and the social environment of the work setting should be taken into account, the findings supported a redefinition of the variables believed to contribute to

employee response to the work environment. The environment was no longer conceptualized as a static influence that required modification of employee behavior and attitude in order to create a workplace employees considered satisfying. Instead, the identification of a dynamic between the demands of the workplace and the worker's experience of discretion or control permitted evaluation of the workplace as an interactive environment. It was not necessary to consider only the need to reduce the demands of the job, thereby sacrificing productivity, in order to improve worker satisfaction. Instead, jobs could be redesigned to provide the employee with a greater sense of control. The research suggested that workers placed in jobs that had high demand or output requirements would have the negative consequences ameliorated by increasing the discretion those workers were able to employ in response to those influences.

Following conceptualization of the demand-control model, Karasek and Theorell (1990) undertook multiple studies to demonstrate the impact of high demand-low control jobs upon the health and well-being of the employee. Studies were conducted sampling multiple occupations, including nurses. All demonstrated support for the demand-control model as a predictor of physical health. In a critical analysis of the findings, Karasek and Theorell linked psychosocial stress, the work environment, and individual personality differences to physiological consequences, particularly cardiovascular disease. This research also highlighted the importance of control, determining that jobs with both high demand and high control produced a sense of well-being, enhanced learning and personal growth. These jobs, termed "active jobs" were associated with mastery which was hypothesized to decrease the perception of strain when exposed to work overload. The authors supported this hypothesis by demonstrating that individuals engaged in active

jobs were more likely to be socially and politically occupied and those who expressed job strain also expressed high levels of frustration that inhibited learning behaviors.

Support for the association between job strain and heart disease is offered by Marmott, Siegrist, Theorell & Feeney (1999) through a meta-analysis of 10 studies that considered the psycho-social content of the work environment and coronary heart disease. These studies were selected from research that used a prospective population-based design. The subjects were primarily male and experienced fatal or validated non-fatal coronary heart disease. Sample sizes ranged from 222 to 10,300 and samples were evaluated to ensure adequacy of sample size for the reported findings. The studies were also filtered to ensure the use of instruments previously determined valid and reliable. Six of the 10 studies demonstrated a positive association between job strain and coronary heart disease. For those studies that failed to support the relationship between job strain and coronary heart disease, methodological issues, particularly related to sampling, were identified which may have contributed to the outcomes.

In spite of what appears to be a clear association between demand-control imbalance and health consequences, de Jonge, van Breukelen, Landerweerd and Nijhuis (1999) point out that many other studies provide inconclusive results due to conceptual as well as methodological issues. There is an inconsistency in the operationalization of the job demand and decision latitude variables and sampling procedures that have often favored employment categories that include individuals of lower socioeconomic status or with health behaviors which places the subject at greater risk for illness. The authors also report inconsistency in the method of analysis and the potential for moderating influences such as personality characteristics and social support. Finally, as most studies have used

a self-report questionnaire, bias may have been introduced as a result of subjective assessment.

In an effort to overcome these issues, de Jonge et al. (1999), studied both group and individual assessments of job demand and job autonomy in a random sample of 16 general hospitals drawn from all general hospitals and nursing homes in the Netherlands. Four units in each setting were asked to participate and subjects included all categories of employees associated with that unit. A response rate of 82% yielded a total of 895 subjects in the final sample. The questionnaire was a modified version of Karasek's original demand-control scale that attempted to more precisely operationalize the study variables. Scores were reported for both individual and aggregate data. Analysis was undertaken using a multi-level regression technique that allowed hypothesis testing at different levels and across levels within an organization.

Data analysis determined that the instrument demonstrated within group inter-rater reliability for job demand and job autonomy at .95 and .96 respectively. Confirmatory factor analysis provided support for both the individual and aggregate outcome variables. Variance component analysis was used to test the model and determined significant differences between single units and institutions, primarily as a result of individual differences, for all outcome variables. Support for the demand-control model was partial in that only 25% of the interaction effects were significant and there were no significant interaction effects associated with health outcomes. On closer analysis, data were in the hypothesized direction and barely failed to reach the level of significance for job demand and job autonomy as it interacted with health status ($p=.06$ and $.07$). Furthermore, the results indicated that the aggregate data provided more

explanation for the interaction of work motivation and satisfaction with demand and autonomy while the individual level data provided more explanation for emotional exhaustion and anxiety. This suggests that the demand-control model contains both situation centered and person centered assumptions. Therefore models that attempt to predict employee health need to focus both on the influence of the work conditions as well as the employee characteristics.

The importance of individual differences was the focus of research conducted by de Rijk, Le Blanc and Schaufeli (1998). Also noting conceptual and methodological concerns with much of the research conducted testing the demand-control model, the authors attempted to add a qualitative dimension to the description of job demand and to incorporate a measure of the need for control into the measurement of that variable. A convenience sample of 578 Dutch intensive care unit (ICU) nurses received questionnaires of which 367 were returned and included in the final sample. Results were analyzed using hierarchical multiple regression. The more focused operationalization of job control variable failed to support the theoretical interaction between job demand and job control. However data related to active coping demonstrated a significant three-way interaction effect with job demand and job control ($p = .001$ & $.05$). Nurses high in active coping demonstrated support for the predicted interaction effects between demand and control while nurses low in active coping skills appeared to actually experience enhanced job strain when reporting high job control. This suggests that individual coping styles may strongly influence the response of the person to the work environment as measured by emotional exhaustion.

Health Consequences

While clear empirical support for the demand-control model is difficult to assert due to methodological and conceptual challenges, the preceding studies support a theoretical model that suggests that both organizational and personal characteristics influence an individual's ability to successfully respond to workplace stressors. Furthermore, the inability to adapt appears to result in negative physical and psychological health consequences. Multiple studies link the organization of the work, the response of the individual and the direct measurement of job strain to health status.

Organization of the Work

Tummers, Landerweerd and van Merode (2002) considered the influence of work organization (uncertainty, complexity, decision authority) and work characteristics (autonomy, workload, social support at work, role ambiguity, role conflict) on psychological work reactions (emotional exhaustion, psychosomatic health complaints, intrinsic work motivation, job satisfaction). Data were collected via a questionnaire in a cross-sectional study of all nurse employees in 15 randomly selected hospitals in the Netherlands. Usable questionnaires were returned by 1204 (68%) of participants. Hierarchical multiple regression was used to evaluate the relationships between work organization and work characteristics, work organization and psychological work reactions and work characteristics and psychological work reactions.

The findings demonstrated that while the percentage of variance explained by the organization of the work on work characteristics was less than or equal to 10% for each variable, the results were statistically significant ($p < .05$) and in the anticipated direction.

The influence of the three characteristics of the work organization (uncertainty, complexity and decision authority) on psychological work reaction measures again demonstrated a low percentage of explained variance ($\leq 5\%$). The relationship between high complexity-low decision authority and the experience of emotional exhaustion and psychosomatic health complaints was statistically significant ($p \leq .05$) as was the relationship between high decision authority and the experience of job satisfaction and intrinsic work motivation ($p \leq .05$). Work characteristics were found to mediate the relationship between work organization and psychological work reaction.

In spite of the limitations due to the cross-sectional nature of the study and a low amount of explained variance, the findings suggest moderate to strong support for the hypothesis that the characteristics of the work organization are predictive of emotional exhaustion, psychosomatic health complaints, job satisfaction and intrinsic work motivation. This relationship appears to be mediated by autonomy, workload, social support at work, role ambiguity and role conflict. This outcome supports the contention that organizational influences impact the health and well being of the employee.

Further support is offered by Lindholm et al. (2003) who considered the relationship among the variables of job demand-control influences, social support, job support and self-assessed health in a sample of 205 Swedish nurse managers. A cross-sectional survey design yielded data that were evaluated using odds ratios and regression analysis. The results demonstrated a strong and statistically significant ($p \leq .05$) relationship between job demands and low self-reported health. This relationship was not attenuated by job or social support or by an increased sense of control. In addition, those with low job support from supervisors and high job demands were determined more

likely to use sick-leave. These findings would suggest that demands inherent in the work environment may not only result in an increased propensity for health consequences, but that for some, may exceed any personal compensatory resources.

Response of the Individual

Just as work characteristics have been demonstrated to influence health as a consequence of job strain, so has the response of the individual to workplace stressors. Gonge, Jensen and Bonde (2002) investigated the relationship between psychosocial factors in the work environment and the experience of low back pain. The 200 subjects were nursing employees of three Danish municipalities engaged in the care of the elderly who volunteered to complete an initial questionnaire and two diary questionnaires over a six month period. The final sample was reduced to 153 participants due to missing values, but baseline data did not differ significantly for respondents and non-respondents. Data were analyzed using logistic regression and odds ratios. The results demonstrated an association between stress and low back pain that was progressive and strongly significant. Stress was subjectively measured through self report on a 10 point Likert-like scale in response to the question “How much stress have you felt at work today?” (p.81). None of the other variables measured in relation to low back pain, including physical exertion, time pressure, emotional demands associated with the needs of the client, social support and control were significant. While these findings may be compromised due to the use of a single subjective item to measure stress, the results suggest that it is the perception of the individual regarding success in adapting to job related stress that is most closely tied to the prediction of health consequences.

Job Strain and Health Status

Whether the health consequences of job strain are more closely tied to the organization of the work or the response of the worker, empirical evidence supports a clear association between the experience of job strain and medically verifiable health outcomes. Shirorn, Westman, Sharnai, and Carel (1997) measured serum lipids in a heterogeneous sample of 665 Israeli volunteers undergoing comprehensive employee health examinations. The quasi-longitudinal study collected initial data via questionnaire, medical examination and laboratory records upon enrollment in the study and a second set of laboratory records was obtained when the employee returned for a follow-up exam two to three years later. After controlling for confounding variables through multivariate analysis, multiple regression analysis was used to test the relationship between psychosocial job characteristics and serum lipids. Elevated serum lipids have been linked to coronary heart disease and it was the intent of this study to determine if there was also an association between serum lipids and indicators of chronic stress such as burnout and overload. Burnout was considered using both physical and emotional criteria. Overload was measured both objectively and subjectively.

The results were presented by gender. The reported scores of the dependent variable were change scores in serum lipids (triglycerides and cholesterol) between time 1 and time 2. Female employees demonstrated a significant change ($p \leq .05$) in both cholesterol and triglycerides as predicted by burnout. For male employees, only the change in cholesterol between time 1 and time 2 was determined to be significant. In addition, for female employees only, subjective overload as indicated by responses related to how hard the employee was expected to work or adequacy of time to complete

work was predictive of a rise in serum cholesterol. This variance between men and women is especially significant when considering the long term health consequences of job strain on RNs whose ranks are overwhelmingly comprised of females. These results suggest that chronic exposure to stress and strain in the work environment leads to elevated serum lipids, which in turn is associated with compromised health due to cardiovascular insult.

Cheng et al. (2000) specifically tested the relationship between psychosocial work characteristics and health functioning in RNs. Participants were enrolled from an ongoing longitudinal cohort study of 21,290 nurses. Initial respondents were mailed a questionnaire which included Karasek's (1979) job content questionnaire and the SF-36™ health questionnaire (Pai & Wan, 1997). They were also screened for active employment and freedom from coronary heart disease, stroke and cancer. A follow-up questionnaire was mailed after four years and respondents were again excluded if they had left the workforce or developed coronary heart disease, stroke or cancer. The researchers also had access to the health data which was collected as part of the larger health study. Multiple regression analysis was used to examine the relationship between job strain and health status. Change in health status over the four year time frame was also evaluated.

The findings demonstrated that in all sub-scales of the SF-36™, nurses with higher levels of job control, lower levels of job demand and higher levels of social support had significantly better health status. Additional testing was done by dividing data from each sub-scale of the SF-36™ into thirds and re-evaluating against similarly divided demand-control scores. Again nurses who were in the top third for high job

demand-low job control were in the bottom third for reported health status. The converse was true for nurses reporting better health. Furthermore, nurses who reported high job demand and low job control had greater declines in health status over the period of the study.

These findings suggest that there is a direct relationship between job strain and self-reported health. It also suggests that social support is associated with better health status. While each of the preceding studies have inherent limitations due to the potential bias introduced by self-report, conceptual and methodological issues, the body of evidence suggests that job strain is a factor associated with employment. The direct measurement of job strain presents difficulty as many of the findings present weak or inconclusive support of the demand-control model, especially in populations of health care providers (Gonge et al., 2002). This is most likely the result of multiple organizational and personal confounding variables. However, health status appears to be a clear indicator of job strain. Regardless of the source of job strain, it appears that the response of the individual is reflected in self-reports of personal health. Therefore, it is reasonable to conclude that self-reported health is a meaningful measure of the construct of job strain.

The association between physical and mental health is well documented (Aday, 2001; Chern, Wan & Pyles, 2000). The constructs are included in the often used definition of health as “physical, mental and social well-being” offered by the World Health Organization (WHO, 1948, p.2). These constructs are characterized as contained within the being of the individual (Aday, 2001). The construct of social functioning, which is also included in the WHO definition of health, is described as by Marmot (1999)

as strongly influenced by forces external to the individual. As such, direct measurement has been confounded. Although current discussion as to the influence of the social or role construct as a component of health status suggests the need for future consideration (Ware, 2003), it will not be considered as a separate common construct for the purpose of this analysis. The influence of physical health on health status is self-evident as suggested by the impact of injury and disease upon the human organism. The association of an individual's psychological state with overall health status is equally well supported in the literature. Therefore it is reasonable to theorize that physical health and mental health are meaningful constructs by which to measure health status.

Professional Practice

Consideration of the latent construct of job strain indicates that the structure or organization of the work environment has a substantial influence upon the ability of the individual to moderate the health consequences of any job strain that is produced as a result of employment in that environment. The preceding discussion supports the contention that while the experience of job strain is manifest in the health of the individual, the work environment influences the individual's ability to respond to job related stress. Havens and Aiken (1999), in a historical analysis of the criteria associated with hospital recognition for quality nursing practice through designation of magnet status, noted that those environments that were most satisfying to nurses were those that emphasized nurse involvement in organizational and patient care decision-making, decentralized the organizational structure and supported effective communication.

Magnet hospital status, as conceived by the American Nurses Association, is recognition of a hospital environment that supports nursing excellence as measured by nursing indicators and patient outcomes (ANA, 1998). The designation was established in the early 1980s when the American Academy of Nursing Fellows sought to recognize those hospitals that had been successful in nursing recruitment and retention while providing high-quality nursing care (Havens and Aiken, 1999). Of the 41 hospitals considered successful, the three features later determined to be in common were practice autonomy, control of the practice environment, and effective communication patterns, especially as it applies to physicians. This commonality was used to establish criteria for ongoing evaluation of hospitals seeking magnet status. Havens and Aiken, in an effort to empirically determine if the organization of the work environment as indicated by those features contributed to patient and staff benefits, undertook a matched comparison between magnet and non-magnet facilities (n = 234).

Study outcomes, using a comparison of 30-day Medicare mortality rates, demonstrated that there was a significantly improved mortality rate in magnet facilities (p = .026). This improvement was maintained even after statistically controlling for staffing variances. Improvements in staff and patient satisfaction were also reported for magnet facilities as was a reduction in workplace injuries and emotional exhaustion. This led the authors to conclude that “organization of the work environment is a major determinant of patient and staff welfare” (Havens and Aiken, 1999, p. 19).

Laschinger et al. (2001b) considered the previously identified factors of autonomy, control and nurse-physician relationships and their influence upon the experience of job satisfaction, the experience of organizational trust and perceived quality

of patient care. A stratified sample of 3,016 nurses was drawn from a larger study evaluating staffing, work characteristics and nurse and patient outcomes. These nurses were asked to complete additional survey items which were analyzed using structural equation modeling techniques. Analysis demonstrated a good fit of the data to the model and explained 39% of the variance in the model. The results indicated that job satisfaction was affected indirectly through emotional exhaustion and trust in management. High levels of autonomy, control and collaboration were associated with trust (.56) and job satisfaction (.17). The indicators of a positive work environment were also associated with low burnout (-.62) that was in turn associated with job satisfaction (-.55). These findings suggest that trust in management and emotional exhaustion are influenced by the work environment. This ultimately influences the experience of job satisfaction. The influence of a positive work environment on emotional exhaustion, which is associated with job strain, suggests that the organization of the work mediates the ability of the individual to respond to work-related stressors.

Laschinger et al. (2001a) sought to test a hypothesis that considered the structural components of work environment and their influence upon psychological empowerment on work satisfaction. Psychological empowerment was hypothesized to reduce feelings of job strain that would in turn lead to greater feelings of job satisfaction. Structural empowerment was measured using survey questions that predicted information, support, resources and opportunity. Psychological empowerment considered meaningful work, competence, autonomy and impact. Subjects were chosen using the names of 600 RNs randomly selected from all qualified applicants who were registered in the College of Nurses for Ontario. This resulted in a useable sample of 404 returned surveys.

Data were analyzed using structural equation modeling. Analysis demonstrated a good fit of the data to the model and accounted for 38% of the variance in the model. The findings demonstrated that structural empowerment had a positive direct effect on psychological empowerment (.46). Psychological empowerment had a strong negative effect on job strain (-.45) and a direct positive effect on job satisfaction (.30). Structural empowerment also had a direct effect on satisfaction (.38). Furthermore, there were no significant effects between job strain and satisfaction suggesting that when the effects of psychological empowerment are considered, job strain is not a factor in predicting job satisfaction. While these findings are limited by the cross-sectional nature of the study, they support the contention that empowering influences in the environment, including manager support, have a significant impact upon the ability of the individual to respond to the experience of job strain.

Mark et al. (2003) tested a causal model that evaluated the relationship between the internal and external context of the work environment, organizational structure and outcome indicators of organizational effectiveness. Organizational structure, which was conceptualized as professional nursing practice, was measured by survey questions intended to elicit responses related to autonomy, collaboration with physicians and decentralization. It was hypothesized that there would be a causal relationship demonstrated between these characteristics and measures of organizational effectiveness (nurse's work satisfaction, nursing turnover and average length of patient stay) and selected patient outcomes.

Data were collected from a sample of 136 general medical-surgical nursing units, selecting no more than two units each from 68 U.S. hospitals. This resulted in an initial

sample of 2279 staff nurses from which 1682 usable questionnaires were returned. Analysis was performed using structural equation modeling and after model modification demonstrated excellent fit to the data. The analysis provided moderate support for the theoretical model. Specifically, analysis demonstrated the strong, positive influence of professional practice upon work satisfaction (.87) and lower nursing turnover (-.55). Given the previously demonstrated relationships between job strain and job satisfaction, these findings provide additional support for influence of the professional practice environment upon the ability of the individual to respond to the stressors associated with the work environment.

Direct evidence of the relationship among autonomy, control and collaboration and health status is provided by Budge, Carryer and Wood (2003). In a cross-sectional survey of 225 RNs conducted in New Zealand, the researchers used questions developed from two established measures – the Revised Nurse Work Index (NWI-R) and the SF-36™. Correlation of scores between those drawn from the study's sample and those from previous studies conducted in the United States demonstrated that the sample was comparable to US samples drawn from non-magnet hospitals. The NWI-R scores and those obtained via the SF-36™ on each of the sub-scales for the two instruments were compared through use of bivariate correlation and multiple regression. Significant positive correlations were established between the majority of the health and professional practice sub-scales. Better health was associated with better positive perception of the workplace as indicated by autonomy, control and collaboration.

The demonstrated relationship between the experience of job strain and indicators of professional practice, and the relationship of indicators of professional practice and job

satisfaction provides evidence that the response of the individual is influenced by the organization of the work. The association between indicators of the professional practice environment and generic health status provides further support for the contention that the response of the individual to the effects of job strain are influenced by the structure of the work environment. Professional practice is a latent construct that characterizes key variables related to work structure. The indicators of professional practice that have been demonstrated to be significant in the literature are those related to autonomy, decentralization and collaboration with physicians. Therefore, it is reasonable to suggest these as constructs appropriate for the measurement of professional practice.

Self-Care Demand

Self-care has been previously identified as the human regulatory function that individuals actively engage through self-care demand to pursue health and well-being (Orem, 2001). This construct was identified as the result of analysis first undertaken in the late 1950s and developed through a lifetime of reflection and questioning regarding the nature of nursing practice. It is one of three articulating theories that are used to define the content and scope of nursing practice. Self-care deficit theory (S-CDTN) is a general nursing theory that uses the term “deficit” to explain the difference between the capabilities of the individual and the needs of the individual for action.

Denyes, Orem and SozWiss (2001) refer to self-care as a “foundational science”. As such, it grounds the triad of theories proposed by Orem in 1956 (Orem, 2001) to define the practice of nursing. While commonly conceptualized by nurses as integral to the definition of nursing practice, the concept of self-care is uniquely defined and

validated. It is based upon theoretically defined constructs that identify a need for regulatory action based upon human functioning. It centers upon five scientific constructs (Denyes et al., 2001): (1) Self-care is a learned regulatory function; (2) undertaken as a result of personal power; (3) prerequisites to self-care are related to those functions that encompass human functioning and development as well as the situation specific functions that occur as a result of current or predicted adverse health status; (4) humans respond to self-care prerequisites based upon therapeutic requirement; and (5) engage in self-care behaviors. As such the concept of self-care is operationalized as the construct of self-care demand. Orem defines self-care demand as a “short, practical way of expressing the care measures persons should elect to perform to meet their outstanding self-care requirements” (p. 52). Self-care demand results in behaviors that support normal function, growth and development, prevent or compensate for disease, injury or disability and promote well-being.

While no studies were identified that considered the benchmark measurement of self-care in a nursing population, the literature provides considerable attention to the measurement of self-care in populations that are consumers of health care services. Nicholas (1994) considered hardiness, self-care practices and perceived health status in a population of older adults. The author was interested in why some elderly clients remained healthy while others became ill. Both hardiness and self-care practices were considered resources upon which the elderly might draw in order to promote health. A random sample of 227 of individuals age 55 and older received questionnaires ($n = 72$). Correlation, regression and ANOVA were used to analyze the data. Both hardiness ($p = .007$) and self-care practices ($p = .029$) contributed significantly to perceived health

status. Specifically, hardiness and self-care practice were significantly ($p < .001$) correlated with higher perceived health status. Hardiness and self-care practices shared a significant ($p \leq 0.05$) and elevated (.68) correlation that suggests that individuals who are hardy are more likely to engage in self-care practices. These findings would suggest that individuals who engage in self-care practices are more likely to consider themselves in good health and that personality may play a role in health care behavior.

In another effort to determine the influence of self-care, Kreulen and Branden (2004) conducted a secondary analysis of data obtained from 307 women enrolled in a medical treatment program for breast cancer. The women were randomly assigned to either intervention groups or a control group. The purpose of the study was to consider the effect of a nursing interventions outcome model on the client's practice of self-care and client morbidity. All subjects provided data at three times over the course of the study. The data were then subjected to path analysis. Nursing intervention was demonstrated as moderately predictive of general self-care practice (.20, $p < .05$) and illness self-care practice (.28, $p < .01$) and self-care practices were predictive of morbidity over the course of the study ($p < .01$). Resourcefulness was predictive of self-care practices in all analytic models. This suggests that (1) self-care behavior as influenced by personality has the ability to influence health outcomes, and (2) that self-care behavior can be modified through intervention.

Both of the preceding studies point to the importance of the relationship between active engagement of self-care practice and health status outcomes. The results are limited by the cross-sectional nature of the studies, but suggest that individuals who engage in self-care practice are more likely to both perceive of themselves as healthier

and demonstrate healthier outcomes when subject to health care interventions. These studies also suggest that while some individuals may be more inclined to initiate self-care behaviors, that those behaviors can be modified through educational intervention. These findings are representative of the literature on the relationship between self-care and health status. However, as the preceding studies demonstrate, a review of the relevant literature suggests that conceptualization of the self-care variable and health status is inconsistent among studies. Self-care is inconsistently defined and is measured by a broad variety of self-assessment instruments. The same is true for health status. These definitions and instruments are often specifically related to the medical diagnosis of the study population and the behaviors adapted by the subjects to respond to the medical diagnosis. What does remain consistent is support for the self-care model proposed by Orem (2001). Therefore it is reasonable to conclude that active engagement in self-care practice through self-care demand is associated with higher self-perceived health status. This conclusion supports the contention that self-care demand is the latent construct that individuals use to mediate deficits that they incur as a result of stressors in the work environment.

Self-Care Practice

The importance of action in response to a perceived health deficit is demonstrated by the following studies. Campbell and Soeken (1999) used structural equation modeling and multiple regression analysis to evaluate the responses of 141 battered African American women who were recruited to complete a pencil and paper questionnaire. Both the structural equation model and regression analysis demonstrated that the relationships

between battering and health (.23, $p < .01$) and self-care and health were strong (-.62, $p < .01$). Increased self-care reduced health problems and increased battering brought increased health problems. Furthermore, a significant indirect relationship ($p < .01$) was demonstrated among battering, self-care and health. It suggested that for those women who were unable to engage in self-care, the experience of battering was greater with a resultant decline in health status. These findings support the contention that individuals who take action, through the use of self-care practices, consider themselves healthier. In addition, it suggests that when individuals are faced with threats to health status, the deficit invokes a demand for self-care. The active self-care response to this demand supports an improvement in health status.

Ekstedt and Fagerberg (2005) were interested in describing the “lived” experience of individuals who had experienced a clinically significant episode of burnout which is associated with job strain. While their research did not directly measure self-care practice as theorized by Orem (2001), it demonstrates the importance of active self-intervention as the critical variable necessary for resumption of health. The researchers used a convenience sample of 8 white-collar workers enrolled in a stress research center in Stockholm. A general structure of the time preceding burnout was identified. The profile demonstrated that the psychological process was accompanied by worsening physical health. Recovery began when the individuals involved in the study took charge of their situation, sought emotional resources and re-engaged in the social and professional environment in a manner that sought to manage their experiences. These findings, when placed in the context of self-care practice, suggest that taking action by invoking self-care demands results in the engagement of self-care practices which is the

behavior that is used to positively affect physical and psychological health. Self-care practice, as the action component of this equation, is the visible indicator of a behavioral response to self-care demand.

Well-Being and Satisfaction

Orem (2001) describes health as a state of a person “characterized by soundness or wholeness of developed human structures and of bodily and mental functioning” (p. 186). This state is accompanied by a related state described as well-being. Well-being is described as an “individuals’ perceived condition of existence” (p. 186). Orem considers well-being a state of mental, intellectual and psychological maturity. It is associated with “experiences of contentment, pleasure, and kinds of happiness; by spiritual experiences; by movement toward fulfillment of one’s self-idea; and by continuing personalization” (p. 186). Lazarus (1991) similarly defines well-being and stresses its subjective nature. It is alternately described as happiness, morale and life-satisfaction. For Orem it is a point of view about the human experience that explains why even those who would appear to be faced with adverse conditions may indicate a heightened sense of well-being.

Evidence to support the premise that well-being is a subjective interpretation of quality of life as it relates to health is provided in the qualitative findings of a study that compared the effects of imagery, support and standard care on immune function in breast cancer patients (Justice, 1998). Semi-structured psychological interviews in a subsample of 13 of the 47 randomly selected women who participated in the trial provided evidence that in spite of clearly diminished health, the vast majority (12) exhibited a

sense of well-being. While a variety of factors were associated with this sense of well-being including spirituality, many of the women interviewed expressed a sense of coherence which the researcher defined as seeing the “world as comprehensible, meaningful and manageable” (p. 66). While they could not control the outcome of their underlying health issues, a sense of optimism, purpose, faith and control allowed these women to transcend the physical and express a belief that “life is good”.

The theorized relationship between health and well-being may be applied to the previously cited studies that link job strain and the experience of satisfaction (Gorge et al., 2002; Karasek, 1979; Laschinger et al., 2001a; Tummers et al. 2002). If the consequence of job strain is diminished health which in turn is associated with diminished satisfaction, this would suggest that a diminished sense of satisfaction or well-being is an affective response associated with a failure to find the job manageable. This failure as it relates to workplace stressors appears related to inadequate personal capacity to actively respond to those stressors revealing a deficit in the demand for self-care which is expressed as job dissatisfaction.

The Influence of Passive Coping Styles

For those nurses who do not engage in an active to response to health care demand, research suggests that it is the result of a passive coping style. Ceslowitz (1989) investigated the experience of burnout in a random sample nurses (n = 150). Participants were asked to complete a questionnaire that elicited data regarding burnout and coping strategies. The data were subjected to canonical correlation and indicated two significant variates that accounted for 47% of the variance over both solutions. Both variates were

significantly related to burnout. The first set was indicative of decreased burnout and active coping ($F = 3.62, p < .001$). The other demonstrated increased burnout and escape or avoidance coping strategies ($F = 2.47, p < .003$). Lazarus (1991) describes avoidance as without conscious action or intention. It is a behavior intended to move the individual away from a source of stress or harm without consciously addressing that source. In this case, those nurses who used avoidance as a coping strategy also experienced higher levels of burnout. Given the previously demonstrated relationship between higher levels of burnout or job strain and diminished self-assessed health status, this suggests that passive responses may be associated with a failure to identify self-care demand and seek resolution of the health deficit. Ceslowitz determined that nurses who engaged in avoidance also used confrontational behavior and self-controlling coping which is associated with inhibition of feelings. These coping styles do not appear to be associated with strategies intended to seek positive changes related to the circumstances associated with the cause of burnout.

Absenteeism

Absenteeism appears to be one variable associated with the failure of individuals to engage in an active response to the health consequences associated with job strain. Landerweerd and Boumans (1994) collected data from nurses in 16 randomly chosen hospitals in the Netherlands. The final sample included data from 36 nursing units and resulted in 561 completed questionnaires. Data were analyzed using correlation and regression techniques in order to determine the relationship between the nurse's work situation and the nurse's reaction to that situation. Results were highly significant across

a variety of indicators and in the anticipated direction. Key findings included the determination that a higher sense of job satisfaction was associated with diminished health complaints. This sense of job satisfaction was influenced by the leadership style of the nurse manager. When specific components of the relationship between work and nurse response were noted, data demonstrated a significant relationship between both absence frequency and work relationships. Specifically, low absence frequency is associated with low work pressure ($p \leq .05$) and high promotional and growth opportunities ($p \leq .05$). These are features associated with low job strain. As absenteeism is classically defined as an unplanned or unscheduled absence from work, which is the source of the job strain, it suggests that the relationship between job strain and absenteeism may be associated with a passive coping style.

Hackett and Bycio (1996) were specifically interested in the use of absenteeism as a coping mechanism for hospital based nurses. A convenience sample of 57 nurses were recruited to complete multiple quantitative diary entries on a Likert-like scale intended to indicate the degree to which nurses experienced stress, personal problems, ill-health; tiredness; sleep and job satisfaction during the time preceding and upon return from an unscheduled absence. A total of 20 nurses met final inclusion criteria that allowed analysis via paired comparison “t” tests and exploratory trend analysis of data collected over a five month period. Data demonstrated that during the shift following the unscheduled absence, the subjects experienced a decrease in symptoms related to doldrums (personal problems, tiredness, ill-health, sleep disruption and stress). While limited by a relatively small sample, the researchers concluded that absence served a maintenance function allowing participants to recover from emotional or physical fatigue.

Based upon these findings and those of Landerweerd and Boumans (1994), it is reasonable to conclude that absenteeism is a behavior indicative of a failure to engage in active efforts to resolve work-related stress.

Intent to Leave

A second variable that is suggestive of a passive response to the source of job strain is intent to leave. Considerable attention has been given to construct of intent to leave in the nursing literature due to its predictive association with nurse turnover. Irvine and Evans (1995) conducted a meta-analysis of the causal relationships among job satisfaction, behavioral intentions and turnover. The analysis concluded that economic factors, structural factors and psychosocial factors all contributed to the experience of job satisfaction. The experience of job satisfaction is mediated by behavioral intentions, defined as a decisional component, as it influences job turnover. The average weighted correlations, corrected for measurement error, indicated that the association between behavioral intentions and turnover is substantially higher than that found for job satisfaction and turnover. The researchers concluded that this indicated that the decisional component regarding intent to leave was more important than the affective response of job satisfaction. Therefore, as nurses reach the decisional point, they are more likely to follow through with turnover behavior. As such, intent to leave becomes a cognitive indicator of a nurses desire to remove oneself from an environment that produces feelings of low satisfaction. These feelings of low satisfaction are influenced by the factors associated with job strain including structural and personal variables.

The preceding study demonstrated that nurses who indicated intent to leave were more likely to use a passive cognitive response to influence the outcome. Support for intent to leave as a passive response is found in an examination of the relationship between satisfaction and intent to leave. Larrabee et al. (2003) used a convenience sample of nurses (n = 90) working in a U.S. medical center. A questionnaire was used to elicit data related to job context, structure, nurse attitude, job satisfaction and intent to leave. Data were analyzed using ANOVA, bi-variate correlation and regression. Results clearly indicated that job dissatisfaction was related to intent to leave ($p < .001$). Examination of the influences upon satisfaction demonstrated that attitude as influenced by psychological empowerment and hardiness and a sense of control over the environment were the most influential predictors of job satisfaction on a variety of scales. Furthermore, context and structure exert most of their influence on satisfaction as a result of their indirect influence upon empowerment. Empowerment was described by the researchers as an active response that allows the individual to shape and manage the work context. Hardiness influences a sense of capability. This analysis suggests that satisfaction is associated with an active response to work context which in turn is associated with low intent to leave. Conversely, it may be concluded that an expression of a high intent to leave is indicative of a failure to engage in active problem solving directed towards the work context.

The preceding analysis supports a determination that self-care demand is a latent construct that conceptualizes the ability of RNs to mediate the effect of job strain and the influences of the professional practice environment. Self-care demand is a cognitive assessment that is affected by self-concept and maturity, culture, knowledge, family,

group membership, choice and ability (Orem, 2001). It is necessary to promote psychophysiological integrity and requires individual action to control behavior and the environment, communicate and utilize resources. Universal self-care requisites are those that are common to all human beings. They are associated with “life processes, with the maintenance of the integrity of human structure and functioning and with general well-being” (p. 48). These include maintenance of a sufficient intake of air, water and food; attention to the elimination process; maintenance of a balance between activity and rest, solitude and social interaction; prevention of hazards; and promotion of human functioning and development. When an individual determines that there is a deficit in self-care requisites, a program is initiated to eliminate the assessed deficit. This is accomplished through a series of actions or self-care practices in which the individual engages to promote health and well-being. These active behaviors can be observed and measured. Furthermore, individuals who lack resources to meet self-care deficits can be assisted through the intervention of care-givers. Self-care practice is therefore a meaningful construct by which to measure self-care demand.

In addition to self-care practice, well-being is influenced by self-care demand (Orem, 2001). There is theoretical support for the measurement of well-being through the assessment of satisfaction (Lazarus, 1991). Satisfaction is an affective response that reflects an individual’s attitudinal evaluation of the influence of the work environment upon well-being. Low satisfaction is theoretically and empirically linked to a low job affiliation as measured by intent to leave and turnover. This suggests that low job satisfaction is associated with a failure to engage in self-care demand/active coping behaviors. The preceding discussion also supports absenteeism and intent to leave as

indicators of a failure to actively engage in a coping response. Therefore, it is reasonable to evaluate the demand for self-care/coping through the measurement of self-care practice, satisfaction, absenteeism and intent to leave.

Research Hypothesis

The relationships, both direct and indirect, among the latent constructs of job-strain, professional practice and self-care demand/coping are complex. They are influenced by the capacity of the individual to respond to personal and workplace stressors (deJonge et al., 1999; de Rijk et al., 1998; Gonge et al., 2002; Kreulen & Branden, 2004; Laschinger et al., 2001a; Nicholas, 1994). Modification of the work environment to support the use of professional practice measures may diminish the experience of job strain (Laschinger et al., 2001a; Mark et al., 2003; Wan, 2002). Equally important may be the influence of the nurse manager in that environment (Irvine & Evans, 1995; Landerweerd & Boumans, 1994; Taunton et al., 1997). This association suggests that the nurse manager may have a role to play by assisting individuals in the management of the effects of environmental stressors. Returning to Karasek (1979) and Karasek and Theorell (1990), the complexities associated with an individual's response to the work environment indicates an interactive model that balances job demands with an individual's ability to respond to those demands through control.

The need for control over professional practice is a well identified theme in the nursing literature. Job control relates to the manner in which the nurse is able to moderate the environment through use of discretion or decision-making, terms associated with the practice construct of autonomy (Kelly & Joel, 1999). Autonomy as a general

construct is an oft used descriptor of a key practice element necessary to establish professional jurisdiction. Discretion and decision-making contribute to a professional practice environment in which “no other profession or administrative force can control nursing practice, and that the nurse has the latitude to make judgments in patient care within the scope of nursing practice as defined by the profession and the state Board of Nursing” (Kelly & Joel, 1999, p. 357-358). Kelly and Joel describe autonomy as having two spheres – that of job content and job context. Job content encompasses the ability to independently address a problem and job context is the ability to define the extent to which that individual and others will be involved in the problem’s resolution. Returning to the control variables of discretion and decision-making, content issues involve decision-making and include such things as involvement in decision-making, decision-making latitude, and choice in how work should be done. Context issues relate to discretion in education and professional development and the application of those skills in the work environment.

These are the same characteristics described by Havens and Aiken (1999) as integral to the success of magnet hospitals. It is in these facilities that Laschinger et al. (2001b) determined that autonomy, control and collaboration were linked to job satisfaction. Laschinger et al. (2001a), Larrabee et al. (2003); Mark et al. (2003) and Wan (2002) demonstrated that these same elements were directly associated with job satisfaction and retention.

While the influence of individual control is important to the experience of job strain, it also appears that the demands of the job may exceed an individual’s ability to exert control (deJonge et al., 1999; de Rijk et al., 1998). Overwhelming job demands

may be a result of environmental structure. However, even in challenging environments, some individuals appear to demonstrate a greater ability to moderate the effects of that environment. Manifestation of the ability to wield control appears to be innate to the individual's personality and temperament (Nicholas, 1994; Rowe, 1997). It is also subject to the influence of an immediate supervisor who may be significant in altering the environment or in assisting the individual to develop the skills necessary to effectively manage environmental stressors (Seversinsson & Kamaker, 1999; Taunton et al., 1997).

Ultimately the balance between job demand and job control is regulated by the individual. Lazarus refers to this regulatory process as coping (1991). The process is interactive, subject to the influence of both the person and the environment. The individual responds to a perceived harm, threat or challenge by either taking action to resolve the assessed risk or by use of avoidance behavior to ignore it. Orem (2001) considers this process when describing an individual's response to a perceived health deficit. Self-care deficit theory contends that only through direct and purposeful action may health deficits be ameliorated. It is a response based upon knowledge and experience and can be influenced by the intervention of skilled caregivers. It is this demand for self-care that appears to regulate the health-related consequences of job strain. The degree of regulation that is necessary is influenced by the structure of the professional practice environment. The established relationship between job strain and the environment also suggests that an interaction between those factors may buffer the need for regulation. The anticipated outcome of active regulation is high self-care practices and job satisfaction with low absenteeism and intent to leave. The converse is true for passive avoidance behavior.

This study was designed to test a hypothesis that the experience of job strain as indicated by self-assessed health is mediated by the individual staff nurse as a function of self-care demand which is operationalized as coping. It is predicted that RNs who adopt an active response will demonstrate higher self-assessed generic health status. These nurses will also demonstrate higher self-care practices/coping and job satisfaction. This will be accompanied by low absenteeism and a diminished indication of intent to leave. It is also hypothesized that the professional practice environment will have a direct positive influence upon coping. RNs who indicate a greater sense of job control, have better communication patterns with physicians and perceive a greater degree of decentralization will have greater application of active coping skills. This generic hypothesized model of the relationships among job strain, professional practice and self-care demand is demonstrated in Figure 2.

CHAPTER FOUR: METHODOLOGY

Review of the relevant literature offers theoretical support for the three latent constructs identified as influential in the retention-related decision-making of the RN – job strain, professional practice and coping. These constructs can be predicted by empirically supported indicators and appear to share direct and indirect causal relationships. Both job strain and professional practice have been demonstrated to be associated with predictors of organizational stability – job satisfaction, intent to leave and turnover. Coping is a latent endogenous construct that identifies an individual’s response to the influence of the latent exogenous constructs of job strain and professional practice. It can be predicted cognitively by the intent to leave, affectively by job satisfaction and behaviorally through self-care practice and absenteeism.

In creating such a model, the focus shifts from the organization to the individual. The rationale for the nurse level of analysis is based upon recognition that no matter how useful organizational and unit outcomes are to the modification of the work environment, they fail to address retention related issues at the level of personal decision-making. As a result, while institutional modifications to improve patient and nurse centered outcomes may achieve aggregate success; they do little to determine the response of the individuals in that environment who remain at risk for voluntary turnover. The potential for significant risk is high given the empirical evidence that associates job satisfaction with turnover (Larrabee et al., 2003; Taunton et al., 1997). Multiple studies demonstrate that nurse job satisfaction ranges between 20% and 40% (Aiken, et al., 2001; Ma et al, 2003; Sochalski, 2002). It is reasonable to conclude that those nurses are at risk for voluntary

turnover. Analysis at the individual nurse level provides both a method to better identify those individuals and to consider the response of those individuals to their work environment.

Determination of at risk individuals provides the opportunity for development of empirically supported methods for nurse managers to address retention at the level of individual decision-making. It also supports the creation of a healthy work force which generates employee, organizational and public health benefits. Finally, the client centered model supports nurse executive intervention from a framework that is directly associated with clinical nursing practice. This will aid both the nurse executive and the employee in the implementation of a plan that is based upon an already mastered skill set.

This study was designed to test a model for identification of nurses at risk based upon Orem's theoretical construct of self-care. Self-care is an active coping skill taken in response to alteration in health status. Coping is conceptualized as the response of RNs working in a staff position on medical-surgical nursing units to the effects of job strain associated with that environment. It is expected that this response will also be influenced by the professional practice environment (Figure 2). Based upon this model, the following research hypotheses are proposed:

H₁: The effect of job strain on RNs will directly influence the use of active coping behaviors.

H₂: The professional practice environment will directly influence the use of active coping behaviors.

The model will be revised using the results of the initial analysis to improve the model and the fit of the data.

Study Variables

Job Strain

Job strain, as conceptualized by Karasek (1979), results when jobs elicit high performance demands that cannot be offset by decision latitude which offers the individual a measure of control. Envelopment in an environment of high demand with low control over that environment elicits a psychological stress response which manifests itself in diminished physiologic functioning. This experience is defined as job strain. The *Job Content Questionnaire* (Karasek, 1979) has been used in multiple studies to demonstrate the relationship between cardiovascular disease and job strain, as conceptualized using the demand-control model (Marmont, et al., 1999). It has been demonstrated that job strain is predictive of physical illness as measured by the experience of cardiovascular events. The experience of job strain in nurses has been tied to low back pain (Gonge et al., 2002), low self-rated health status and increased absenteeism (Lindholm, et al., 2003). However, the demand-control model has not been consistently demonstrated as predictive of job strain. De Jonge et al. (1999) and de Rijk et al. (1998) suggest that group and individual characteristics impact the model. Therefore, since diminished health status is the postulated outcome of job strain, a more direct measure may be elicited through use of the 12 item Short-Form Health Survey (SF-12v2™). Permission to use the SF-12v2™ was secured from QualityMetric Incorporated (Appendix A).

SF-12v2™

The SF -12v2™ has been demonstrated as a valid and reliable measure of health status as a multi-dimensional construct (Ware, Kosinski, Turner-Bowker & Gandek, 2002). It was developed over a 10 year period as an alternative to the SF-36 in an effort to create a measure of health status that was a shorter, valid method of collecting generic health information. The SF-36™ is the most widely-used health survey in the world and its use has been reported in over 5000 articles and publications. It has been demonstrated a psychometrically-sound measurement tool. Each of the 36 items scores only one of eight sub-scales. Physical functioning (PR), role-physical (RP), bodily pain (BP) and general health (GH) are observed measures of physical health; and vitality (VT), social functioning (SF), role-emotional (RE) and mental health (MH) are observed measures of mental health. These measures support determination of two summary measures – physical component summary (PCS) and mental component summary (MCS).

The content and format of the SF-12v2™ measures the same eight scales found in the SF-36™. Recent improvements in both the wording and the scoring format have been demonstrated as making the instrument easier to understand and less culturally biased than previous versions. The items for each scale were comprised of items from the SF-36™ and calibrated using QualityMetric Incorporated computerized adaptive testing (CAT) software. The results were determined reliable estimates for all scales and vary from the SF-36™ only in absolute precision. The SF-12v2™ uses a standard (4-week) recall period and scoring algorithms for the eight-scale profile. It provides both ratio (0-100) and norm based scoring options. It is estimated to require only 2 minutes for administration and is recommended for research in which there is a need to minimize

respondent burden. It is characterized as the “tool of choice for most fixed-length population surveys and for all population surveys that require maximum efficiency and fewer than 36 questions” (Ware et al., 2002, p. 15). As of 2001, the SF-12™ had been cited as the research tool used in over 275 articles and publications.

Confirmation of concurrent and construct validity have been reported by the instrument’s authors and from multiple outside sources (Ware et al., 2002). Of particular interest for this study are reports that the sub-scales of the instrument (PCS, MCS) are accurate generic measures of population health, both as norm-based predictors and in comparison to multiple other measures of population health. Comparison to the more precise SF-36™ supports a conclusion that the instruments are strongly correlated and similar.

The reliability of the instrument was calculated using data from the 1998 and 2000 general US population and the Medical Outcomes Study (Ware et al., 2002). Reliability coefficients ranged between .73 and .87 across all eight scales (PF, RP, BP, GH, VT, SF, RE, MH). The summary scale measure coefficients were determined to be .89 for the physical component summary (PCS) and .86 for the mental component summary (MCS). The instrument is also very sensitive when used to detect differences between a group mean and a fixed norm. For example, 197 subjects are needed to detect a difference of two points and 32 subjects are necessary to detect a difference of five points. To assist in the scoring and application of appropriate algorithms and well as determination of the accuracy and completeness of the entered data, scoring software is provided by the developer of the instrument. Higher scores indicate a higher assessment of generic physical and mental health status. This higher assessment of physical and

mental health status is indicative of diminished health consequences which occur secondary to the experience of job strain.

Personal and Organizational Influences

Job strain as a construct objectified by health status may also be influenced by relational and experiential influences. Spector (2004) identifies personal factors such as gender, ethnicity and cultural influences that impact the experience of health. Age may make a difference, with older nurses experiencing higher levels of stress and job strain (Santos, et al., 2003). The level of education plays a role (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Conflicting responsibilities outside the work environment are also contributory (Sochalski, 2002; Strachota et al., 2003). In an effort to determine the influence of these factors upon job strain, data were collected to measure age, gender, ethnicity and race, marital status and the responsibility for dependents. Education was assessed in order to determine the highest level of nursing education and the month and year of graduation from the subject's basic nursing program.

Organizational characteristics may also influence the experience of job strain. Research demonstrates that unit size influences the experience of job satisfaction which is a predictor of job strain (Mark et al., 2003). In order to evaluate the influence of the size of the practice setting, data was collected regarding both the bed capacity of the hospital and the nursing unit. Boyle (2004) determined that unit culture may influence client adverse incident rates, specifically between specialty and general medical-surgical units. In an effort to evaluate the influence of unit culture upon the study population, subjects were asked to characterize the needs of their primary patient care responsibilities as either

medical or surgical in nature. Table 1 summarizes the personal and organizational exogenous variables associated with job strain.

Table 1 : Study Variables

Variable	Operationalization
Study Variables	
(1) Job Strain	A latent endogenous variable measured by the following indicators:
Physical Health	self-assessment via SF-12 v 2™
Mental Health	self-assessment via SF-12 v 2™
(2) Professional Practice	A latent exogenous variable measured by the following indicators:
Decentralization	opportunity to participate in nursing unit decision making as measured by Mark, Sayler & Wan (2003)
Collaboration	opportunity and character of nurse/physician collaboration as measured by Mark, Sayler & Wan (2003)
Autonomy	amount of job related independence, initiative and freedom as measured by Mark, Sayler & Wan (2003)
(3) Coping	A latent endogenous variable measured by the following indicators:
Self-Care Practice	self-care practice as measured by DSPCI-90©
Dissatisfaction	perception of well-being as indicated by dissatisfaction with the job
Intent to Leave	extent to which the subject anticipates leaving in the current job
Absenteeism	unscheduled absence from work
Control Variables	
Relational Influences	outside influences on subject including marital and care-giver status
Experiential Influences	number of years working as a RN, nursing educational preparation
Age	subject's age
Gender	male/female
Clinical Designation	unit case mix identified as medical or surgical patients
Unit Size	data will be sorted and categorized for unit bed size
Societal Influences	data will be collected during a specific time frame which minimizes the influence of organizational and social turbulence
Work Setting	subjects limited to full time staff nurses on general medical-surgical patient care units - via sampling
Job Qualifications	subjects limited to registered nurses with at least 3 months experience and 3 months in current position - via sampling

Professional Practice

Professional practice is conceptualized by Mark et al. (2003) as an integrative construct indicated by decentralization, autonomy and nurse-physician collaboration.

This model is theoretically consistent with a model of empowerment also used to gauge professional practice (Havens & Aiken, 1999; Laschinger et al., 2001a; Laschinger et al., 2003; Laschinger et al., 2001b; Wan, 2002). Using these models as a guide, for the purposes of this study decentralization will be operationalized as the opportunity to participate in unit decision-making. Autonomy is defined as the amount of job related independence, initiative and freedom; and collaboration will be described as the opportunity for and the character of nurse collaboration with physicians. These variables will be measured using instruments validated in a previous study conducted by Mark et al. (2003) that conceptualized professional nursing practice as an integrative latent construct (Appendix A). Table 1 summarizes the variables associated with professional nursing practice.

Measurement of Autonomy, Decentralization and Collaboration

Autonomy, decentralization and nurse-physician collaboration were measured in a population of 2279 (n = 1682) staff nurses by Mark et al. (2003) as part of a study funded by the National Institute for Nursing Research: A Model of Patient and Administrative Outcomes. The Outcomes Research in Nursing Administration Project developed indicators on Likert-like rating scales which were administered to staff nurses. The autonomy scale is a 21-item, six-point scale that assesses freedom to “engage in activities such as consulting with others about complex care problems, influencing standards of care, and acting upon on their own decisions related to care-giving” (p. 228). The measure was adapted by Mark et al. using the Control over Nursing Practice Scale

(Verran, Gerber, Milton & Murdaugh, 1995). The alpha coefficient for the scale, as adapted, was .93 and three factors explained 54% of the total variance.

Decentralization items were developed to capture nurse involvement in unit decision-making on a 6-item, 5-point scale (Mark et al., 2003). Reliability was established (alpha = .81) and a single factor explained 48% of the scale's total variance. Items related to collaboration with physicians were developed using a 6-point, 9-item scale designed to measure negotiation with physicians as it relates to nurse practice, physician practice and the appropriateness of physician orders. Items were developed using the nurse scale associated with the Collaborative Practice Scale (Weiss & Davis, 1985). An alpha coefficient of .90 was established and two factors explained 69% of the total variance. Higher scores on all variables indicated a higher level of the presence of the indicator.

Coping

Self-care demand is a theoretical construct postulated by Orem (2001) as an active and knowledgeable coping response to a perceived health deficit. It is measurable through the practice of self-care and a sense of well-being. The outcome of this response is performed action designed to regulate the individual's functioning and development (Denyes et al., 2001). A measure of self-care practice, the Denyes Self-Care Practice Instrument (DSCPI-90©) has been determined a valid and reliable indicator (Denyes, 1990). Permission was secured for inclusion of the instrument in this study (Appendix A).

DSCPI-90©

The DSCPI-90© was developed to measure self-care practices in adolescents based upon the self-care requisites identified by Orem (Denyes, 1990). It has also been successfully administered in adult populations. Content and construct validity were established as was reliability across alternate forms ($\eta > .50$) (Denyes, 1980). The original items were modified in 1982, 1988 and 1990 based upon empirical and theoretical re-evaluation (Denyes, 1990). The current instrument is an 18 item self-administered questionnaire that asks the subject to report responses to each item as a number from 0-100 where 0 means none of the time and 100 means all of the time. Use of the instrument in nine independent studies supports the reliability of the DSCPI-90© with alpha coefficients ranging from .82 to .89. Completed surveys are coded and scored on a 0 to 100 scale. A final score is determined by calculating the mean of the scores for items 1 to 18. Further testing of the instrument will be conducted to confirm identification of a single factor in scoring self-care practice. In an effort to ensure that all indicators for self-care demand are unidirectional, self-care practice will be characterized as the extent to which an individual engages in self-care practices or coping. Lower scores will be associated with lower levels of coping.

Dissatisfaction, Absenteeism and Intent to Leave

Satisfaction is a theoretically defined construct that is classically described in the work environment as satisfaction with the job. Orem (2001) and Lazarus (1999) characterize satisfaction as an affective response that represents a sense of well-being or morale. As such, higher levels of well-being are associated with higher self-assessments

of health and effective organizational outcomes (Laschinger et al., 2001a; Mark et al., 2003; Wan, 2002). Mark et al. (2003) assessed satisfaction on a 4-item scale measuring global satisfaction with the job (Appendix A). The responses were demonstrated reliable ($\alpha = .84$) and a single factor explained 68% of the variance.

The association of absenteeism with job strain is supported through theoretical and empirical analysis (Hackett & Bycio, 1996; Landerweerd & Boumans, 1994). It is defined as an unplanned absence from the job. When the opportunity for direct measurement is unavailable, self-report has been demonstrated a satisfactory alternative (Brooke & Price, 1989; Burke & Greenglass, 2000). Typical measures use one and two item scalable responses that ask the subject to indicate the number of different times the respondent was “off from regularly scheduled work”. Single factor loading has been reported with alpha coefficients ranging between .71 and .97. The two absenteeism measures for this study were adapted from representative questions associated with the reported studies. Each question applied a 3-month recall period and requested absence frequency both as a function of the number of days and number of times the employee missed regularly scheduled work. Responses will be scaled and coded so that lower absence scores reflect lower absence frequency in order to allow unidirectional interpretation of coping.

Intent to leave is described as “withdrawal cognition” (Mowday, Kober & McArthur, 1984, p. 83). Comparison among studies is confounded by conceptualization as either “intent to leave or search” or “intent to stay” (Irvine & Evans, 1995). Based upon the cognitive precept of withdrawal, for the purposes of this study the concept will be operationalized as intent to leave or search. Withdrawal has been measured using a

limited number of response items focusing on the likeliness that the subject would leave the current position in the next 12 months (Mowday et al, 1984; Rambur et al., 2003).

Two items were devised that asked subjects to scale likeliness to seek a new position in the next year and report anticipated length of expected tenure in the current position. In the case of anticipated length of tenure, a self-report of less than one year will be coded as “intent to leave”. Reliability of the measures will be demonstrated in the data analysis. In order to allow unidirectional interpretation of coping, data will be coded so that lower scores will represent a lower intent to leave.

Participants

Participants were selected from full-time RN employees on the medical-surgical patient care units in the Florida Hospital system. This system is comprised of seven campuses ranging in capacity from 50 to 902 beds, with a total bed capacity of 1772 beds, caring for nearly one million patients a year (Florida Hospital, 2000). The case mix index for this system is the highest in the state, and nursing unit size ranges from 22 to 65 beds (Florida Hospital, 1999). The patient care services available at each of the facilities varies, anchored by a major tertiary referral hospital. Facilities are distributed throughout a three county region and provide care in urban, suburban and semi-rural settings.

For the purposes of this study, data collection was limited to those patient care units designated as providing medical-surgical care. After discussion with senior nursing leadership for the hospital system, the medical-surgical nursing staff was defined as staff providing care on patient care units identified as medical-surgical and progressive care. Medical-surgical nursing is currently experiencing one of the highest vacancy rates in the

United States – 14.1% as reported by the American Organization of Nurse Executives (2002). In the state of Florida, medical-surgical nursing reports the highest vacancy rate (17.2%) of all nursing specialties (Florida Hospital Association [FHA], 2001). This is consistent with findings of the ANA (2005) that reported that 28% of medical-surgical nurses predicted a change in job in the next year as compared to 21% for all RNs. Finally, the NSSRN 2000 (Spratley et al., 2001) reports that when asked to identify their primary work setting, the single highest percentage of nurses (32%) indicated that more than half of their direct patient care time was spent in a medical-surgical setting. These figures suggest that medical-surgical nurses may experience greater variability in their experience of job strain, and that the findings of this study would be applicable to a significant percentage of the nurse population.

Research subjects were selected using a non-probability technique. All RNs employed on the medical-surgical and progressive care units of the hospitals included in the study received surveys and a request for participation. From these units, 1027 nurses met sample criteria. Sampling procedures were initiated and coordinated through the Human Resources Department which ensured that all hospital policies regarding the use of employee information were safeguarded. The sample included all staff nurses employed on all shifts and in all RN employment categories associated with the medical-surgical and progressive care units in the hospital system. Nurses identified as temporary, floats or per diem were excluded from the study. Identification of the participants was completed one month prior to the beginning of the study. Surveys were coded to allow the researcher identification of the subject for purposes of repeat surveying only. Subject identification was removed by the researcher upon return of the

completed questionnaire. All subjects are adults (> 18 years of age) and no compensation was offered.

Human Participant Protections

The research project was submitted to the institutional review boards of the University of Central Florida and Florida Hospital Healthcare System and approvals were received (Appendix C). In addition, Florida Hospital required coordination with the Office of Research Administration, the Nursing Research Council and the Department of Human Resources. All requested documents were supplied and permissions secured (Appendix C).

A waiver of consent, including a Health Insurance Portability and Accountability Act (HIPPA) waiver of authorization, was requested and granted. The survey was anonymous and subjects were de-identified (data separated from subject identification) by the investigator. All subjects were informed that their responses were anonymous and confidential, and that completion of the survey constituted that individual's consent to participate in the study. In addition, participants were informed that participation was voluntary and that they had the right to withdraw from the study at any point prior to return of the survey. Subjects were assured that their employer would only have access to aggregate study findings. Finally, all participants were offered the opportunity to receive the completed findings of the study in a manner that protected their anonymity. A copy of the consent information is contained on the cover of the proposed instrument (Appendix B), and a separate form was provided to solicit study findings (Appendix B). A stamped envelope was provided for return of the completed survey.

Participant lists were maintained by the investigator. The participants received the surveys at their home address through U.S. postal services. The survey, a letter from the chief nursing officer of the hospital in support of the study, a request for study findings and a response envelope were placed in a sealed envelope. The cover of the survey included an invitation to participate in the project, assurance that responses were anonymous and that individual data would not be shared with Florida Hospital. It also stipulated that surveys would be coded for administrative use only and included instructions to discard the outer envelope in order to separate the participant's name from the survey.

Each survey included a number associated with the participant list on the first page. Coding consisted of a number to identify the hospital and nursing unit as well as a number matched to a key on the participant list. Upon return of the survey, the participant list was marked to signify survey return based upon the numerical identifier. At that time, the first page of the survey was separated from the data and shredded. Data were entered in the statistical program in a numerically identified row in the order in which it was returned. This procedure completely de-identified the data from the participant. Active participant lists and data were maintained in separate locked file cabinets and password protected computer programs. These survey procedures are consistent with those specified by Dillman (1978) for maximization of response rates for mailed surveys. Upon completion of the data collection period, participant lists were destroyed. While active, all participant lists were maintained in a file cabinet and/or password protected personal computer in the private residence of the investigator. The

file cabinet and computer were contained in a locked office that was only accessible to the investigator.

Survey and Survey Administration Procedure

Data were collected for this exploratory cross-sectional study through administration of an anonymously administered survey in a sample of RNs. Questions were developed on Likert-like and ratio scales and coded to allow unidirectional interpretation. Those questions were supplemented by open-ended responses which were summarized in an effort to add qualitative dimension to the quantitative findings. Research instruments were selected from tools established as valid and reliable measures and supplemented with questions adapted from the literature. Permission was obtained for all instrumentation which includes the SF-12v2TM Health Survey, Denyes DSCPI-90[©], and scales developed by Mark et al. (2003) (Appendix A). A copy of the instrument is attached (Appendix C).

Establishing statistical power for SEM in order to determine sample size is complex (Wan, 2002). Bentler and Chou (1987) propose 5 respondents as necessary to evaluate each of the 27 parameters to be estimated for this study. Bollen (1986) suggests 10 respondents for each parameter. A non-probability sample is utilized to maximize the final sample size. Based upon previous experience with the sample population, a response rate of 25% is anticipated. The large sample size will help ensure an adequate response rate to support statistical analysis. Statistical testing using goodness-of-fit indices will be used to assist in the assessment of the adequacy of the final sample. The

pencil and paper surveys are self-administered and the U.S. postal system will be used to distribute and collect the surveys.

A methodological procedure for distribution of the surveys and advertisement of the project was developed in consultation with nursing management in accordance with institutional policy and procedure. The investigator met with clinical nursing leadership and first line nurse managers to discuss the research project and request manager support at all campuses. Nurse managers were encouraged to contact the investigator regarding any additional questions and/or to request additional information regarding the research constructs. A cover letter for the survey was developed and signed by the chief nursing officer asking staff to support this research effort (Appendix D). At the unit level, nurse managers were asked to encourage staff participation at unit meetings and to distribute flyers regarding the research project (Appendix D).

In an effort to control for extraneous influences, subjects were limited to RNs with at least three months professional practice experience and three months employment in the current position. Only nurses employed full-time on medical-surgical and progressive care nursing units were included. Hospital size was sorted and categorized and the study was implemented after the Labor Day holiday in an effort to minimize organizational and social turbulence. It was assumed that hiring procedures for employees remained consistent through-out the organization.

Surveys were mailed to all suitable subjects via the U.S. postal system on September 12, 2005. On October 1, 2005, postcards were mailed to participants reminding them of the importance of the study with a request that those who had not returned a survey do so at their earliest convenience (Appendix D). No surveys returned

after October 21, 2005 were included in data analysis. Upon completion of the study, results will be distributed to all facilities, review boards and participants who request individual responses.

Data Analysis

Pilot

A pilot study was conducted from July 5, 2005 to August 2, 2005 at Florida Hospital Orlando. Two-hundred-eight surveys were distributed to ICU nurses on five units selected by nursing administration in order to support administration of the final survey. Nurse managers for the selected units were provided an overview of the research project and asked to distribute the surveys. The sample was drawn by the Human Resources Department using study protocols. Participation was voluntary and protocols for the protection of human subjects were observed. A stamped return envelope was provided and the survey, a cover letter from the chief nursing officer, and a request form for study results was placed in a sealed envelope and distributed via on-unit distribution systems. A total of 71 surveys were returned which reflected a 34% response rate. Responses were received from all five ICUs. The response pattern for each unit was consistent with the percentage achieved for the full sample. One survey, which was incomplete, was excluded from analysis. This response rate is slightly higher than the 25% response rates to previous surveys conducted by the institution. Data analysis was conducted on the 66 surveys returned by July 29, 2005. In addition, nearly 30% of study respondents requested information regarding study outcomes.

Pilot sample demographics suggest a population consistent with U.S. demographics for RNs as indicated by the National Sample Survey of Registered Nurses (Spratley, et al., 2001). Participants were predominately female (88%) and over the age of 40 (71%). The majority described their ethnicity/race as white non-Hispanic (75%). Those reporting Asian parentage represented 14% of the study population which is higher than the 3.7% reported for RNs nationally. The number who identified themselves as black or white-Hispanic was 4.6% in each category, and one individual was identified as American Indian/Alaska Native. The majority began their nursing careers through associate degree programs (54%); however, when queried regarding highest nursing degree, 53% indicated a bachelors degree or higher. The number of years in professional nursing practice varied from 2 years to 35 years, with 53% reporting more than 16 years since graduation. Time in the current position ranged from 3 months to almost 25 years, with 51% reporting more than 5 years in the current job. Fifty-eight percent described themselves as currently married and 25% as widowed, divorced or separated. Forty-three percent indicated responsibility for the care of dependents.

Alpha coefficients were calculated for all study scales. Decentralization (.787), collaboration (.907), autonomy (.916), generic health status (.79), self-care practice (.897), satisfaction (.823) and absence (.98) are consistent with previously reported values (Brooke & Price, 1989; Burke & Greenglass, 2001; Denyes, 1990; Mark, Sayler & Wan, 2003; & Ware, Kosinski, Turner-Bowker & Gandek, 2002) and appear to be reliable measures for the purposes of the study. The alpha coefficient for intent to leave was low (.539) and further analysis of the two questions suggested ambiguity in construction. The first question asks intent to leave; the second was designed to

ascertain the projected tenure in the current position. A time-frame of less than one-year was considered indicative of intent to leave. Previous research demonstrates an inverse relationship between satisfaction and intent to leave (Larrabee et al., 2003). Therefore correlation between the two variables was undertaken to investigate the source of the discrepancy.

Intent to leave is negatively correlated with all satisfaction variables ($p = .01$, two-tailed). Values related to anticipated length of tenure only had a significant negative correlation ($p = .05$, two-tailed) with one satisfaction measure. Analysis of question design reveals a strong organizational construct, asking intent to seek a position in another organization and anticipated length of stay with the current organization. As it is possible to move between units and hospitals within the hospital system, it is possible that there was misinterpretation of the question related to anticipated tenure. Therefore, the questionnaire was modified to reflect a unit structure for both questions.

Although previous experience with several of the scales (Mark, et al., 2003) and preliminary exploration suggest multi-factorial measures, insufficient data prohibits this level of analysis. Therefore, as each scale was designed to provide a single factor score, means were calculated for each scale as a single factor. Scoring for the variable “intent to leave” was limited to the single question which correlated with satisfaction. While the sample size is not adequate for complete statistical analysis, evaluation of the means of the outcome variables suggests that results compare favorably with previous use of the scales (Mark et al., 2003; Slusher, 1999; & Ware et al., 2003). Table 2 demonstrates the mean values for study variables.

Table 2: Comparison of Study Variable Means (Pilot) with Previously Published Means

Study Variable	Pilot Mean ^a	Reported Results (Mean)	Scale ^b
Decentralization	2.2	2.35 ^d	1 to 5
Collaboration	2.8	3.02 ^d	1 to 6
Autonomy	4.45	4.39 ^d	1 to 6
Satisfaction	2.66	2.17 ^d	1 to 4
Absence	1.76		1 to 6
Intent to Leave	2		1 to 4
Self Care Practice SF -12V2™	62.75	60.7 ^e	1 to 100
Physical Functioning	86.11	80.65 ^f	1 to 100
Role Physical	85.96	80.61 ^f	1 to 100
Bodily Pain	78.85	83.42 ^f	1 to 100
General Health	73.46	71.96 ^f	1 to 100
Vitality	56.54	55.12 ^f	1 to 100
Social Functioning	80.38	84.58 ^f	1 to 100
Role Emotional	87.12	86.79 ^f	1 to 100
Mental Health	69.62	71.38 ^f	1 to 100
Physical Health Summary	51.21 ^c	49.63 ^{c, f}	1 to 100
Mental Health Summary	48.89 ^c	49.37 ^{c, f}	1 to 100

^aN=65; ^bhigher values represent greater presence of the characteristic; ^cnorm-based scoring; ^dMark et al., 2003 (N=1682); ^eSlusher, 1999 (N=173); ^fWare et al., 2002 (1998 population)

Study

All study data were coded according to instrument instructions and recoded as necessary to ensure unidirectional interpretation. Items requiring reversal were transformed using SPSS (2004) software. In the case of the data collected via the SF-12v2™, data were coded and analyzed for construct validity through integrated coding software (QualityMetric, 2004). In the event that missing data interfered with data analysis, and was less than 5% of the available responses, a series mean was used to replace those values. Of the final sample (n=308), no variable used for the analysis

demonstrated greater than 2.9% missing data. Data were examined using descriptive techniques, exploratory factor analysis and the measurement models were evaluated through confirmatory factor analysis. Confirmatory factor analysis is used to explain variation and co-variation of the observed measurement variables (Wan, 2002).

The model presented in Figure 2 was adjusted using the results of confirmatory analysis and the re-conceptualized model was subjected to analysis through structural equation modeling techniques using AMOS 5.0 (SPSS, 2004) in an effort to confirm the hypothesized generic model. Structural equation modeling is a multivariate technique appropriate for use in non-experimental samples impacted by a complex set of inter-related variables (Wan, 2002). It allows estimation of the strength of relationships between variables and the influence of intervening variables theorized by the model.

The initial hypothesized causal relationships among the latent variables were specified by the structural equation model in Figure 2. It is assumed only measurement errors for the observed variables are correlated. For the hypothesized model presented in Figure 2, there are 27 parameters to be estimated – 9 errors (ϵ & δ), 9 lambdas (λ), 5 gammas (γ), 2 betas (β) and 2 zetas (ζ). To estimate the number of outcome indicators, 23 factors are suggested prior to factor analysis of survey data. Using the formula provided by Maruyama (1998) to determine the number of correlations

$$\# \text{ of correlations} = v(v-1)/2$$

where v is the number of variables or outcome indicators in the model – the number of data points is estimated to be a minimum of 253. The number of coefficients to be estimated is subtracted from the maximum number of data points. As the number of unknowns is less than the number of known data points the model is over-identified and

suitable for analysis (Wan, 2002). The proposed model was modified as indicated by the analysis in an effort to improve the goodness of fit of the data to the model.

Assessment of model fit is undertaken to “ensure the appropriate interpretation of the theoretical framework” (Wan, 2002., p. 82). Wan suggests a three stage approach to this process. First, each variable is assessed for appropriateness as it relates to parameter estimates and standard errors using correlations and squared multiple correlations. Second, the overall fit of the model is evaluated to determine how well the model fits the data. A model that is determined to adequately explain the data minimizes the discrepancy (residual) between the sample co-variance matrix and the population covariance matrix implied by the model (Byrne, 2001). This is supported through the use of a variety of fit indexes that seek to determine (1) if the unexplained variance after model fitting is acceptable; (2) how well the model explains the observed data as compared to a range of other models; and (3) how well the model combines fit and parsimony (Maruyama, 1998). The fit indices that will be used for this study are outlined in Table 3.

Table 3: Goodness of Fit Indices

Measure	Estimation Approach	Range
Chi-square (χ^2)	significance of discrepancies between observed and predicted relationships among measures*	the discrepancy should be minimal, therefore a non-significant value is desired
Degrees of Freedom (df)	number of sample moments minus number of distinct parameters to be estimated**	greater than or equal to 0
Likelihood Ratio (χ^2/df)	sample covariance matrix is drawn from the population as characterized by the hypothesized covariance matrix**	< 4.0 suggests a good fit
Goodness of Fit Index (GFI)	the amount of variance and covariances suggested by the model**	> 0.95 suggests good fit
Adjusted GFI (AGFI)	goodness of fit taking into account degrees of freedom**	> 0.90 suggests good fit
Tucker Lewis Index (TLI)	compares alternative models*	> 0.90 suggests good fit
Normed Fit Index (NFI)	compares best fitting and worst fitting (null) models*	> 0.90 suggests good fit
Root Mean Square Error of Approximation (RMSEA)	adequacy of model based upon population discrepancy as related to degrees of freedom**	less than 0.05
Probability (p or p-close)	tests the null hypothesis that the RMSEA is ≤ 0.05 **	≥ 0.05 suggests a close model fit
Hoelter's Critical N (CN)	evaluates sample size to determine the largest sample which is adequate to accept the hypothesis that the model is correct using χ^2 **	greater than 200

*Maruyama (1998); **Wan (2002)

Finally, Wan (2002) suggests that the model be evaluated to identify the possible sources of lack of fit. Modification of those sources then may be guided by the original theoretical model to improve the goodness of fit. This may be done by first eliminating observed variables that do not contribute to the measurement of the latent variable in a statistically significant manner. In addition, other related indicators may be added to measure the latent variables. Finally, parameters may be freed using the largest generated modification index that lies within the constraints of the theoretical model.

The minimum level of significance for all testing is set at $p = 0.05$.

CHAPTER FIVE: FINDINGS

Of the 1027 surveys mailed, 10 were returned as undeliverable mail resulting in an effective sample of 1017. From that sample, 255 surveys were returned by October 31, 2005 for a response rate of 25%. Of those surveys, 2 were disallowed as incomplete and 3 subjects no longer met the inclusion criteria (3 months in current position). Seven surveys arrived after the initiation of data analysis. Those 12 surveys represented 1% of the response rate. A response rate of 25% is consistent with response rates of the study population of the medical center to previous surveys regarding nursing practice.

The response patterns associated with the returned surveys were evaluated to ensure that surveys were returned in a pattern that represented uniformity across postal codes, hospitals and nursing units. Comparison of zip codes on mailed and returned surveys demonstrated consistency in receipt and return of the surveys across those zip codes. This suggests that the survey population was effectively contacted and that no bias was induced via the method of survey distribution. In addition, returned surveys were evaluated for consistency in response rates between hospitals and nursing units. In all cases, the returned surveys represented the 7 facilities and 26 nursing units in a percentage consistent with the percentage of the sample those facilities/units represented. This suggests homogeneity in the representativeness of the study sample to the surveyed population.

Finally, the demographic statistics for the 242 surveys which met study inclusion criteria were compared with the 70 surveys which met inclusion criteria from the pilot study. Study subjects and subjects from the pilot study were similar in age, gender,

race/ethnicity, education and experience and compared favorably with the demographics associated with a national sample of registered nurses (Tables 4 and 5). Therefore, it was determined appropriate to combine both samples. This resulted in a final sample of 308 which represents 25% of those surveyed as part of a combined sample. The resulting data was cleaned and recoded using accepted statistical practices in order to support subsequent statistical analysis.

Table 4: Descriptive Statistics of Demographic Characteristics

	Study Statistic ^a	Study Range ^a	Pilot/Survey	NSSRN ^b	HRSA Florida Profile Summary ^c
Personal					
Age	41.97 yrs	19-67	44.2/41.7 yrs	41.8 yrs	
	< 30 years			10.40%	10%
	30-40 years	25% - 33yrs		24.60%	23%
	40-50 years	50% - 42 yrs		37.10%	34%
	> 50 years	75% - 50yrs		27.60%	32%
Gender					
	female		87.7%/91.8%	94.10%	
	male		12.3%/7%	5.90%	
Race/Ethnicity					
	American Indian/Alaskan Native		1.5%/1.2%	0.50%	0.50%
	Asian		13.8%/13.1%	3.80%	2.30%
	Black		4.6%/14.3%	5.10%	8.60%
	Hawian/Pacific Islander		0%/ .8%	0.30%	
	White-Hispanic		4.6%/9%	2.20%	1.90%
	White- Non Hispanic		75.4%/60.2%	85.90%	84.40%
Marital Status					
	Now Married		58.5%/66.4%	66.30%	
	Widowed/Divorced/Separated		24.6%/14.8%	20.10%	
	Never Married		16.9%/17.6%	13.00%	
Dependent Care Responsibility					
					52.90%

Note: ^an=308; ^bNational Sample Survey of Registered Nurses 2000 (n=35,358); ^cFlorida Center for Nursing - HRSA State Health Workforce Profile - July 2005

The demographic characteristics associated with the final sample of 308 were compared to the statistics associated with a large national sample of RNs working on

medical surgical nursing units (Spratley et al., 2001) and statistics for the region of the US in which the study population was located (Florida Center for Nursing, 2005).

Table 5: Education and Experience of the Study Group

		Study Statistic ^a	Study Range ^a	Pilot/Survey	NSSRN ^b	HRSA Florida Profile Summary ^c
Education						
Entry Degree						
	<i>Diploma</i>	8.40%			25.70%	
	<i>Associate</i>	55.20%			43.30%	
	<i>Bachelors</i>	36.00%			30.30%	
	<i>PhD/Masters</i>	0.30%			0.70%	
Highest Degree						
	<i>Diploma</i>	5.80%		4.6%/5.7%	20.20%	16%
	<i>Associate</i>	44.20%		43.1%/44.7%	41.80%	46%
	<i>Bachelors</i>	45.10%		49.2%/44.2%	35.10%	28%
	<i>PhD/Masters</i>	4.90%		3.1%/4.9%	2.90%	10%
% Seeking Higher Ed.		15.90%				
Age at Graduation with Entry Degree		28.4 yrs	19-60		30.9 yrs	
	< 22 years	27.90%				
	23-30 years	36.40%	25% - 22 yrs			
	30-40 years	28.20%	50% - 26 yrs			
	>40 years	7.50%	75% - 33 yrs			
Professional Experience						
Years in Current Job						
	< 1 year	16.20%			8.7/5.7 yrs	
	1-5 years	44.80%	25% - 1.41 yrs			
	5-10 years	14.60%	50% - 3.17 yrs			
	10-15 years	10.80%	75% - 9.66 yrs			
	>15 years	13.60%				
Years as RN						
	<1 year	1.60%			16.3/13.25 yrs	
	1-5 years	22.70%				
	5-10 years	20.50%	25% - 5.33 yrs			
	10-15 years	15.60%	50% - 11.83 yrs			
	15-20 years	11.30%	75% - 21.5 yrs			
	>20 years	29.90%				

Note: ^an=308; ^bNational Sample Survey of Registered Nurses 2000 (n=35,358); ^cFlorida Center for Nursing - HRSA State Health Workforce Profile - July 2005

Again, the demographic characteristics for the final sample were very comparable to the national and regional samples for age, gender, marital status, education and experience. The final sample differs from the state and national sample as it relates to

race and ethnicity. The study's subjects reflected greater racial and ethnic diversity than that found in the general nursing population. The study sample is associated with a medical center having a strong religious affiliation and international mission out-reach (Adventist Health System, 2005). It is also located in a community with a rapidly growing Hispanic population (Fishkind, 2005) and improved access to higher education for minorities (OneFlorida, 2002). These factors most likely have affected the ability of the institution to recruit from outside the US and to attract a more diverse workforce from within the local community. Overall the sample appears reflective of the general population of nurses providing care to a hospitalized medical surgical population in the Southeastern United States.

Descriptive Analysis

The demographic data (Table 4) portray a sample of 91.6% women and 8.4% men. The mean age was 41.97 years with almost 60% of the sample over the age of 40. The majority of the subjects were white-non Hispanic (63%) and married (66.9%). Fifty-three percent of the subjects are responsible for the care of dependents. The demographic data are consistent with demographic data from a commonly cited nation-wide sample of RNs (Sprately et al., 2001).

The study sample also presented educational and experiential qualities consistent with those which characterize those of RNs practicing in the US (Table 5). However, there are differences. The majority entered nursing through an associate degree program (55.2%) which is 12% higher than national norms. The numbers associated with those first seeking a diploma (8.4%) are 17% lower than national statistics and those first

seeking a bachelor's degree (36%) are 6% higher than national statistics would suggest. The NSSRN 2000 (Sprately et al., 2001) provides data which indicates that the average age at graduation is steadily rising, reflecting the large number of individuals who are seeking a nursing career later in life. Nationally, the average age at graduation is almost 31 years. The age of the study sample is lower at 28.4 years and positively skewed (7.66: $nl. \leq 2$). Almost 65% of study subjects were under the age of 30 at the time of graduation. In addition, those seeking higher educational preparation represent almost 16% of the sample. Those with advanced, bachelors and associate degrees exceed national averages. This suggests a population which entered nursing through a collegiate program and has actively pursued career development and educational enhancement.

While national data are not available to evaluate years of professional experience, the data suggest a positive skew for years in the current job (11.6: $nl. \leq 2$) and years of experience (4.6: $nl. \leq 2$). The range for years in the current job is 0.25 to 41.67 years, and the range for years of experience is 0.33 to 42 years. These ranges suggest a population with a broad depth of experience as a result of years of practice. However, the majority (61%) of the study group had been in the current position for less than 5 years and practicing nursing for more than 5 years (75.7%). Anecdotal evidence would suggest that these patterns are consistent with those found in a general nursing population in a volatile job market.

Data collected for each of the study variables suggest outcomes similar to previous experience with the selected indicators (Table 6). Only the data associated with self-care practice suggest a normal distribution (Kolmogorov-Smirnov = $p \geq 0.05$). The scales for autonomy, collaboration and decentralization appear consistent with previous

efforts to evaluate those indicators in a nursing population (Mark et al., 2003). Overall, subjects indicated that they were able to clinically practice nursing in an autonomous fashion, but had less success in their ability to collaborate with physicians and influence unit decision-making. Satisfaction indicators provide data suggesting that study subjects experience job satisfaction at levels greater than national norms as measured by the NSSRN 2000 (Sprately et. al., 2001). Approximately 65% of a general population of staff nurses working in a hospital setting reported job satisfaction. When asked to rate job satisfaction on a 4-point scale (very satisfied, somewhat satisfied, somewhat dissatisfied and very dissatisfied), 76.1% of the study subjects reported they were somewhat or very satisfied with their jobs. The calculated mean for job satisfaction (2.64) was also greater than that previously published (2.17) using study indicators (Mark et. al., 2001).

Table 6: Comparison of Study Variable Means with Previously Published Means

Study Variable	Study Mean ^a	Study Standard Deviation	Study Range	Reported Results (Mean)	Reported Results		Scale ^b
					Standard Deviation	Range	
Decentralization	2.11	0.895	1.00-4.86	2.35 ^d	0.32 ^d	1.25-3.10 ^d	1 to 5
Collaboration	2.84	0.967	1.00-5.78	3.02 ^d	0.34 ^d	3.03-5.07 ^d	1 to 6
Autonomy	4.53	0.764	1.90-6.00	4.39 ^d	0.41 ^d	2.24-4.48 ^d	1 to 6
Satisfaction	2.64	0.574	1.00-3.75	2.17 ^d	0.32 ^d	1.29-2.89 ^d	1 to 4
Absence	1.835	1.29	1.00-6.00				1 to 6
Intent to Leave	2.17	1.09	1.00-4.00				1 to 4
Self Care Practice SF -12V2™	62.53	15.99	16.94-94.61	60.7 ^e	15.8 ^e	35.3-98.4 ^e	1 to 100
Physical Functioning	87.74	19.92	0-100	80.65 ^f	29.71 ^f		1 to 100
Role Physical	84.78	20.33	12.50-100	80.62 ^f	27.84 ^f		1 to 100
Bodily Pain	81.9	21.9	0-100	83.42 ^f	24.34 ^f		1 to 100
General Health	72.18	20.39	0-100	71.96 ^f	23.53 ^f		1 to 100
Vitality	54.63	23.03	0-100	55.12 ^f	25.63		1 to 100
Social Functioning	80.76	25.55	0-100	84.58 ^f	25.22 ^f		1 to 100
Role Emotional	85.71	18.63	12.5-100	86.79 ^f	22.65 ^f		1 to 100
Mental Health	67.86	18.51	12.5-100	71.38 ^f	20.55 ^f		1 to 100
Physical Health Summary	51.83	7.67	20.53-69.24	49.63 ^f	9.91 ^f	4.92-69.24 ^f	norm-base ^c
Mental Health Summary	48.18	9.46	14.38-73.44	49.37 ^f	9.75 ^f	8.14-73.24 ^f	norm-base ^c

Note: ^an = 308; ^bhigher values represent greater presence of the characteristic; ^cnorm-based scoring (1998 General US population means); ^dMark et al., 2003 (N=1682); ^eSlusher, 1999 (N=173); ^fWare et al., 2002 (transformed scores, 1998 General US population)

Self-reported absence in the selected facilities is low. A score of (1) indicates no self-reported absence over the previous three months and a score of (6) indicates five or more days of unplanned absence over the same time period. Almost 60% of the sample (58.8%) reported no unplanned absence and 90% reported two days or fewer of absence over a three month period. No comparative statistics are available. Data reported for intent to leave suggests that 16.6% of study subjects indicate that they were very likely to seek another job in the next 12 months. Again no comparative statistics are available.

Data collected using the SF-12v2™ (Ware et al., 2002) to measure generic health status provides data consistent with national norms for the general U.S. population. However, the study sample does offer some variation of note. All measures associated with the mental health summary (vitality, social functioning, role emotional and mental

health) are lower than those reported for the general population. Scores associated with the physical health summary are higher for all measures except bodily pain. These findings suggest that the nurses in the study sample consider themselves physically healthy, except for the experience of bodily pain. However, they report diminished vigor when asked to rate mental health. Such an outcome offers empirical support to previous reports from nurses regarding the physical and psychological health effects associated with the work environment (Hart, 2001).

A correlation matrix was developed for each of the study scales (Appendix E). All correlations for generic health status were significant ($p \leq .05$) except for the relationship between physical functioning and mental health. No indicators correlated above the 0.70 level. The scales associated with professional practice (decentralization, collaboration and autonomy) also demonstrated significant correlation at $p \leq .05$ for the vast majority of indicators, with only one correlation greater than 0.7. This correlation was associated with decision-making as it relates to policy and program adoption. These findings suggest no overall issues of multicollinearity related to the scales.

The correlations for indicators of self-care practice were all significant at $p \leq .01$; however a small number of the correlations exceeded the 0.7 threshold with several more correlating above 0.6. Therefore, care must be taken to consider multicollinearity as a factor in final data analysis. The indicators of dissatisfaction and intent to leave all demonstrate significant correlation at $p \leq .01$, with no correlation exceeding 0.7. The two indicators of self reported absence failed to demonstrated statistically significant correlation with either dissatisfaction or intent to leave, but were strongly correlated with

each other (.944) at a significant level ($p \leq .01$). Caution will be exercised to avoid issues associated with multicollinearity in the final data analysis.

Reliability Analysis

Cronbach's alpha was calculated for all scales. Scales measuring generic health (alpha = .79), decentralization (alpha = .869), collaboration (alpha = .899), autonomy (alpha = .883), satisfaction (alpha = .832), self-care practice/coping (alpha = .916) and absence (alpha = .987) were all determined reliable measures and compared favorably with previously reported reliability scores (Brooke & Price, 1989; Burke & Greenglass, 2001; Denyes, 1990; Mark, Sayler & Wan, 2003; Ware, Kosinski, Turner-Bowker & Gandek, 2002). The recoded measure for intent to leave (alpha = .501) showed some improvement in reliability over the pilot (alpha = .361). However, the low alpha score for the combined measures suggests concerns regarding the reliability of the scale to accurately measure intent to leave.

The first indicator of intent to leave specifically asks the subject to rate on a four point scale the subject's likeliness to seek a job on another nursing unit or organization in the next 12 months. The second asks intent to stay in the current position. Intent to stay 12 months or less in the current position was recoded as intent to leave. Both measures are significantly correlated with all measures of job satisfaction ($p \leq .01$) in the direction predicted by the literature (Larrabee et al., 2003). However, the measure which directly assesses intent to leave had a stronger correlation with the satisfaction measures (correlation of .42 to .52 for intent to leave as compared to a correlation of .216 to .274 for the recoded variable). It also explains a greater percentage of the variance when

correlated with the satisfaction measures (17% to 27% of the variance for intent to leave as compared to 5% to 7% of the variance for the recoded variable). As the direct query regarding intent to leave appears the stronger indicator, further analysis of the subject's intent to leave will be limited to the single question which directly asks intent to leave. Because the correlation with the satisfaction variables is consistent with previously reported findings, the single item can be considered a reliable measure.

Exploratory Factor Analysis

Generic health status is conceptualized as comprised of two factors – physical health status and mental health status (Ware et al., 2002). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy – KMO (.802) and Bartlett's Test of Sphericity ($p = .000$) indicate suitability for the application of exploratory factor analytical techniques (EFA). Data extraction supported the conceptualization of two factors explaining 58.6% of the variance for generic health.

The three scales associated with the latent construct of professional practice (decentralization, collaboration and autonomy) also demonstrated suitability for exploratory factor analysis with KMO values above 0.7 and Bartlett's Test significant at $p \leq .000$. Decentralization yielded one factor which explained 57.8% of the variance. Collaboration produced two factors explaining 67.8% of the variance, and autonomy produced three factors explaining 54.5% of the variance.

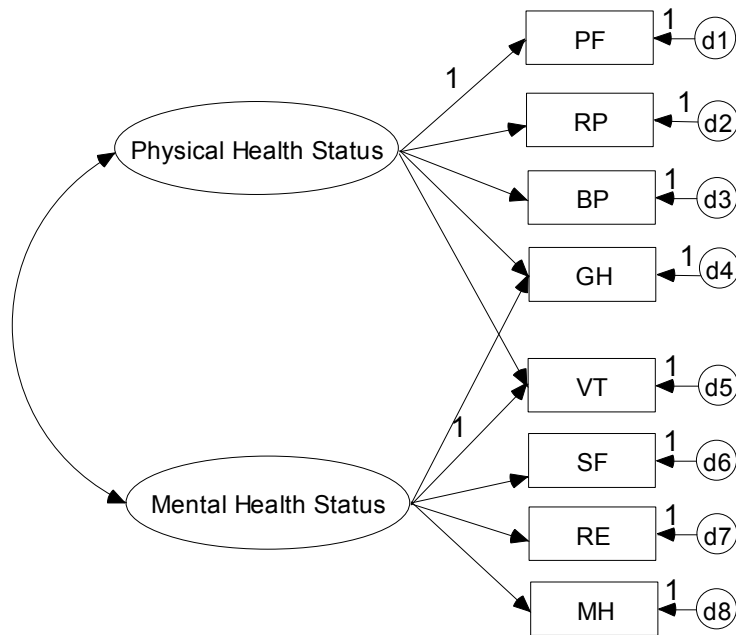
The remaining three multi-item constructs associated with coping – self-care practice, satisfaction and absence – were also evaluated as to their suitability for analysis using exploratory factor techniques. Self-care practice and satisfaction both produced

KMO values above 0.7 and were significant at $p = .000$. The KMO for absence was below 0.7 (.500) and significant at $p = .000$. Exploratory factor analysis on the variable of self-care practice resulted in identification of two factors explaining 54.7% of the variance, and analysis of satisfaction indicators produced one factor which accounted for 66.9% of the variance. Analysis of absence produced a single factor accounting for 97.2% of the variance.

Confirmatory Factor Analysis

Job Strain

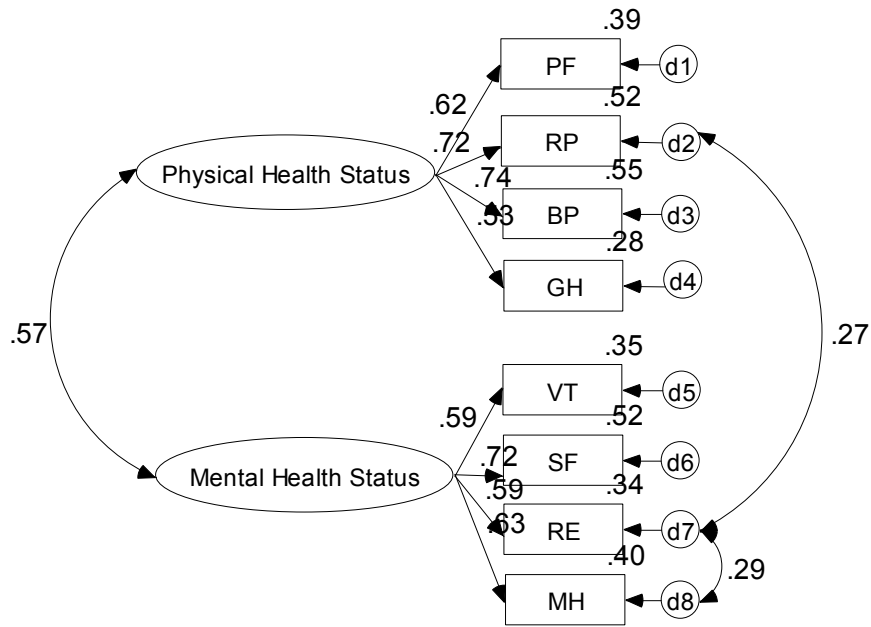
Having identified the shared variances within the measurement indicators, it is necessary to confirm each of the measurement models for the latent constructs of job strain, professional practice and self-care demand/coping. Job strain was conceptualized as a construct measured by self-assessed generic health status. Lower levels of job strain were associated with higher levels of self-assessed health status. The model in Figure 3 was subjected to confirmatory techniques using AMOS 5 (SPSS, 2004).



Note: PF = physical functioning; RP = role physical; BP = bodily pain; GH = general health; VT = vitality; SF = social functioning; RE = role emotional; MH = mental health

Figure 3: A Hypothesized Generic Model of Job Strain as a Function of Generic Health Status with Two Factors.

The critical ratios (CR) for the regression demonstrated significant relationships at $p \leq .05$ ($CR \geq 1.96$) for all observed variables. Factor loading from vitality to physical health (.15) and general health to mental health (.20) were relatively low and the theorized associations were eliminated. Measurement errors were allowed to be correlated if the modification index was elevated and the correlation was theoretically sound. The modified model is demonstrated in Figure 4. Again all critical ratios were statistically significant at $p \leq .05$. Table 7 demonstrates the reported results.



Note: PF = physical functioning; RP = role physical; BP = bodily pain; GH = general health; VT = vitality; SF = social functioning; RE = role emotional; MH = mental health

Figure 4: Modified Model of Job Strain as a Function of Generic Health Status with Two Factors.

Table 7: Parameter Estimates for Two Factor and Single Factor Models of Job Strain

Indicator	Descriptor	Generic Model - Two Factor				Revised Generic Model - Two Factor			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
physical functioning	PF	1	0.628			1	0.622		
role physical	RP	1.197	0.736	0.131	9.126*	1.174	0.719	0.13	9.507*
pain	BP	1.306	0.745	0.143	9.159*	1.313	0.743	0.144	9.135*
general health	GH	0.673	0.411	0.128	5.256*	0.878	0.533	0.119	7.372*
vitality	VT	1	0.458			1	0.588		
social functioning	SF	1.615	0.667	0.279	5.796*	1.363	0.722	0.174	7.820*
role emotional	RE	1.231	0.698	0.21	5.857*	0.806	0.586	0.115	7.030*
mental health	MH	1.291	0.735	0.219	5.900*	0.869	0.634	0.118	7.372*
VT← physical health		0.271	0.147	0.132	2.043*				
GH ← mental health		0.382	0.197	0.146	2.607*				
physical ↔ mental		63.303	0.481	15.311	4.135*	94.982	0.568	17.893	5.308*
d2 ↔ d7						57.879	0.274	14.292	4.050*
d7 ↔ d8						62.143	0.288	17.756	3.5*

Indicator	Descriptor	Generic Model - One Factor				Revised Model - One Factor			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
physical functioning	PF	1	0.472			0.001	0.219		
role physical	RP	1.389	0.643	0.201	6.892*	2.11	0.446	0.61	3.463*
pain	BP	1.475	0.634	0.215	6.848*	2.508	0.49	0.719	3.487*
general health	GH	1.177	0.541	0.186	6.327*	2.382	0.499	0.734	3.247*
vitality	VT	1.288	0.526	0.207	6.226*	3.136	0.583	0.981	3.196*
social functioning	SF	1.648	0.607	0.246	6.709*	4.269	0.715	1.353	3.155*
role emotional	RE	1.181	0.596	0.177	6.652*	2.467	0.567	0.802	3.078*
mental health	MH	1.075	0.545	0.169	6.347*	2.646	0.61	0.851	3.108*
d7 ↔ d8						72.205	0.321	16.75	4.311*
d1 ↔ d2						134.883	0.392	20.776	6.492*
d1 ↔ d3						144.983	0.4	23.001	6.303*
d2 ↔ d3						144.009	0.418	23.343	6.169*
d2 ↔ d7						53.131	0.192	14.57	3.647*
d1 ↔ d4						76.316	0.227	18.634	4.096*
d1 ↔ d5						52.487	0.148	19.89	2.639*

Note: *Correlation significant @ $p \leq .05$

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error
C.R. = critical ratio

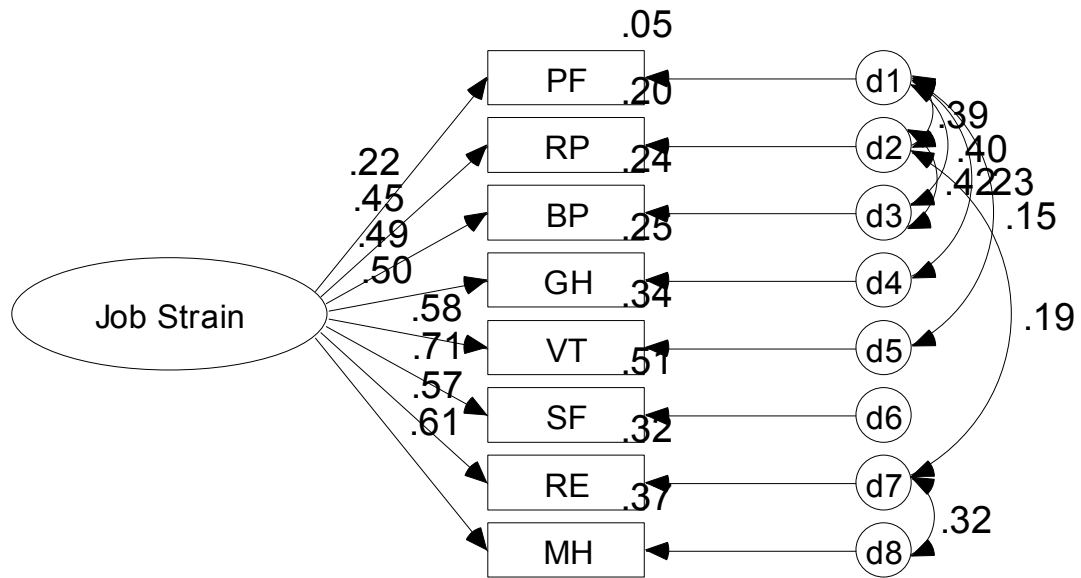
Goodness of fit statistics for both models are provided in Table 8. Fit statistics improved in the modified model and the chi-square difference (Δx^2) between the two models is computed at 17.8 which indicates an improvement of data fit in the revised model. Goodness of fit statistics for the modified model indicate a reasonably good fit of the measurement model to the data. A chi-square probability of 0.001, root mean square of approximation (RMSEA) of 0.091 and a Hoelter CN value of less than 200 fail to meet

fit criteria. The correlation between mental health and physical health was .59 and significant at $p = .000$ which suggests a single-factor model might provide a better fit. A generic single-factor model was developed and modified based upon elevated modification indices. The modified single-factor model is presented in Figure 5, parameter estimates are provided in Table 7 and goodness of fit statistics are presented in Table 8.

As with the previous models, all critical ratios were significant at $p \leq 0.05$. Fit statistics improved in the revised single-factor model, and the chi-square difference of 3.98 between the two revised models suggests substantial improvement. The RMSEA is acceptable ($p = .059$) and the chi-square probability of .013 is close to a level of non-significance ($p \geq .05$). All other fit indices were within the acceptable range. Therefore, the single-factor measurement model of job strain as a function of generic health status demonstrates an acceptable fit of the model to the data and is confirmed as a measurement model for the latent construct of job strain.

Table 8: Goodness of Fit Indices for Job Strain as a Function of Generic Health

Index	Criterion	Generic Two Factor Model	Revised Two Factor Model	Generic Single Factor Model	Revised Single Factor Model
Chi-square (χ^2)	low	60.625	42.808	189.816	26.901
Degrees of Freedom (df)	≥ 0.0	17	17	20	13
Probability	≥ 0.05	0	0.001	0	0.013
Likelihood Ratio (χ^2/df)	< 4.0	3.566	2.518	9.491	2.069
Goodness of Fit Index (GFI)	$> .95$	0.953	0.968	0.839	0.978
Adjusted GFI (AGFI)	$> .90$	0.9	0.933	0.711	0.939
Tucker Lewis Index (TLI)	$> .90$	0.89	0.935	0.637	0.954
Normed Fit Index (NFI)	$> .90$	0.911	0.937	0.722	0.961
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.091	0.07	0.166	0.059
Probability (p or p-close)	$\geq .05$	0.003	0.094	0.000	0.286
Hoelter's Critical N (CN)	> 200	140	198	51	256



Note: PF = physical functioning; RP = role physical; BP = bodily pain; GH = general health; VT = vitality; SF = social functioning; RE = role emotional; MH = mental health

Figure 5: Modified One Factor Model of Job Strain as a Function of Generic Health

Professional Practice

Decentralization

Three constructs have been associated with the latent variable of professional practice – decentralization, collaboration and autonomy. Decentralization was conceptualized as a single factor measuring participation in decision-making using seven items developed on a 5-point Likert-like scale. Figure 6 depicts the generic measurement model.

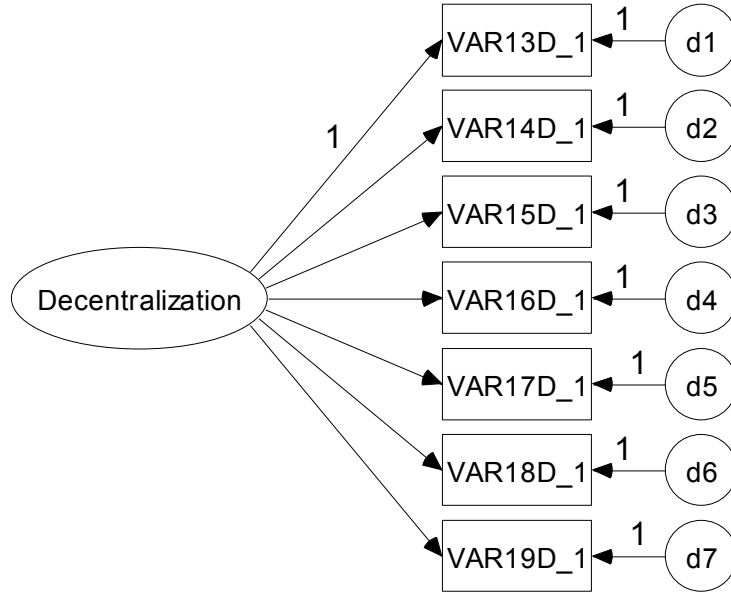


Figure 6: Generic Measurement Model of Decentralization

The critical ratios for all observed variables were significant at $p \leq .05$ and all factor loadings were .47 or greater. However, the goodness of fit does not demonstrate an adequate measurement model. As a result, measurement errors were correlated for elevated modification indices which were theoretically sound. The revised model is presented in Figure 7. Again, all critical ratios were significant at $p \leq .05$ with all factors loading at .505 or greater. Variables 17, 18 and 19, which had correlations of .8 or greater asked subjects the degree to which they participated in long-range planning, and adoption of policies and nursing care programs (Appendix B). The chi-square difference of 64.69 indicates substantial improvement in the revised model. Table 9 demonstrates the reported parameter estimates.

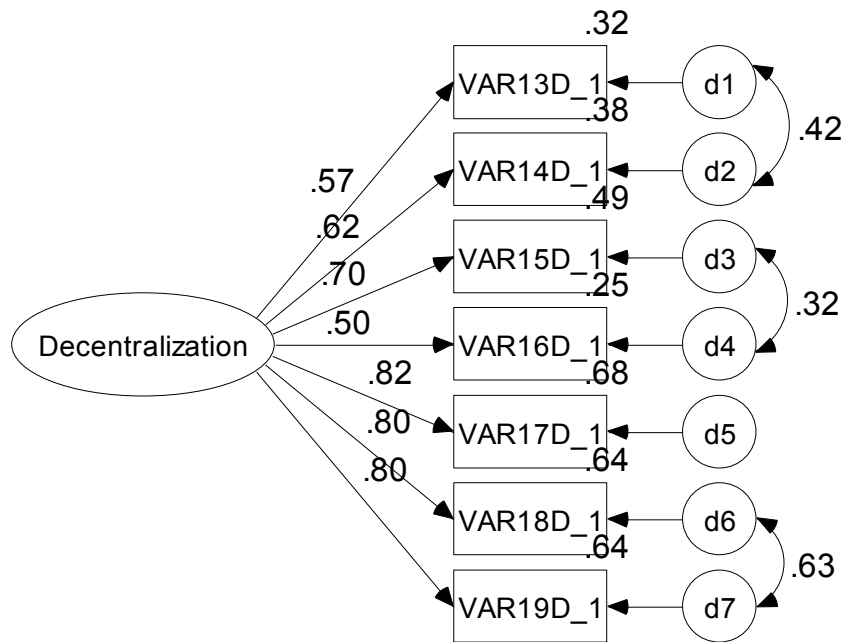


Figure 7: Revised Model of Decentralization

Table 9: Parameter Estimates for Decentralization

Indicator	Descriptor	Generic Model				Revised Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Var13_1	D1	1	0.543			1	0.566		
Var14_1	D2	1.249	0.567	0.157	7.938*	1.3	0.615	0.12	10.864*
Var15_1	D3	2.056	0.653	0.236	8.707*	2.119	0.702	0.237	8.940*
Var16_1	D4	1.56	0.469	0.226	6.916*	1.61	0.505	0.227	7.086*
Var17_1	D5	2.026	0.751	0.214	9.46*	2.129	0.824	0.219	9.706*
Var18_1	D6	2.566	0.912	0.247	10.401*	2.15	0.798	0.226	9.521*
Var19_1	D7	2.691	0.915	0.258	10.414*	2.251	0.799	0.236	9.530*
d1↔d2						0.209	0.421	0.035	6.027*
d3↔d4						0.383	0.316	0.084	4.557*
d6↔d7						0.355	0.629	0.061	5.824*

Note: *Correlation significant @ p = .000

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

The goodness of fit statistics for the revised model demonstrate a very good fit.

There is a substantial reduction in the chi-square value, the chi-square probability is non-

significant at $p = .058$ and the likelihood ratio is less than 4.0(1.74); all confirming the adequacy of the specified model. All goodness of fit measures are within the suggested range. This supports confirmation of the measurement model for decentralization.

Table 10: Goodness of Fit – Decentralization

Index	Criterion	Generic Model	Revised Model
Chi-square (χ^2)	low	183.284	19.198
Degrees of Freedom (df)	≥ 0.0	14	11
Probability	≥ 0.05	0	0.058
Likelihood Ratio (χ^2/df)	< 4.0	13.092	1.745
Goodness of Fit Index (GFI)	$> .95$	0.845	0.983
Adjusted GFI (AGFI)	$> .90$	0.691	0.956
Tucker Lewis Index (TLI)	$> .90$	0.785	0.987
Normed Fit Index (NFI)	$> .90$	0.847	0.984
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.198	0.049
Probability (p or p-close)	$\geq .05$	0.000	0.466
Hoelter's Critical N (CN)	> 200	40	315

Collaboration

The latent construct of professional practice also was conceptualized as including the measurement of collaboration. The 9-item survey instrument selected was designed to measure collaboration with physicians on a 6-point Likert-like scale. Two factors were extracted using exploratory factor analysis. Using the results of that analysis, Figure 8 depicts the hypothesized generic model of collaboration.

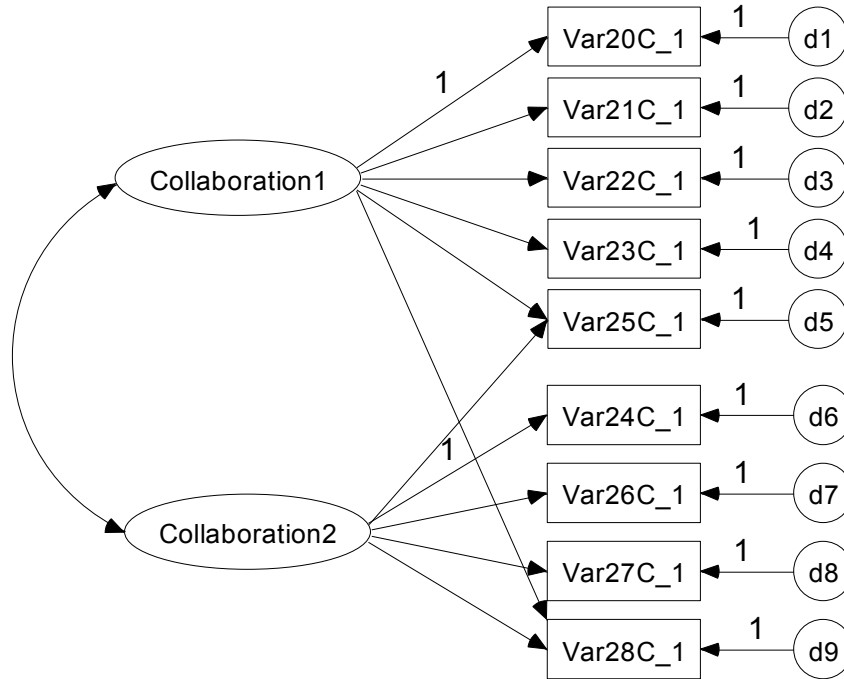


Figure 8: Hypothesized Generic Measurement Model of Collaboration

The hypothesized generic measurement model was subjected to confirmatory analytic techniques. All critical ratios were significant at $p \leq .05$ and factor estimates ranged from .309 to .836. However, as noted for the measurement of job strain, the correlation between the two factors was elevated and significant (.699; $p = .000$). No goodness of fit indicators were within the suggested range. Due to the poor fit and significant correlation of the two factors, a single-factor model was hypothesized. Table 11 depicts the parameter estimates for the generic two-factor model and Table 12 demonstrates the goodness of fit indices.

The hypothesized generic single-factor model again demonstrated significant critical ratios ($p \leq .05$) and the regression estimates ranged from .606 to .811 (Table 11).

Consideration of the goodness of fit statistics (Table 12) suggested that the model could be improved through correlation of the measurement errors. The revised single-factor model is depicted in Figure 9.

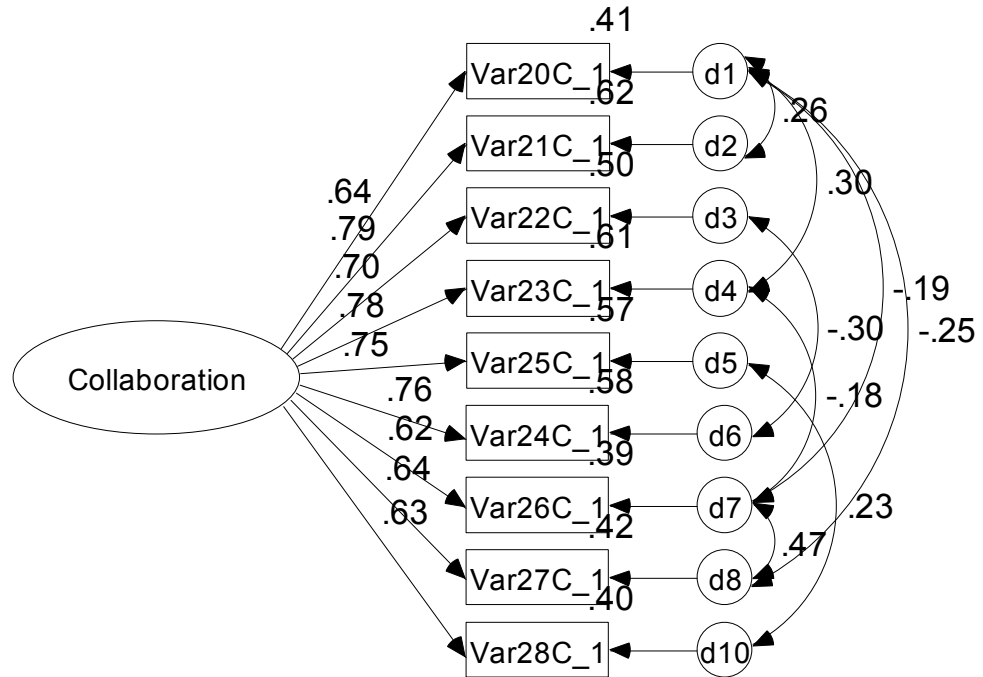


Figure 9: Revised Single Factor Measurement Model of Collaboration

The revised single-factor model of collaboration demonstrated statistically significant critical ratios for all indicators ($p \leq .05$) and factor estimates ranged from .622 to .79 (Table 11). Those variables with correlations greater than .7 focused on the degree to which the nurse was involved in communications with physicians which supported clarification of the nurse's role in patient management (Appendix B). The chi-square difference between the two single-factor models was calculated at 26.8 which indicates a substantial improvement in the fit of the data. The chi-square value is considerably lower

in the revised model and a likelihood ratio of 2.38 (χ^2/df) supports the adequacy of the model. While the probability remains significant ($p = .001$) when considered in light of the remaining fit statistics, this does not suggest a need to consider the model inadequate (Byrne, 2001).

The remaining fit statistics are well within suggested ranges except for the RMSEA. Calculated at .067, this statistic is slightly above the .05 set as a criterion level. The measure falls well within the confidence interval of .042 to .092 reported for this statistic and the probability of the closeness of the fit ($p\text{-close} = .122$) is well above the suggested value of greater than .05. In addition, RMSEA levels as high as .10 have been considered an adequate fit in large samples (Byrne, 2001). Therefore, the data support confirmation of the measurement model of collaboration.

Table 11: Parameter Estimates for the Measurement Model of Collaboration

Indicator	Descriptor	Generic Two-Factor Model			
		U.F.L.	S.F.L.	S.E.	C.R.
Var20C_1	C1	1	0.746		
Var21C_1	C2	1.155	0.833	0.081	14.344*
Var22C_1	C3	0.934	0.681	0.08	11.621*
Var23C_1	C4	1.128	0.836	0.078	14.380*
Var24C_1	C5	0.54	0.416	0.095	5.705*
Var25C_1	C6	1	0.74		
Var26C_1	C7	1.008	0.763	0.082	12.351*
Var27C_1	C8	1.053	0.807	0.081	12.920*
Var28C_1	C9	0.382	0.309	0.1	3.834*
Var28C_1 ← Collaboration 1		0.459	0.399	0.092	4.992*
Var25C_1 ← Collaboration 2		0.548	0.393	0.104	5.273*
Collaboration1 ↔ Collaboration 2		0.658	0.699	0.088	7.511*

Indicator	Descriptor	Generic One-Factor Model				Revised One-Factor Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Var20C_1	C1	1	0.67			1	0.641		
Var21C_1	C2	1.251	0.811	0.101	12.130*	1.293	0.79	0.1	12.904*
Var22C_1	C3	1.031	0.674	0.097	10.609*	1.142	0.704	0.112	10.158*
Var23C_1	C4	1.195	0.795	0.098	12.229*	1.247	0.782	0.095	13.088*
Var24C_1	C5	1.093	0.756	0.093	11.727*	1.153	0.752	0.107	10.823*
Var25C_1	C6	1.016	0.725	0.09	11.312*	1.129	0.759	0.105	10.766*
Var26C_1	C7	0.83	0.606	0.086	9.636*	0.898	0.622	0.105	8.0550*
Var27C_1	C8	0.871	0.643	0.086	10.177*	0.925	0.644	0.107	8.633*
Var28C_1	C9	0.846	0.659	0.081	10.402*	0.86	0.632	0.091	9.435*
d7 ↔ d8						0.423	0.471	0.064	6.623*
d1 ↔ d4						0.255	0.295	0.059	4.351*
d1 ↔ d8						-0.24	-0.25	0.055	-4.369*
d4 ↔ d7						-0.149	-0.183	0.047	-3.188*
d1 ↔ d7						-0.187	-0.19	0.058	-3.224*
d1 ↔ d2						0.229	0.262	0.058	3.942*
d5 ↔ d9						0.177	0.229	0.052	3.397*
d3 ↔ d6						-0.243	-0.301	0.056	-4.367*

Note: *Correlation significant @ $p \leq .05$

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error

C.R. = critical ratio

Table 12: Goodness of Fit Statistics for Collaboration

Index	Criterion	Generic Two-Factor Model	Generic One-Factor Model	Revised One-Factor Model
Chi-square (χ^2)	low	144.029	256.495	42.212
Degrees of Freedom (df)	≥ 0.0	24	27	19
Probability	≥ 0.05	0.000	0.000	0.001
Likelihood Ratio (χ^2/df)	< 4.0	6.001	9.5	2.38
Goodness of Fit Index (GFI)	$> .95$	0.906	0.83	0.969
Adjusted GFI (AGFI)	$> .90$	0.824	0.716	0.927
Tucker Lewis Index (TLI)	$> .90$	0.877	0.791	0.966
Normed Fit Index (NFI)	$> .90$	0.904	0.829	0.97
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.128	0.166	0.067
Probability (p or p-close)	$\geq .05$	0.000	0.000	0.122
Hoelter's Critical N (CN)	> 200	78	49	205

Autonomy

The final construct included in the theoretical characterization of professional practice is autonomy. This construct was measured using a 21-item questionnaire which asked the subject to identify “freedom to engage in a variety of different activities” on a 6-point Likert-like scale. When subjected to exploratory factor analysis (EFA), the data suggested a three factor measurement model. However, when the three factor model was submitted to confirmatory factor analysis, the goodness of fit was inadequate and a single factor model was conceptualized and evaluated through confirmatory factor analysis. All parameters met the test of statistical significance and the regression estimates ranged from .42 to .696 (Table 13). Evaluation of the goodness of fit statistics (Table 14) suggested that the model could be improved through correlation of measurement errors. The revised single-factor model is demonstrated in Figure 10.

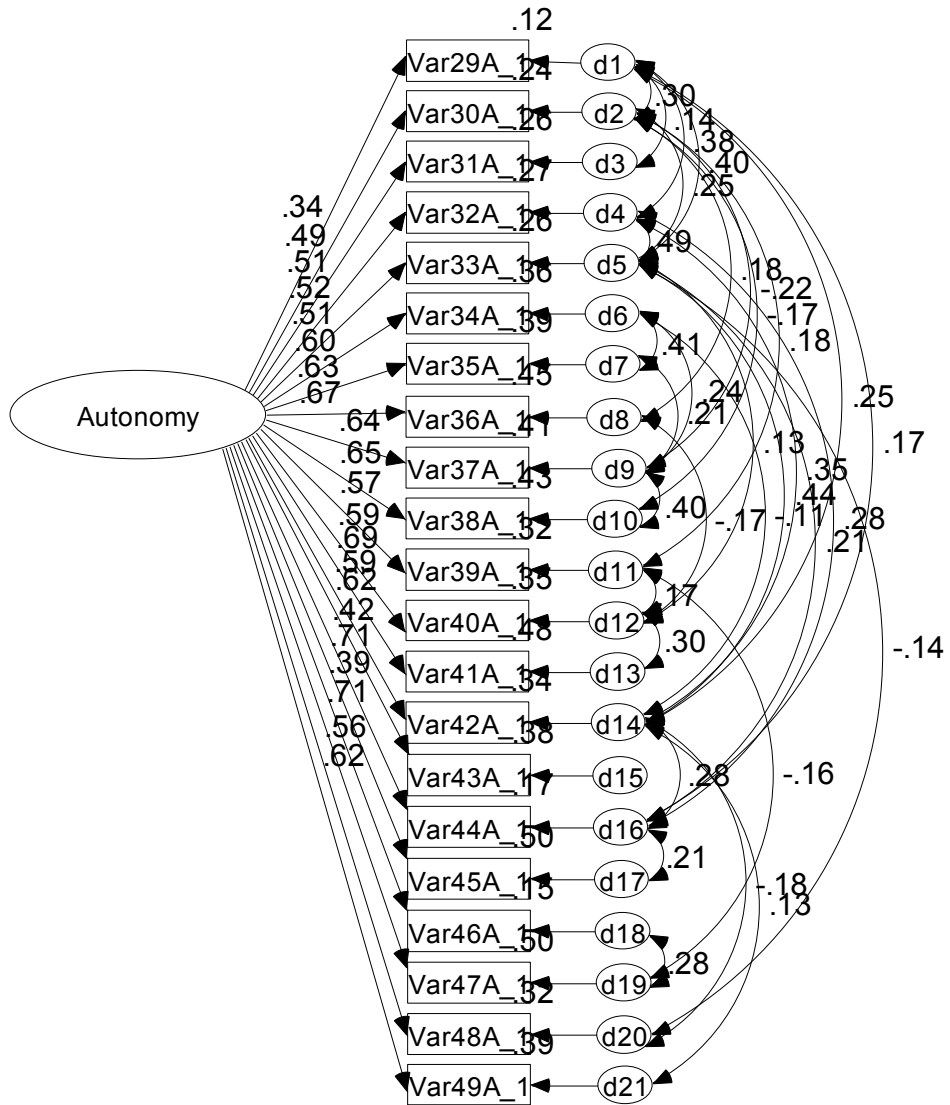


Figure 10: Revised Single-Factor Measurement Model of Autonomy

Table 13: Parameter Estimates for the Single-Factor Models of Autonomy

Indicator	Descriptor	Generic One-Factor Model				Revised One-Factor Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Var30A_1	A2	1.02	0.521	0.164	6.221*	1.204	0.49	0.203	5.919*
Var31A_1	A3	0.76	0.515	0.123	6.184*	0.963	0.514	0.175	5.513*
Var32A_1	A4	1.308	0.596	0.197	6.626*	1.457	0.523	0.229	6.372*
Var33A_1	A5	1.278	0.584	0.195	6.567*	1.374	0.511	0.215	6.401*
Var34A_1	A6	0.889	0.602	0.133	6.658*	1.126	0.604	0.207	5.441*
Var35A_1	A7	1.015	0.635	0.149	6.806*	1.273	0.628	0.231	5.505*
Var29A_1	A1	1	0.422			1	0.343		
Var48A_1	A20	0.563	0.518	0.091	6.202*	0.776	0.563	0.146	5.327*
Var43A_1	A15	1.011	0.619	0.15	6.739*	1.277	0.617	0.233	5.482*
Var49A_1	A21	1.245	0.636	0.183	6.813*	1.54	0.621	0.281	5.488*
Var46A_1	A18	0.731	0.412	0.134	5.450*	0.881	0.392	0.192	4.586*
Var36A_1	A8	1.085	0.658	0.157	6.906*	1.405	0.673	0.251	5.606*
Var47A_1	A19	1.126	0.696	0.16	7.050*	1.447	0.706	0.255	5.672*
Var37A_1	A9	0.812	0.626	0.12	6.766*	1.038	0.639	0.188	5.528*
Var38A_1	A10	0.732	0.624	0.108	6.760*	0.97	0.653	0.174	5.563*
Var39A_1	A11	0.897	0.559	0.139	6.442*	1.15	0.565	0.216	5.325*
Var40A_1	A12	0.92	0.612	0.137	6.704*	1.126	0.591	0.209	5.399*
Var41A_1	A13	1.008	0.682	0.144	7.001*	1.293	0.691	0.229	5.644*
Var42A_1	A14	1.326	0.628	0.196	6.778*	1.538	0.586	0.255	6.033*
Var45A_1	A17	0.965	0.697	0.137	7.056*	1.24	0.707	0.218	5.676*
Var44A_1	A16	1.004	0.486	0.167	5.999*	1.091	0.415	0.211	5.165*
d9↔d10						0.181	0.401	0.029	6.238*
d6↔d9						0.144	0.242	0.034	4.255*
d6↔d7						0.307	0.409	0.051	6.076*
d5↔d14						0.697	0.442	0.097	7.160*
d5↔d1						0.807	0.398	0.12	6.724*
d4↔d14						0.564	0.348	0.102	5.522*
d4↔d1						0.797	0.382	0.123	6.460*
d4↔d5						0.863	0.49	0.112	7.710*
d2↔d9						0.19	-0.221	0.044	-4.331*
d2↔d1						0.57	0.303	0.098	5.844*
d2↔d5						0.39	0.245	0.073	5.328*
d18↔d19						0.272	0.282	0.062	4.419*
d12↔d13						0.2	0.299	0.042	4.750*
d7↔d9						0.13	0.205	0.036	3.623*
d6↔d14						-0.107	-0.106	0.045	-2.388*
d5↔d20						-0.121	-0.143	0.04	-2.980*
d14↔d20						-0.141	-0.181	0.042	-3.367*
d8↔d12						-0.133	-0.174	0.042	-3.180*
d1↔d14						0.471	0.252	0.105	4.507*
d2↔d11						0.208	0.181	0.061	3.412*
d11↔d19						-0.126	-0.161	0.044	-2.845*
d4↔d16						0.517	0.284	0.109	4.747*
d3↔d1						0.195	0.139	0.071	2.770*
d14↔d16						0.461	0.283	0.096	4.787*
d14↔d21						0.175	0.132	0.07	2.503*
d16↔d17						0.2	0.21	0.056	3.597*
d11↔d12						0.143	0.173	0.046	3.123*
d2↔d10						-0.13	-0.168	0.041	-3.132*
d2↔d8						0.187	0.176	0.058	3.207*
d5↔d12						0.145	0.127	0.048	3.040*
d5↔d16						0.366	0.207	0.098	3.736*
d1↔d16						0.362	0.172	0.112	3.221*

Note: *Correlation significant @ p ≤ .05

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

Table 14: Goodness of Fit Statistics for the Measurement Models of Autonomy

Index	Criterion	Generic One-Factor Model	Revised One-Factor Model
Chi-square (χ^2)	low	963.342	276.732
Degrees of Freedom (df)	≥ 0.0	189	157
Probability	≥ 0.05	0.000	0.000
Likelihood Ratio (χ^2/df)	< 4.0	5.097	1.763
Goodness of Fit Index (GFI)	$> .95$	0.702	0.919
Adjusted GFI (AGFI)	$> .90$	0.636	0.88
Tucker Lewis Index (TLI)	$> .90$	0.694	0.943
Normed Fit Index (NFI)	$> .90$	0.681	0.908
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.116	0.05
Probability (p or p-close)	$\geq .05$	0.000	0.499
Hoelter's Critical N (CN)	> 200	71	208

The revised one-factor model demonstrated significant critical ratios ($p \leq .05$) for all variables (Table 13). Standardized regression estimates ranged from .343 to .707. While 80% of the correlations exceeded .5, the two which measured .7 addressed matters related to freedom to exercise authority over that nurse's professional practice (Appendix B). Goodness of fit statistics for the revised one-factor model improved substantially over the generic one-factor model ($\Delta \chi^2 = 21.46$). Chi-square values remain high in the revised one-factor model and the probability remains significant. However the likelihood ratio (1.763) is well below the criterion level of < 4.0 which suggesting that the sample is adequate. Goodness of fit statistics are within the suggested range for all estimations except the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI). Those levels, while low, suggest a fairly good fit, especially when considered with the remaining fit indices. Therefore, the single-factor model is considered a satisfactory measure of autonomy.

Measurement Model of Professional Practice

As the measurement models of the three components of professional practice were determined adequate through confirmatory factor analysis, summary measures (scale means) were developed for each scale. In addition, the exogenous demographic variables of education and years of experience were incorporated into the theoretical construct of professional practice. Wade (1999) attributes the level of a nurse's educational attainment to the experience of autonomy, with higher levels of education associated with a greater experience of professional autonomy. Aiken et al. (2003) demonstrated that nurses educated at the bachelor's level or higher provided care that is associated with improved patient outcomes. In part, this was attributed to the attainment of increased proficiency in the use of skills associated with a professional practice environment. Furthermore, this research indicated that years of experience did not contribute to improved patient outcomes. In an effort to discern the impact of educational preparation and years of experience upon the professional practice model, data were grouped for each indicator and included in the professional practice measurement model. Grouping criteria for the variable education (EDU) divided the data between those with a highest degree of BSN/MS/PhD and those with an ASN or diploma as the highest degree. Data for years of experience (YREXP) divided the sample amongst those with less than 5 years experience, those with 5 to 10 years experience and those with greater than 10 years experience. Figure 11 demonstrates the hypothesized generic measurement model of professional practice.

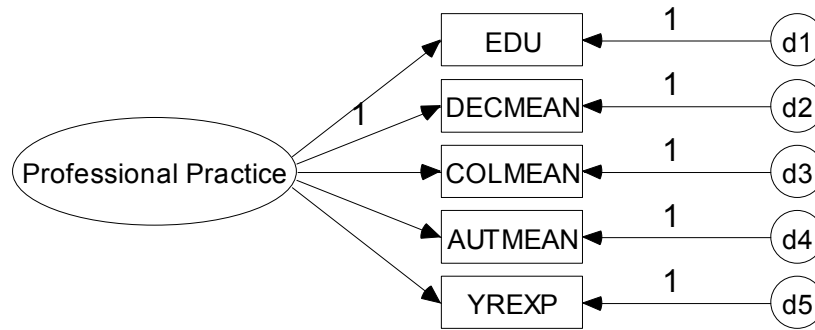


Figure 11: Hypothesized Generic Measurement Model of Professional Practice

The hypothesized generic measurement model for professional practice was subjected to confirmatory analytic techniques. All critical ratios were statistically significant ($p \leq .05$) and standardized regression estimates ranged from .184 to .751 (Table 15). While all goodness of fit statistics were within the suggested range (Table 16), the modification indices suggested that the model would be improved through the correlation of measurement errors. The revised generic measurement model of professional practice is provided in Figure 12.

Table 15: Parameter Estimates for Measurement Models of Professional Practice

Indicator	Descriptor	Generic Model				Revised Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
EDU	BSN Degree of higher	0.149	0.199	0.058	2.553*	0.188	0.237	0.067	2.791*
DECMEAN	Decentraization	1	0.751			1	0.707		
COLMEAN	Collaboration	0.626	0.435	0.153	4.09*	0.725	0.474	0.165	4.381*
AUTMEAN	Autonomy	0.508	0.456	0.123	4.13*	0.559	0.473	0.122	4.586*
YREXP	Years of Experience	0.226	0.184	0.095	2.394*	0.227	0.174	0.099	2.302*
d1↔d3						-0.062	-0.15	0.027	-2.250*

Note: *Correlation significant @ $p \leq .05$

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

Table 16: Goodness of Fit Statistics for Measurement Model of Professional Practice

Index	Criterion	Generic Model	Revised Model
Chi-square (χ^2)	low	14.201	8.976
Degrees of Freedom (df)	≥ 0.0	5	4
Probability	≥ 0.05	0.014	0.062
Likelihood Ratio (χ^2/df)	< 4.0	2.84	2.244
Goodness of Fit Index (GFI)	$> .95$	0.981	0.988
Adjusted GFI (AGFI)	$> .90$	0.942	0.955
Tucker Lewis Index (TLI)	$> .90$	0.806	0.869
Normed Fit Index (NFI)	$> .90$	0.865	0.915
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.077	0.064
Probability (p or p-close)	$\geq .05$	0.141	0.28
Hoelter's Critical N (CN)	> 200	240	325

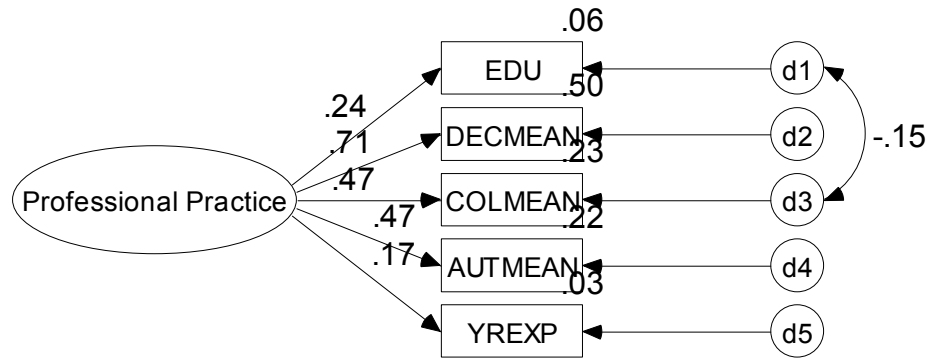


Figure 12: Revised Measurement Model of Professional Practice

The difference in chi-square between the generic and revised model indicated substantial improvement ($\Delta \chi^2 = 5.225$) and all critical ratios were significant at $p \leq .05$. Decentralization (.71) is the most reliable predictor of professional practice with collaboration and autonomy contributing equally at 22%. While education and experience contributed at lower levels, the contribution was significant ($p \leq .05$) and they were maintained in the measurement model.

Goodness of fit indices indicated an excellent fit of the data to the model. The chi-square was low and statistically insignificant, with a likelihood ratio of 2.244. The absolute measures of model fit (GFI = .988; AGFI = .955) neared 1.0; and while the baseline comparison associated with the Tucker Lewis Index (.869) is slightly lower than the criterion level, the remaining baseline comparisons were well within the suggested range (NFI = .915; RFI = .786; CFI = .948). The RMSEA of .064 and the p-close estimation of .280 suggest that the initially hypothesized model fits the data well. Finally, the Hoelter's CN value of 325 indicates that the sample is adequate to support the measurement model.

Coping

The latent construct of self-care demand was conceptualized as the use of active coping skills in response to the stressors associated with the work environment. Those coping skills were theorized to be comprised of behaviors associated with self-care practices as identified by Orem (2001), the affective response of job satisfaction, the cognitive identification of intent to leave and the behavioral response of absenteeism. Based upon the reliability analysis of the two measures of intent to leave, a single indicator was selected to represent this variable. The significant high correlation (.944; $p \leq .01$) between the two measures of self-reported absenteeism and the relatively low levels of self-reported absenteeism (90% report two days or fewer absence over three months) suggest a need to modify the measurement criteria for absenteeism. Therefore, the single indicator measuring days of absence as an absolute value (Var54Ab) was recoded to indicate no absence (no absence in a three month period) and absence (one or

more days of absence in a three month period). This single estimate will be used as the measurement indicator for the variable of self-reported absenteeism.

Satisfaction

Satisfaction was conceptualized as a sense of well-being associated with the work environment with higher values representing greater sense of satisfaction. The EFA of satisfaction indicated a single factor. Study values were recoded as dissatisfaction to allow unidirectional interpretation. Figure 13 demonstrates the hypothesized generic model of dissatisfaction.

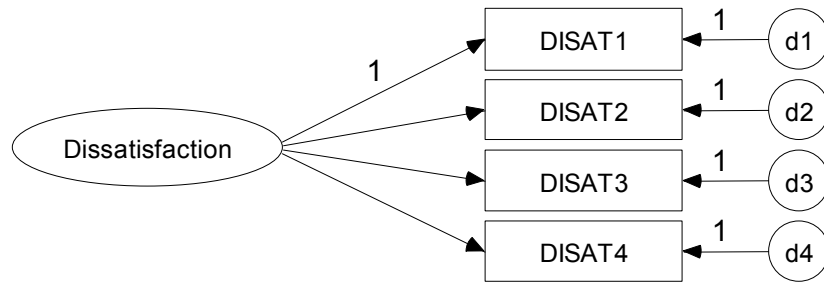


Figure 13: Hypothesized Generic Measurement Model of Dissatisfaction

All critical ratios were statistically significant ($p \leq .05$) with standardized regression weights ranging from .626 to .833 (Table 17). The goodness of fit estimates indicated an excellent fit of the data to the model (Table 19) and no modification of the measurement model was necessary. Therefore the single-factor model as presented will be used to measure dissatisfaction.

Table 17: Parameter and Goodness of Fit Estimates for Dissatisfaction

Indicator	Descriptor	Generic Model			
		U.F.L.	S.F.L.	S.E.	C.R.
Disat1	recode of satisfaction 1	1	0.826		
Disat2	recode of satisfaction 2	0.677	0.714	0.053	12.703*
Disat3	recode of satisfaction 3	0.668	0.626	0.061	10.936*
Disat4	recode of satisfaction4	1.048	0.833	0.072	14.581*

Note: *Correlation significant @ p = .000

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

Index	Criterion	Generic Model
Chi-square (χ^2)	low	0.036
Degrees of Freedom (df)	≥ 0.0	2
Probability	≥ 0.05	0.982
Likelihood Ratio (χ^2/df)	< 4.0	0.018
Goodness of Fit Index (GFI)	$> .95$	1
Adjusted GFI (AGFI)	$> .90$	1
Tucker Lewis Index (TLI)	$> .90$	1.012
Normed Fit Index (NFI)	$> .90$	1
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0
Probability (p or p-close)	$\geq .05$	0.992
Hoelter's Critical N (CN)	> 200	50913

Coping

Coping was measured on a scale of 1 to 100 using 18 indicators conceived by Denyes (1990) as incorporating the eight universal self-care requisites theorized by Orem (2001) as necessary for all human beings. When these indicators of coping were subjected to EFA, two factors emerged. The first incorporated the coping skills or self-care requisites associated with sustainability and the second factor appears to be associated with the unifying construct of balance. The hypothesized generic measurement model is depicted in Figure 14.

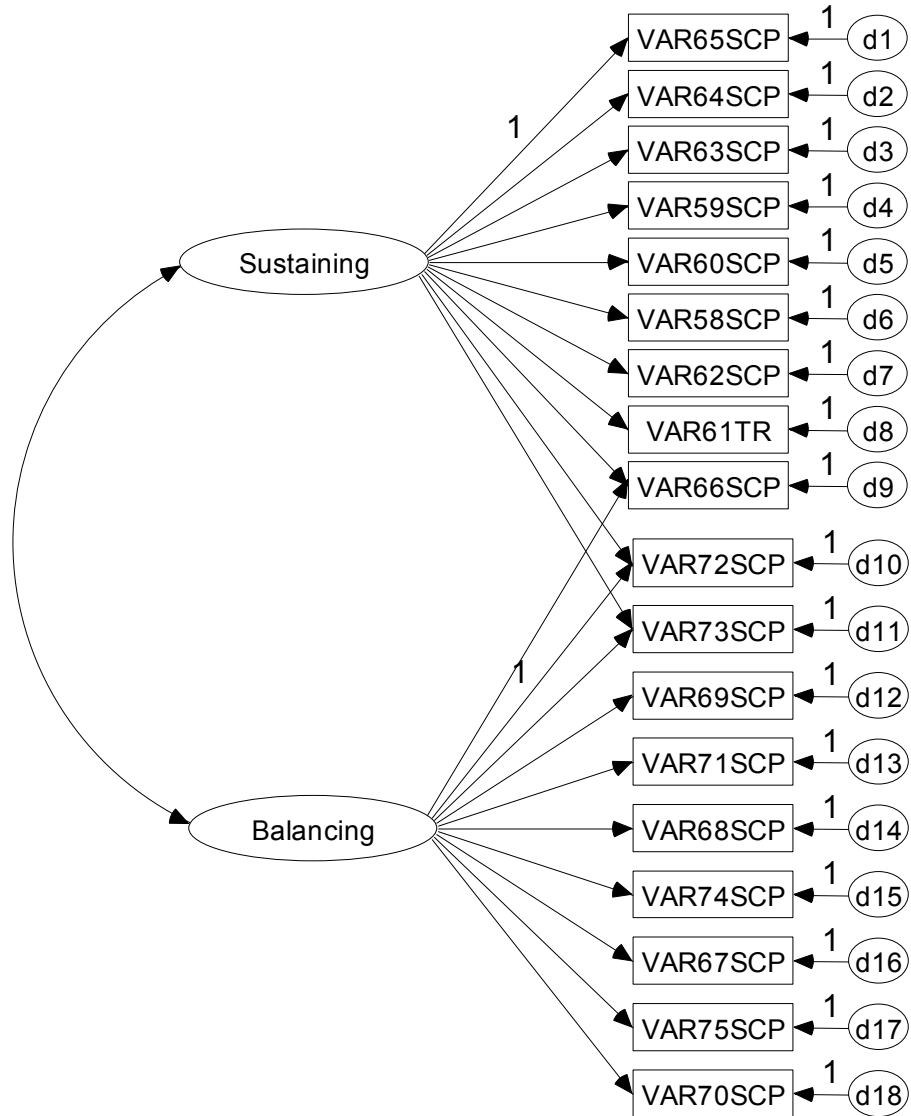


Figure 14: Hypothesized Generic Two-Factor Measurement Model of Coping

The hypothesized model was subjected to confirmatory factor analysis. All indicators were statistically significant ($p \leq .05$) and standardized regression weights ranged from .192 to .9 (Table 18).

Table 18: Parameter Estimates for Generic and Revised Models of Coping

Indicator	Descriptor	Generic Model				Revised Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Var65SCP← Sustaining	SCP 8	1				1	0.801		
Var64SCP← Sustaining	SCP 7	0.957	0.858	0.044	21.680*	0.89	0.708	0.039	23.103*
Var63SCP← Sustaining	SCP 6	0.891	0.822	0.045	19.818*	0.83	0.685	0.043	19.096*
Var59SCP← Sustaining	SCP 2	0.983	0.848	0.046	21.175*	1.168	0.896	0.065	17.850*
Var60SCP← Sustaining	SCP 3	0.935	0.766	0.054	17.365*	1.153	0.837	0.074	15.538*
Var58SCP← Sustaining	SCP 1	0.91	0.803	0.048	18.938*	1.077	0.844	0.066	16.406*
Var62SCP← Sustaining	SCP 5	0.677	0.414	0.09	7.546*	0.675	0.367	0.106	6.361*
Var61TR← Sustaining	SCP 4	0.59	0.466	0.068	8.656*	0.729	0.511	0.08	9.120*
Var66SCP← Sustaining	SCP 9	0.629	0.504	0.076	8.259*	1.07	0.762	0.073	14.632*
Var72SCP← Balancing	SCP 15	1	0.306			1	0.49		
Var73SCP← Balancing	SCP 16	0.528	0.256	0.208	2.538*	0.634	0.493	0.082	7.763*
Var69SCP← Balancing	SCP 12	2.141	0.694	0.562	3.813*	1.243	0.649	0.186	6.670*
Var71SCP← Balancing	SCP 14	2.07	0.715	0.541	3.825*	1.156	0.649	0.157	7.372*
Var68SCP← Balancing	SCP 11	1.919	0.786	0.497	3.859*	1.133	0.744	0.144	7.855*
Var74SCP← Balancing	SCP 17	1.794	0.645	0.474	3.781*	1.122	0.648	0.153	7.356*
Var67SCP← Balancing	SCP 10	1.843	0.701	0.483	3.817*	0.988	0.605	0.14	7.077*
Var75SCP← Balancing	SCP 18	1.711	0.642	0.453	3.778*	1.089	0.655	0.147	7.397*
Var70SCP← Balancing	SCP 13	1.822	0.639	0.483	3.776*	1.109	0.623	0.153	7.242*
Var66SCP← Balancing	SCP 9	0.782	0.284	0.258	3.029*				
Var72SCP← Sustaining	SCP 15	0.284	0.192	0.112	2.533*				
Var73SCP← Sustaining	SCP 16	0.221	0.237	0.071	3.120*				
Sustaining↔Balancing		119.307	0.657	33.318	3.581*	193.387	0.747	30.308	6.381*
d14↔d16						168.344	0.603	22.346	7.534*
d13↔d18						162.844	0.409	25.23	6.455*
d12↔d13						152.381	0.365	26.728	5.701*
d10↔d11						140.742	0.335	27.496	5.119*
d4↔d6						33.717	0.268	11.825	2.851*
d2↔d3						162.181	0.655	18.56	8.738*
d1↔d2						145.516	0.694	17.396	8.365*
d1↔d3						122.167	0.585	16.26	7.513*
d15↔d17						88.23	0.251	24.745	3.566*
d12↔d16						56.386	0.141	17.797	3.168*
d5↔d13						-52.405	-0.198	14.142	-3.706*
d10↔d12						-139.484	-0.254	31.032	-4.495*
d3↔d7						58.193	0.122	20.445	2.846*
d1↔d5						-27.342	-0.153	8.416	-3.249*
d11↔d12						-77.196	-0.224	19.416	-3.976*

Note: *Correlation significant @ p = .000

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

The theorized relationship between Var72SCP and 73SCP and sustaining contributed minimally (< 4% and 6% respectively) to the measurement model and theoretically were unnecessary to the measurement of sufficiency. Therefore, the hypothesized associations were eliminated. Var72SCP also contributed minimally (6.5%) to the construct of balancing; however inclusion of the indicator in the model was theoretically sound and the variable was maintained in the measurement model. Finally,

the relationship between Var66SCP and balancing was not theoretically supported and the contribution to balancing was minimal (8%). As a result, the hypothesized relationship was eliminated. Elimination of the preceding relationships produced a model with two distinct factors. Goodness of fit estimates suggested that the model could be improved through correlation of measurement errors (Table 19). A revised measurement model of coping is presented in Figure 15.

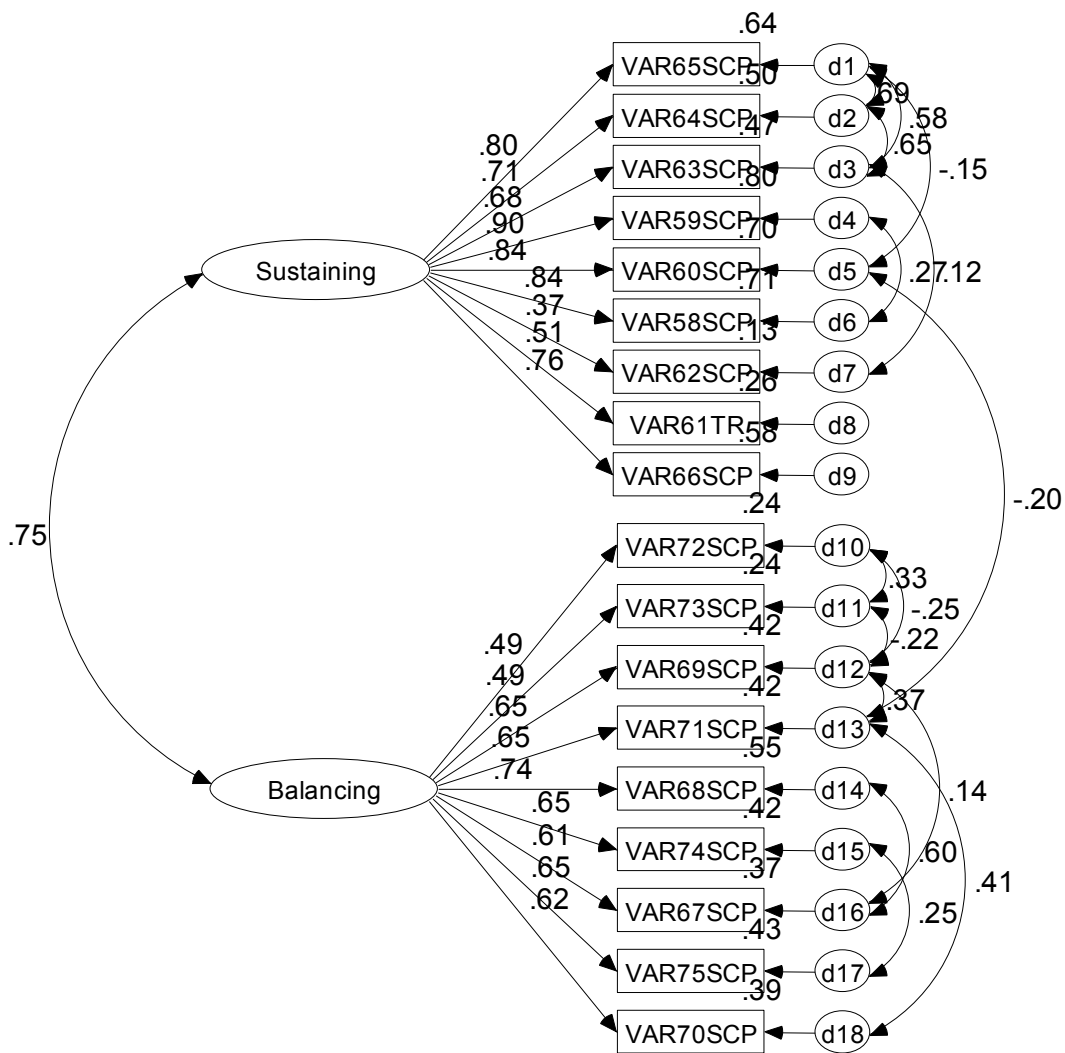


Figure 15: Revised Model of Coping

Parameter estimates for the revised model are presented in Table 18. All parameters are statistically significant ($p \leq .05$) and the standardized estimates for the indicators range from .367 to .896 for sustaining and from .490 to .744 for balancing. The most predictive indicator for sustaining was Variable 59 which asked the percent of time spent to take care of good health. Variable 68 was most predictive of balance and asked the percent of time spent achieving a balance between rest and activity. The two factors are strongly correlated at .747 suggesting that both constructs are necessary for measurement of coping. The difference in chi-square between the generic and revised model is 54.05 suggesting considerable improvement in fit estimates for the revised model.

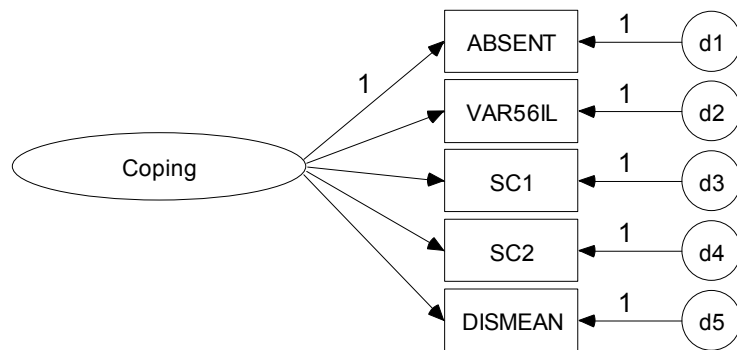
Evaluation of the goodness of fit for the revised model indicates a good fit of the model to the data (Table 19). While the degrees of freedom remain elevated (188), there is substantial reduction from the initial value of 836. The chi-square probability fails to approach non-significance; however, the likelihood ratio suggests that the model is adequate. In addition, all goodness of fit statistics are within the suggested range except for the GFI which at .94 is only slightly below the criterion level of .95. Therefore, the measurement model of coping is confirmed.

Table 19: Goodness of Fit Statistics for Coping

Index	Criterion	Generic Model	Revised Model
Chi-square (χ^2)	low	836.294	187.719
Degrees of Freedom (df)	≥ 0.0	131	119
Probability	≥ 0.05	0	0
Likelihood Ratio (χ^2/df)	< 4.0	6.384	1.577
Goodness of Fit Index (GFI)	$> .95$	0.733	0.939
Adjusted GFI (AGFI)	$> .90$	0.652	0.913
Tucker Lewis Index (TLI)	$> .90$	0.762	0.974
Normed Fit Index (NFI)	$> .90$	0.769	0.948
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.132	0.043
Probability (p or p-close)	$\geq .05$	0	0.82
Hoelter's Critical N (CN)	> 200	59	238

Measurement Model of Coping

The measurement of coping is conceptualized as comprised of five indicators – two self-care coping factors, one factor measuring satisfaction and the indicators of absenteeism and intent to leave. As the measurement models for coping and satisfaction were confirmed, summary measures (scale means) were calculated for each factor. This has the additional benefit of diminishing the concern regarding multicollinearity identified for the self-care coping indicators. The theorized generic model is depicted in Figure 16.



Note: ABSENT = absenteeism; VAR56IL = intent to leave; SC1 = sustaining; SC2 = balancing; DISMEAN = dissatisfaction

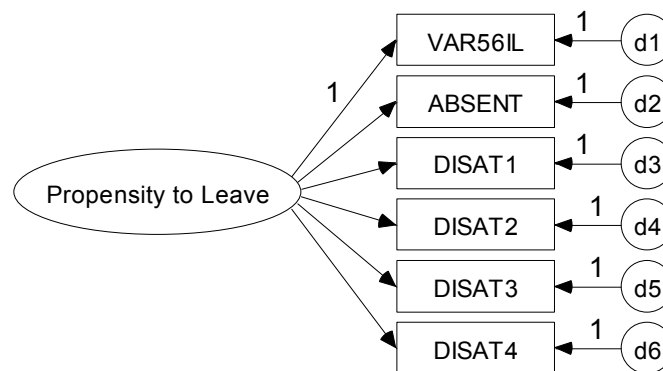
Figure 16: Theorized Generic Model of Coping

When subjected to confirmatory factor analysis, only the two factors associated with self-care coping contributed to the model at a statistically significant level ($p \leq .05$). The standardized estimate for sustaining (SC1) was $(-).939$ and the standardized estimate for balancing (SC2) was $(-).668$. The standardized estimates for the three remaining indicators were $.035$ for dissatisfaction, $.066$ for intent to leave and $.201$ for absenteeism suggesting little contribution to the measurement model of coping. Review of the theoretical construct of the model in light of these findings suggests that only the indicators of self-care coping contribute to the measurement of coping. The measurement model is the same as that identified and confirmed in Figure 15.

Propensity to Leave

Measurement of dissatisfaction, absenteeism and intent to leave as function of an individual's coping response was not supported. Returning to the literature (Irvine &

Evans, 1995; Lazarus, 1991; & Orem, 2001), it is reasonable to adopt an alternative hypothesis that these variables, rather than serving as measures of coping, represent the individual's response to coping behaviors. The literature also suggests that these variables may directly measure the outcome of an individual's response to job strain and the professional practice environment (Laschinger et al., 2001a; Mark et al. 2003; Wan, 2002). Considered in this manner, measurement variables of absenteeism, intent to leave and dissatisfaction represent an additional latent variable – propensity to leave. A hypothesized generic measurement model of propensity to leave is demonstrated in Figure 17. Although the measurement model for dissatisfaction supported use of a single indicator, the constraints imposed by confirmatory factor analysis indicates the need for inclusion of separate indicators for each variable (Wan, 2002).



Note: VAR56IL = Intent to Leave; ABSENT = absenteeism; DISAT 1-4 = dissatisfaction indicators

Figure 17: Hypothesized Generic Measurement Model for Propensity to Leave

The hypothesized generic measurement model was subjected to confirmatory factor analysis. The critical ratios for all variables except absenteeism were statistically

significant ($p \leq .05$). As absenteeism does not contribute to the model, the variable was eliminated. The standardized regression estimates for the remaining factors ranged from .574 to .851. Parameter estimates for propensity to leave are provided in Table 20.

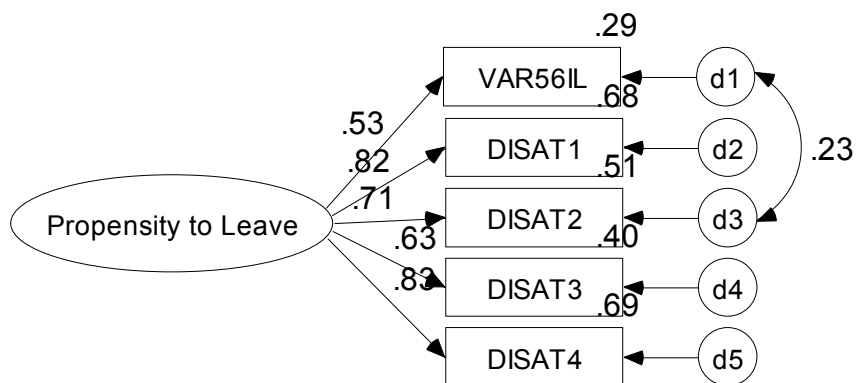
Table 20: Parameter Estimates for Propensity to Leave

Indicator	Descriptor	Generic Model				Revised Model			
		U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Var56IL	intent to leave	1	0.574			1	0.534		
Absent	absenteeism	0.002	0.002	0.048	0.032				
Disat1	dissatisfaction 1	0.979	0.811	0.099	9.914*	1.067	0.822	0.118	9.034*
Disat2	dissatisfaction 2	0.699	0.74	0.074	9.437*	0.726	0.715	0.075	9.656*
Disat3	dissatisfaction 3	0.677	0.636	0.079	8.576*	0.725	0.634	0.091	7.953*
Disat4	dissatisfaction 4	1.029	0.821	0.103	9.967*	1.121	0.832	0.124	9.062*
d1↔d3						0.088	0.233	0.026	3.379*

Note: *Correlation significant @ $p = .000$

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

Goodness of fit estimates (Table 21) indicate a need for substantial improvement in the model. Therefore measurement errors were correlated as suggested by elevated modification indices. The revised measurement model is provided in Figure 18.



Note: VAR56IL = Intent to Leave; DISAT 1-4 = dissatisfaction indicators

Figure 18: Revised Measurement Model of Propensity to Leave

Critical ratios were statistically significant ($p \leq .05$) for all variables. The standardized regression estimates for the remaining variables ranged from .53 to .83 (Table 20). Goodness of fit statistics indicate an excellent fit (Table 21) with all estimates exceeding criterion values. Therefore the measurement model of propensity to leave supports further analysis.

Table 21: Goodness of Fit Statistics for Propensity to Leave

Index	Criterion	Generic Model	Revised Model
Chi-square (χ^2)	low	30.536	4.578
Degrees of Freedom (df)	≥ 0.0	9	4
Probability	≥ 0.05	0	0.333
Likelihood Ratio (χ^2/df)	< 4.0	3.393	1.145
Goodness of Fit Index (GFI)	$> .95$	0.97	0.994
Adjusted GFI (AGFI)	$> .90$	0.931	0.978
Tucker Lewis Index (TLI)	$> .90$	0.94	0.998
Normed Fit Index (NFI)	$> .90$	0.95	0.992
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.088	0.022
Probability (p or p-close)	$\geq .05$	0.031	0.661
Hoelter's Critical N (CN)	> 200	171	637

Structural Equation Model

Based upon the preceding analysis, the hypothesized structural equation model presented in Figure 2 (page 44) was revised and indicators renamed as suggested by the confirmatory process. Figure 19 presents a generic structural equation model with four latent variables – job strain, professional practice, coping and propensity to leave. A correlation matrix was developed incorporating all indicators. While some variables shared a significant correlation ($p \leq .05$), no correlations exceeded .7, resolving any

previously identified concerns related to multicollinearity. The hypothesized generic model was subjected to structural equation modeling using AMOS 5 (SPSS, 2004).

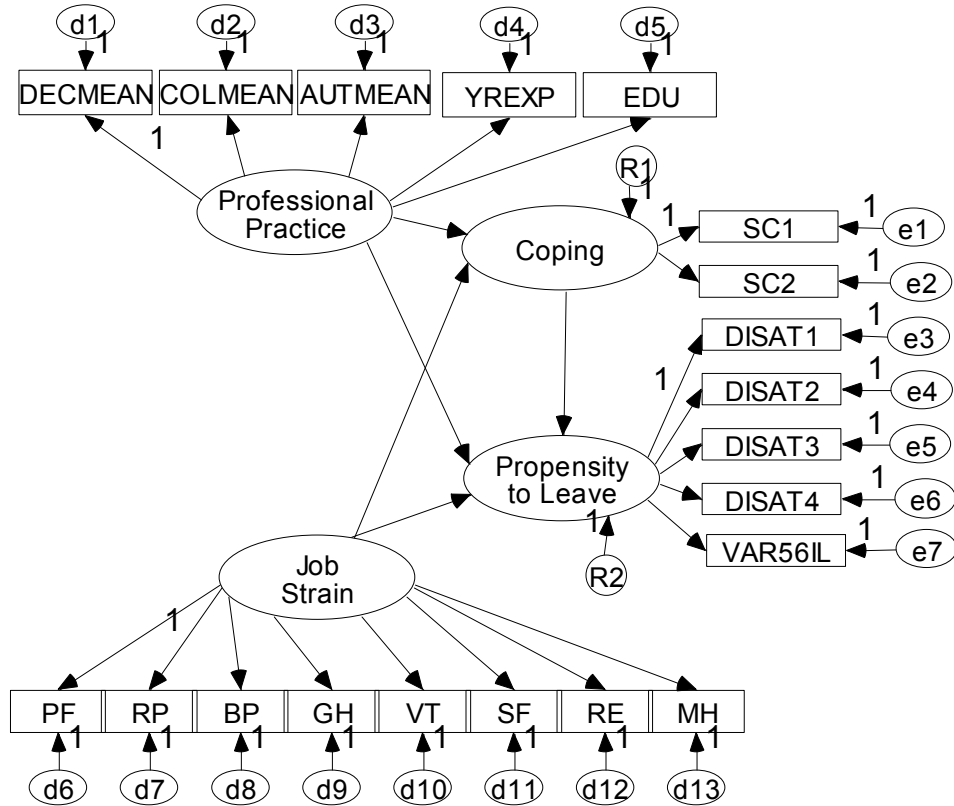


Figure 19: Alternate Structural Equation Model with Four Latent Variables

Parameter estimates for the generic structural equation model are presented in Table 22. All estimates were in the anticipated direction; however a number of the hypothesized relationships failed to demonstrate significance. Years of experience and education had previously been found significantly related to professional practice, although the association was weak. In the generic SEM, the variable, education, no

longer contributed to the model in a significant fashion; and the contribution of the variable, years of experience, while significant, contributed minimally to the model. Therefore, the hypothesized associations were eliminated. The hypothesized relationship between the latent variables coping and professional practice and coping and propensity to leave also failed to prove significant. However, because the variables were theoretically indicated, they were retained in the model. Goodness of fit estimates (Table 22) suggested that the model could be improved through correlation of measurement errors. The revised model is presented in Figure 20.

Table 22: Parameter Estimates for the Generic and Revised Structural Equation Model

Indicator	Generic Model				Revised Model			
	U.F.L.	S.F.L.	S.E.	C.R.	U.F.L.	S.F.L.	S.E.	C.R.
Coping ← Professional Practice	2.962	0.094	2.23	1.328	3.547	0.095	2.339	1.516
Coping ← Job Strain	0.573	0.551	0.101	5.693*	0.823	0.556	0.185	4.442*
Propensity to Leave ← Professional Practice	-0.983	-0.641	0.174	-5.656*	-1.135	-0.585	0.22	-5.163*
Propensity to Leave ← Job Strain	-0.006	0.115	0.004	-1.437	-0.016	-0.209	0.007	-2.393*
Propensity to Leave ← Coping	0.003	0.07	0.004	0.871	0.006	0.119	0.004	1.511
Decentralization ← Professional Practice	DECMEAN	1	0.452		1	0.361		
Autonomy ← Professional Practice	AUTMEAN	1.428	0.771	0.254	5.623*	2.099	0.905	4.025*
Years Experience ← Professional Practice	YREXP	0.299	0.146	0.143	2.091*			
Education ← Professional Practice	EDU	0.111	0.09	0.085	1.313			
Role Physical ← Job Strain	RP	1	0.605		1	0.403		
Physical Functioning ← Job Strain	PF	0.72	0.444	0.112	6.439*	0.492	0.202	0.148
Sustaining ← Coping	SC1	1	0.697		1	0.663		
Balancing ← Coping	SC2	1.196	0.896	0.156	7.653*	1.309	0.924	0.184
Dissatisfaction 1 ← Propensity to Leave	DISAT1	1	0.823		1	0.833		
Dissatisfaction 2 ← Propensity to Leave	DISAT2	0.696	0.731	0.052	13.353*	0.667	0.709	0.052
Dissatisfaction 3 ← Propensity to Leave	DISAT3	0.683	0.638	0.06	11.359*	0.669	0.632	0.059
Dissatisfaction 4 ← Propensity to Leave	DISAT4	1.028	0.815	0.068	15.091*	1.024	0.822	0.068
Intent to Leave ← Propensity to Leave	VAR56IL	0.994	0.566	0.1	9.901*	0.914	0.527	0.101
Bodily Pain ← Job Strain	BP	1.064	0.597	0.131	8.134*	1.188	0.441	0.181
General Health ← Job Strain	GH	0.921	0.554	0.12	7.69*	1.2	0.477	0.21
Vitality ← Job Strain	VT	1.049	0.56	0.135	7.753*	1.713	0.605	0.304
Social Functioning ← Job Strain	SF	1.295	0.623	0.155	8.383*	2.185	0.696	0.372
Role Emotional ← Job Strain	RE	0.913	0.602	0.112	8.183*	1.315	0.575	0.218
Mental Health ← Job Strain	MH	0.873	0.578	0.11	7.938*	1.477	0.647	0.258
Collaboration ← Professional Practice	COLMEAN	0.898	0.376	0.197	4.553*	0.948	0.316	0.206
d1 ↔ d2					0.176	0.231	0.049	3.592*
d10 ↔ d11					62.063	0.29	16.177	3.836*
d5 ↔ d10					55.953	0.2	14.333	3.904*
d5 ↔ d6					160.166	0.443	23.922	6.695*
d5 ↔ d4					151.766	0.424	22.048	6.883*
d6 ↔ d7					66.128	0.188	21.9	3.02*
d4 ↔ d6					163.707	0.43	24.46	6.693*
d4 ↔ d7					111.306	0.319	21.689	5.132*
d5 ↔ d7					65.458	0.198	19.763	3.312*
d4 ↔ e1					34.944	0.133	13.715	2.548*
d4 ↔ d8					47.092	0.133	19.162	2.458*
e4 ↔ e7					0.092	0.24	0.026	3.545*
e1 ↔ d7					70.877	0.291	15.362	4.614*

Note: *Correlation significant @ $p \leq .05$

Note: U.F.L. = unstandardized factor loading; S.F.L. = standardized factor loading; S.E. = standard error C.R. = critical ratio

Table 23: Goodness of Fit Estimates for the Generic and Revised SEM

Index	Criterion	Generic Model	Revised Model
Chi-square (x^2)	low	462.969	138.824
Degrees of Freedom (df)	≥ 0.0	165	117
Probability	≥ 0.05	0	0.082
Likelihood Ratio (x^2/df)	< 4.0	2.806	1.187
Goodness of Fit Index (GFI)	$> .95$	0.85	0.952
Adjusted GFI (AGFI)	$> .90$	0.81	0.93
Tucker Lewis Index (TLI)	$> .90$	0.802	0.983
Normed Fit Index (NFI)	$> .90$	0.759	0.924
Root Mean Square Error of Approximation (RMSEA)	$\leq .05$	0.077	0.025
Probability (p or p-close)	$\geq .05$	0	0.999
Hoelter's Critical N (CN)	> 200	130	317

Parameter estimates for the revised model are demonstrated in Table 22. All estimates remained in the anticipated direction and those relationships previously identified as statistically non-significant remained so. Of the statistically significant findings, standardized regression coefficients ranged from .209 to .924. The difference in chi-square values between the generic and revised models was 6.75 which indicates an improvement in fit statistics for the revised model. The likelihood ratio of 1.187 and a probability of .082 in the revised model suggests that the model is adequately supported by the data.

Goodness of fit statistics suggest that the revised model provides an excellent fit of the model to the data. The exogenous control variables of age, gender, ethnicity, marital status, care of dependents, unit size and unit mix (primarily medical or surgical patients) were placed in the model, but failed to demonstrate statistical significance. Therefore they were not included in the final model.

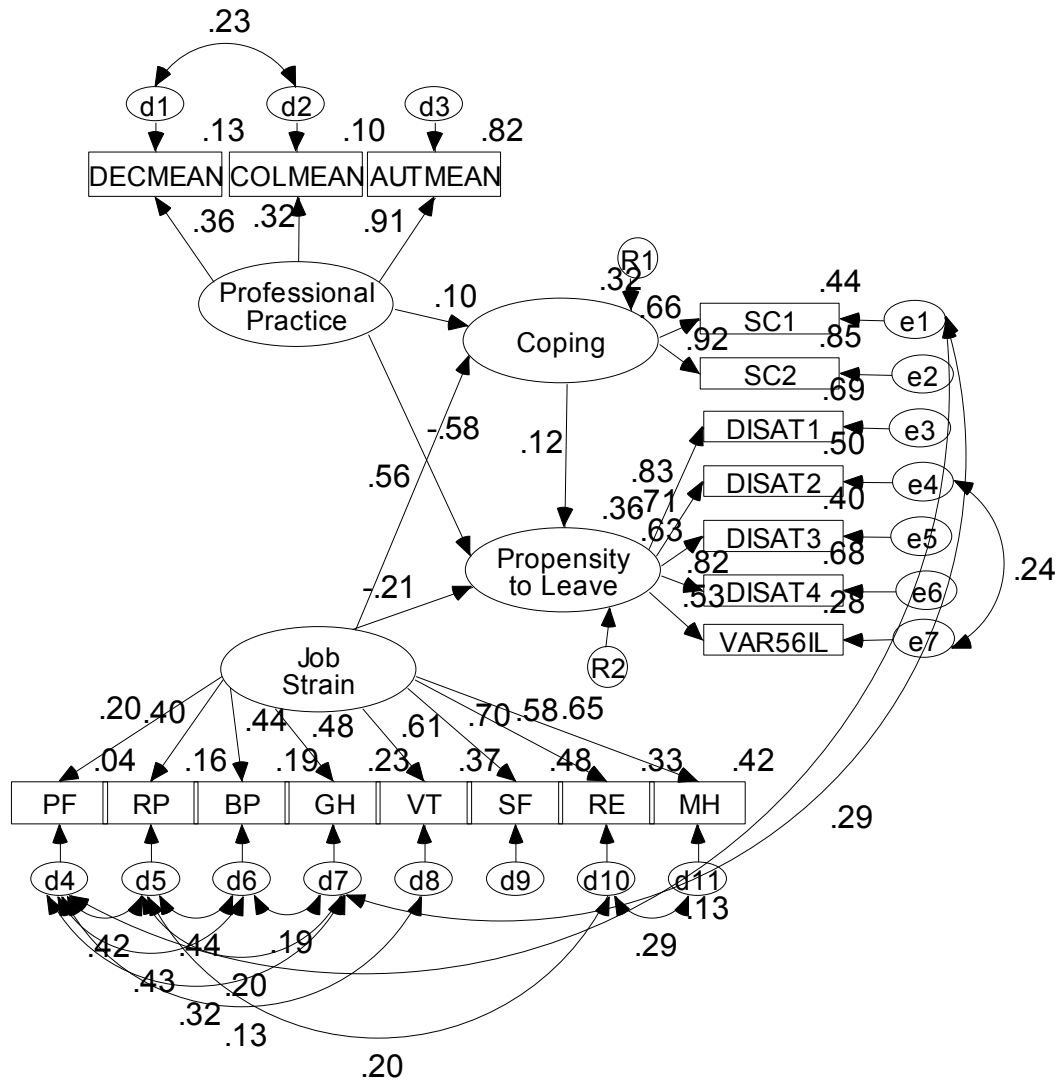


Figure 20: Revised Alternate Structural Equation Model with Four Latent Variables

Hypothesis Testing

Two research hypotheses were proposed regarding the generic research model (Figure 2, page 43).

H₁: The effect of job strain on RNs will directly influence the use of active coping behaviors.

H₂: The professional practice environment will directly influence the use of active coping behaviors.

Because the initial measurement model of coping was revised as two separate latent variables, the research hypotheses require revision to incorporate both constructs. The revised research hypotheses, based upon the alternate generic research model presented in Figure 20, are as follows:

H₁: The effect of job strain on RNs will directly influence the use of active coping behaviors.

H₂: The effect of job strain on RNs will directly influence propensity to leave.

H₃: The professional practice environment will directly influence the use of active coping behaviors.

H₄: The professional practice environment will directly influence propensity to leave.

H₅: The use of active coping behaviors will directly influence propensity to leave.

Based upon the preceding findings, H₁ one was supported. A correlation of .56 indicates that nurses with greater self-assessed generic health status, and therefore lower job strain, also demonstrated an increased use of active coping skills. Closer examination of this relationship indicates that the variables associated with mental health status (mental health, role emotional, social functioning and vitality) were most influential upon the experience of job stain and that balance was most influential upon the latent variable of coping.

H₂ was also supported. A correlation of (-) .21 indicates, while the relationship is weak, that those nurses with a higher assessment of generic health status, and therefore lower job strain, are less likely to feel dissatisfied and indicate an intent to leave.

H₃ was not supported. There is no statistically significant relationship between attributes associated with the professional practice environment and the active use of coping skills. Therefore the null hypothesis was not rejected.

H₄ was supported. The correlation of (-).58 indicates an inverse relationship between the presence of attributes associated with a professional practice environment (decentralization, collaboration and autonomy) and propensity to leave. Autonomy was the most influential component of the professional practice model and the measures of dissatisfaction were the most influential indicators of propensity to leave.

H₅ was not supported. The relationship between coping and propensity to leave failed to meet tests of significance and the null hypothesis was not rejected.

CHAPTER SIX: DISCUSSION, IMPLICATIONS, LIMITATIONS AND CONCLUSION

The study's findings provide broad support for the research hypotheses. Only the relationship between professional practice and the use of active coping skills, and the relationship between the use of active coping skills and propensity to leave, failed to reach the level of significance. Because the coping skills selected for this study were based upon Orem's theory of self-care, the behaviors surveyed by the DSCPI-90© (Denyes, 1990) focused upon health-related behavior. It is conceivable that use of an additional measure, more sensitive to coping with perceived deficits in autonomy, collaboration and decentralization, would have produced an alternative result. Failure to reach significance in the relationship between use of coping skills and propensity to leave also suggests the need for further study. The remaining findings add to the literature, especially as it relates to the experience of individual staff nurses working in hospitals and providing care to inpatients on medical/surgical patient care units.

Discussion of the Structural Equation Model

Professional Practice, Job Strain and Propensity to Leave

The latent exogenous variables of job strain and professional practice both share an inverse relationship with propensity to leave. This confirms the hypothesized relationships regarding the impact of these variables upon an employee's cognitive behavior in response to stressors associated with the work environment. The professional practice environment exerts the most influence with a standardized regression weight of

(-).58. This is consistent with the findings of previous research conducted at the unit and organizational level (Mark et al., 2003). Various aspects of the professional practice environment, including autonomy, collaboration and decentralization, have long been associated with a variety of efforts to improve job satisfaction and employee retention at the organizational level. Much of the success of professional practice models has been demonstrated through evaluation of hospitals which have achieved magnet status (Wagner, 2004). These facilities have implemented organizational strategies which focus upon fostering the professional practice environment.

This research indicates that consideration also needs to be given to the individual's response to that professional practice model. Anecdotal remarks provided by the nurses in this study indicated that they often felt they were in the middle of a complex environment filled with requirements placed upon them by patients, families, doctors and administrators. Those nurses expressed a variety of emotions related to resolution. Some had given up and were planning an exit strategy. Others were frustrated, but felt they had no choice except to stay because of personal constraints. However, the vast majority of study subjects indicated that they were satisfied with their job (76%) and had no intention of changing jobs in the next 12 months (83%).

Staff registered a high degree of professional autonomy, but did not demonstrate equal support regarding a shared collaborative experience with physicians or participation in unit-based decision-making. Evaluation of strategies which maintain a sense of autonomy, and at the same time improve a sense of collaboration and involvement in organizational processes, offers an opportunity to support further the professional practice needs of individual employees. As one subject suggested, "There are things that

could be changed to improve retention of good nurses. Involving team members in decision-making areas of work environment and equipment especially could enhance the way they feel about being a nurse...”.

Job strain also shared an inverse relationship with propensity to leave. While the contribution to the variance was lower than that for professional practice, the standardized regression weight of (-).21 suggests that in an otherwise healthy population, lower levels of job strain, as indicated by an elevated health status, are associated with a lower propensity to leave. Not only are employees who consider themselves healthy less likely to leave, they are more satisfied with their jobs. This emphasizes the importance of employer efforts directed towards the promotion of employee health.

There are considerable efforts underway to protect the nurse from the direct causes of illness and injury on the job. The American Nurses Association is spearheading actions intended to safeguard the work environment through appropriate legislation and policy implementation. The current focal point of these activities is the dissemination of information on the effects of fatigue, scheduling, and personal safety as well as on the ethical and legal issues associated with the consequences of these influences (ANA, 2002). This research indicates that health status, while inclusive of illness and injury, requires a much broader definition than that provided by the diagnosis of medically related symptoms. In addition, those factors which have the most influence upon the model also appear to be the most difficult for individuals to identify.

Mental health issues are the predominate influence upon the perception of job strain as a function of generic health status. While subjects placed importance on physical health issues associated with nursing practice, those issues did not appear to

influence their perception of job strain to the same degree as mental health issues. When commenting, staff cited the experience of stress associated with the job, but provided little detail regarding the impact of that stress on the individual. There was mention of stress, depression, a feeling of being overwhelmed and fatigue, but little information in terms of degree of affliction. In contrast, numerous subjects wrote that they experienced specific physical ailments and incapacity. Those comments appeared not just in the space provided for additional comments, but were also placed in proximity to survey questions related to physical health.

The correlation coefficient for physical functioning (.2), while significant at $p \leq .05$, explained only 4% of the model's variance with the remaining physical health indicators ranging from 16% to 23%. Meanwhile each of the indicators of mental health status contributed between 34% and 49% to the model's variance. The dichotomy between the written remarks and the statistical findings suggests a need for further research on the determinants of both physical and mental health deficits. Interventions then could be developed using evidence-based findings to promote both physical and psychological health.

Job Strain, Propensity to Leave and Coping

The experience of job strain demonstrated a direct positive relationship with the use of coping skills. The standardized regression coefficient of .56 provides statistically significant support for the hypothesized use of active coping skills in the management of job-related stress. As job strain was measured as a function of generic health status, this finding also provides empirical support for the direct relationship between the use of

active coping behaviors and health-related outcomes. While the use of coping has been demonstrated as essential in the moderation of the negative effects of the work environment (Laschinger et al., 2003), no studies directly link this to the physical and psychological outcomes associated with job strain. Direct measurement of those outcomes, through evaluation of self-assessed health status, demonstrates the important influence that coping behaviors have in the individual management of the health consequences associated with work place stressors.

This conclusion is consistent with the findings of Karasek (1979) which held that individual differences should be taken into account when considering the health-related consequences associated with the demand-control model. The demand-control model states that individuals faced with jobs requiring high demands are more effective in response to those stressors through the use of control, thereby reducing the experience of job strain. Karasek also emphasized the importance of the social environment of the work setting to the experience of job strain. This study's results regarding the significance of social functioning supports that hypothesis.

Additional research by Karasek and Theorell (1990) determined that those who effectively managed the demand-control imbalance experienced better health. However, difficulties related to the direct assessment of demand-control imbalances and the corresponding health-related outcomes in a nursing population have made measurement of job strain difficult (deJonge et al., 1999; deRink et al., 1998). The findings of this study support the use of the latent indicator, generic health status as measured by the SF12v2™ (Ware et al., 2002), as an effective indicator of the outcome of job strain in the work environment. While further research may be necessary to develop appropriate

methodologies, the outcome may support identification of job strain and allow ongoing assessment in an effort to develop intervention and evaluation strategies.

Furthermore, when the strongest indicators of job strain (mental health status) are related to coping behaviors, there is a solid association between those who report improved mental health status and those who are able to sustain health and effectively balance lifestyle. Recognition of the importance of individual coping behaviors emphasizes the need to tailor assessment and intervention strategies to meet the needs of individual staff members in response to job strain. The anecdotal comments provided by staff suggest that while common themes, such as feeling overwhelmed emerged, staff response to those themes was individual. For example, in expressing a need for balance some focused upon personal time; others focused upon the needs of the patient; and there were concerns expressed about job requirements. Even within each of these groups there was diversity. The issue of personal time was individualized to comments about shift length, overtime, vacation and holiday time, and access to work hours. The importance of individual assessment points to the need for nurse managers who are skilled in making effective assessments related to the experience of job strain and the associated risk regarding propensity to leave. Effective assessment will allow planning for interventions intended to reduce job strain and support retention. Determination that the coping response to job related circumstances is individual also helps to explain the variances that nurses report when queried about the extent to which work-related factors such pay and scheduling influence satisfaction and intent to leave (McNeese-Smith, 1999).

The theoretical association of coping with professional practice was not supported; however this may be related to the use of an instrument heavily weighted to

the detection of health related outcomes. Further research, incorporating instrumentation more sensitive to the thoughts and actions of individuals engaged in stressful encounters yet may demonstrate support for the theoretical association. The *Ways of Coping Scale* (Lazarus & Folkman, 1984) has been demonstrated as a valid and reliable tool and its use may offer additional insight into the response of individuals to the professional practice environment.

Coping and Propensity to Leave

The theorized relationship between coping and propensity to leave was not supported. The previously identified weakness in the measurement of coping as it relates to professional practice may have affected the model's sensitivity to the theoretical association. Further research is indicated in order to determine the significance of the relationship.

Discussion Related to the Latent Variables

Job Strain

Job strain was conceptualized for the purposes of this study as a reflection of self-assessed generic health status. This methodology provided a theoretically sound approach to the outcome measurement of the effects of job strain: diminished physiological and psychological health (Cheng et al., 2000; Karasek & Theorell, 1990; Tummers et al., 2002). Data were collected using the SF12v2™ (Ware et al., 2002). Means were determined for the study group on subscales for mental health status (MHS) and physical health status (PHS). When study means for each of the subscales were

compared to fixed norms, study subjects demonstrated slightly higher summary scores for physical health status (51.83 vs. 49.63) and slightly lower summary scores for mental health status (48.18 vs. 49.37). Because the sample was predominately female, summary scores were also compared to fixed norms for females in the general U.S. population. Again the physical health summary score of 51.83 exceeded that for females in the general population (48.72) and the mental health summary score of 48.18 was roughly equivalent to that of females in the general population (48.43). This suggests that the study population, which was slightly younger than the U.S. population (42 years vs. 51 years), considered itself physically healthy and shared mental health norms in common with the general population. Data calculated for each of the individual scales (PF, RP, BP, GH, VT, SF, RE, & MH) demonstrated similar trends when compared to the fixed norms associated with the general U.S. population.

Evaluation of the data associated with the latent construct of job strain indicates that it is the psychological variables which have the greatest impact on an individual's experience of job strain. Social functioning was the predominate influence (.70) upon the model for job strain; with mental health (.65), vitality (.61) and role emotional (.58) contributing significantly. The measures for general health (.48), bodily pain (.44), role physical (.4) and physical functioning (.2) contributed to a lesser extent.

The influence of psychological stress was evident in the anecdotal responses provided by individual staff members. Upon completion of the survey, subjects were asked to share any additional comments. Some mentioned the stress of the job directly, while others shared that they felt "overwhelmed at work" because of "too many demands and expectations". These remarks appear related to the indicators of mental health (MH),

vitality (VT) and role emotional (RE) which assess mental health affect (peacefulness vs. depression), energy level and sense of accomplishment.

The differences in contribution to the model between the indicators for mental and physical health speak to the significance of psychological factors on the perception of job strain. In a population which considers itself at least as physically and psychologically healthy as the general U.S. population, clear differences emerge for study subjects when the data are subjected to SEM. While subjects placed importance on physical health issues associated with nursing practice, those issues did not appear to influence their perception of job strain to the same degree as mental health issues. These findings suggest a need for the assessment of the mental health aspects of job strain and for further research on workplace interventions intended to promote both physical and psychological health. In addition, while age, gender, race, ethnicity, marital status and the responsibility for dependents did not contribute to research model, the potential impact of multiple role expectations remains an important consideration in the measurement of job strain (de Jonge et al. 1999).

The importance of social functioning to the measurement of job strain highlights the necessity of effective social relationships to high levels of psychological well-being. This is especially noteworthy in nursing work groups which emphasize a hierarchically coordinated approach to nursing practice (Tiedeman & Lookinland, 2004). Social functioning refers to the degree to which physical or emotional problems interfered with social activities. Ware (2003) advocates independent scoring for role participation, however until that scale can be validated; it remains a component of mental health status. Those nurses who indicated a greater level of social interaction also experienced lower

levels of job strain. The importance of social functioning to the model illustrates that the ability to interact successfully is necessary to support effective performance within the work setting.

The importance of the work group was evident in a number of the comments provided by staff respondents. One nurse wrote:

Nursing is more emotionally and physically draining than I ever expected it to be. I never really understood the full realm I would be responsible for until I began working. Often I feel it is much more my responsibility than any doctor's to coordinate care and keep the patient safe. ... The only way I am able to function and feel like I can do my job well is to know the nurses that surround me will help in any crisis or question with their experience and knowledge.

The importance of “the team” and “team members” was mentioned by a number of subjects as contributing to their sense of job satisfaction. Subjects also noted the converse to be true as indicated by the following statement, “Most of the time it's not the workload that's the problem. It is the people you work with...” This indicates that circumstances in the work environment which interfere with social processes may contribute to feelings of job strain and suggest a need for further research.

Coping

It was hypothesized that individual staff nurses coped with the effects of job strain through use of active health supporting behaviors. Orem's (2001) theory of self-care was proposed as theoretically appropriate for measurement of these behaviors. Orem's Self-Care Deficit Theory of Nursing is a general nursing theory which is considered foundational to nursing science (Hartweg, 1991). As such, it provides nurses a familiar methodological approach by which to gauge self-care practices. Denyes (1990) used Orem's model to develop instrumentation incorporating the eight universal self-care

requisites theorized as necessary to maintain and promote good health. Using exploratory factor analysis, this study identified two primary factors related to those eight core principles. The first was the need to sustain good health. Questions associated with this variable were associated with actions taken to maintain general health, meet nutritional needs and to ensure that exercise and activity needs were addressed. The second variable identified was a need for balance. In general, these actions were those taken to achieve stability or equilibrium. The questions associated with balance addressed behaviors related to rest and activity, shared vs. personal time, attention to safety and bodily functions and adjustment to stress.

The measurement model depicted in Figure 16 demonstrates a strong correlation between the two factors (.75), indicating the importance of both factors in the measurement of health-related coping behaviors. Means calculated for each of these factors were incorporated into the structural equation model and provided a powerful contribution to the revised model. The variable of sustaining explained 43% of the variation in the latent variable of coping and balancing explained 85% of the variance.

Issues associated with sustaining and balancing were identified themes in the additional comments provided by study participants. Comments related to sustaining addressed concerns regarding adequate time to meet nutritional requirements and job related fatigue which was detrimental to participation in an exercise program. Subjects addressed the theme of balance in a broad variety of ways. While all comments did not address balancing as related to personal coping challenges directly, the desire for balance was evident as subjects described activities associated with their professional performance.

The desire for balance between time spent on the job and personal time was clear as staff expressed issues associated with the hours spent at work. Some related stress to the amount of overtime necessary to meet patient care and non-clinical job requirements. The amount and distribution of vacation and holiday time was the source of a number of comments. Other subjects described the required shift length as too long. Characteristic of those remarks was the following:

I feel the 12 hour work day interferes with a balanced life of any kind. I do not know of a single nurse that has any balance in their (sic) life at all on a day that is spent almost entirely at the hospital or traveling to and from work.

Subjects were also affected by the acuity of their patients and the inability to achieve balance between assignments based upon a prescribed nurse/patient ratio and the assessed needs of their patients. The issue of workload was apparent again in comments which addressed the non-clinical aspects of the job. There were numerous reports of extensive charting requirements and inefficiencies in the system which prohibited staff from establishing balance between those functions and what was considered their primary role of patient care provider. One long time practitioner summarized this imbalance as follows, “I love nursing. But I feel I am being pushed and pulled away from spending bedside time with my patients to do paperwork”.

Even at the bedside, balance appears difficult to obtain for some participants. The desire was expressed for improvements in access to equipment and there were reports of “unreasonable or uninformed” expectations from patients and their families. These experiences leave some staff feeling unable to balance their professional expectations with the demands of the job. One subject explained the associated stress by commenting:

I have always been a very serious and hard worker, but the stress from nursing at the bedside and all it entails (i.e. patient and family demands, patient anger, etc.), combined with the fact that there is no room for error, makes this a career I would not pursue if I were younger.

The identification of sustaining and balancing as key constructs related to health-related coping provides a new paradigm by which to evaluate staff nurse response to the work environment. When asked to identify reasons for leaving, departing staff often provide concrete answers. Strachota et al. (2003) offer a list of 12 reasons, of which hours worked was cited by 50% of the subjects surveyed. Remaining items on the list included better opportunity/pay, family reasons, staffing, unsupportive management, unacceptable work environment and workload. Solutions proposed to such circumstances require system wide changes and adjustments which may meet the needs of those who left, but says little about the needs of those remaining in the system. These solutions also fail to address generational preferences which may influence individual employee perceptions of the work environment (AHA, 2002; Porter-O'Grady, 2003). Instead of seeking a one size fits all solution, the identification of sustaining and balancing as key constructs associated with coping suggests the need for individualized solutions. It also suggests the need for additional research which seeks to identify patterns in individual nurse responses to the work environment in order to support the assessment of organizational initiatives.

In addition, as previous research demonstrates that the use of active coping skills can be learned (Ceslowitz, 1989; Denyes et al., 2001; Orem, 2001); determination of ineffective coping strategies used by individual nurses may support interventions intended to foster health supportive coping strategies. This calls for further research which takes into account identification of an individual staff member's coping skills as

they relate to retention related issues and the development of management strategies which support flexibility in the response to the assessed behaviors.

Professional Practice

Professional practice was conceptualized as derived of three constructs: autonomy, collaboration and decentralization. In addition, the variables of highest level of nursing education and years of experience were added to the model based upon reports that these criteria influenced the ability to practice professionally (Aiken et al., 2003). Both education and experience contributed significantly to the measurement model of professional practice, although the contribution to the model was minimal. However, when considered as part of the structural equation model, neither variable made a significant contribution and were eliminated.

Autonomy was conceptualized as the freedom to engage in a variety of professionally-related activities. These included the implementation and direction of the nursing care plan, oversight of nursing care standards and practices, and independent determination of professional responsibilities. Autonomy explained 83% of the variance in the final model. Overall, subjects appeared to experience high levels of autonomy in their professional practice. On a scale of 1 to 6, the calculated group mean for autonomy was 4.53. This indicates that study subjects believe they have control over nursing practice and have the latitude to make judgments regarding the scope of nursing practice.

Comments related to autonomy generally reflected concerns regarding the amount of individual responsibility subjects were required to accept in light of high patient acuity and increasing workloads. Staff also expressed personal frustration regarding the

effective management of issues associated with the rapid evolution in patient care practices. One subject responded, “One of the biggest stresses I see in nursing is the frequent discrepancy between what the medical profession is capable of in restoring health and what the families believe is possible”. While some indicated disappointment with career choice, many used the comment section to explain that while they may experience job related frustration, they were satisfied with their career choice and proud to be members of the nursing profession.

Collaboration was defined as collaboration with physicians. The factors associated with these nurse/physician interactions were primarily related to interactions which involved professional nurse/physician discussion and those interactions which were related to information sharing. On a 1 to 6 scale, the group mean for collaboration was 2.84. When incorporated into the SEM, collaboration contributed 10% to the model of professional practice. The relatively low group mean and minimal contribution to the overall model suggests that study subjects did not believe that collaboration with physicians supported a professional practice environment.

Comments from study subjects strongly adhered to the empirical findings. A large number of the study’s respondents pointed to ineffective and inappropriate communication with physicians as a significant source of job related stress and frustration. Subjects shared the belief that physicians failed to value or even recognize the contributions that nursing staff made to patient care. The following comment is typical of those who shared this viewpoint:

My experience working around physicians is that I do not see much of a physician-nurse relationship. Physicians (some) make rounds without a nurse. Orders are written without reviewing it with a nurse. Some physicians belittle

nurses when calling for orders. It seems they do not want to be bothered. I do not see professionalism.

The concern that staff share regarding a perceived failure to implement an effective collaborative model and the impact that has on patient care is evident in the account of another subject:

Doctors overall are not open to collaborative team efforts. They are not approachable. Many times will lash out in front of others and your patients. There have been times when other nurses (new) would hesitate to call doctors on important issues regarding patient care because of the possible attitudes that come from many doctors.

The findings that nurse/physician collaboration does little to support a professional practice model and may serve as a major source of negativity in overall perceptions regarding the practice environment is consistent with previous research (Havens & Aiken, 1999; Mark et al., 2003; Upenicks, 2002).

Decentralization was conceptualized as involvement in unit-based decision-making. All indicators contributed significantly to the measurement model with long range planning and the adoption of policies and programs explaining 62% to 67% of the variance. The group mean for decentralization was 2.11 on a 1 to 5 scale.

Decentralization contributed to 13% of variance in the SEM for professional practice. As with collaboration, the relatively low group mean score and the minimal contribution to the structural model suggests that decentralization is not a substantial element in the promotion of a professional practice environment for study subjects.

Communication issues with nursing leadership were seen as having an impact on both nurse and patient. One nurse mentioned a sense of “powerlessness” when making efforts to effect change on behalf of patients. There were also concerns expressed

regarding patient safety and the potential impact upon licensure if nurses were unable to correct what they believed to be deficiencies in the care delivery system. At the same time, specific decentralization efforts at the unit level did appear to attenuate the overall perception regarding the aforementioned issues. One staff member voiced optimism about inclusion in a shared governance model and the opportunity it offered for involvement in decision-making. Others shared how important unit leadership and colleagues were to their overall perceptions. One subject commented:

I work with a wonderful staff and wonderful management that makes me feel valued. Team work is optimum on our floor and most attitudes are helpful, kind and nourishing, not “eat your young”. I feel I’m especially blessed because I know a lot of places aren’t like that. Their making me feel valued as a person and employee is a big part of why I wouldn’t want to go anywhere else.

Previous research supports the need for effective communication at all levels of the organization in order to promote an environment which supports professional nursing practice (Havens & Aiken, 1999; Upeniceks, 2002). These findings indicate the need for continued emphasis upon research regarding the incorporation of staff into both organizational and unit-based decision-making/decentralization models. In addition, staff concerns that inefficiencies in the system may have a negative impact on patient care indicate a need for additional emphasis on evidenced-based research to determine the effectiveness of decentralization efforts on patient care outcomes.

Propensity to Leave

Propensity to leave was hypothesized to reflect an individual’s response to the work environment as well as that individual’s ability to cope with the influences associated with that environment. It was measured using two constructs derived from the

literature: satisfaction and intent to leave. All measurement indicators were coded to allow for unidirectional interpretation.

Satisfaction was measured by four items which were recoded to indicate the dissatisfaction of study participants. Participants were asked to describe their satisfaction with the job, the organization and in relation to peers. All variables were significant in both the measurement and the structural equation model. Analysis of the contribution of each of the measures to the determination of propensity to leave identifies the two items directly associated with current working conditions as most indicative of job satisfaction, explaining 67% to 68% of the variance.

Intent to leave was signified by a single item which had a regression weight of .53 and contributed to 28% of the variance in the structural equation model. The strong association between satisfaction and propensity to leave as well as the moderate contribution of the direct measurement of intent to leave are consistent with previous research (Irvine & Evans, 1995; Laschinger et al., 2001a; Mark et al., 2003). The importance of current working conditions as a primary determinant of propensity to leave suggests that overall satisfaction with the employing organization is less important to decision-making processes than specific unit related circumstances. This emphasizes the importance of implementing retention strategies at the unit level (Mark et al., 2003).

Absenteeism was eliminated from the measurement model. It is possible that sample size was inadequate to measure the effects of absenteeism in the study population. In addition, research suggests that nursing staff may fail to engage in self-care practices which require absence from work due to tensions associated with peers and supervisors regarding the legitimacy of absence (Crout, Chang & Cioffi, 2005). Therefore, further

research on the significance of absence behavior to the individual and the characterization of absence in the work environment is warranted.

Implications

This study was undertaken at the level of the individual RN employee in order to understand better the response of those individuals to an array of work-related influences. On the surface this appears to mirror a vast body of literature which seeks to understand better the complicated relationship between nurse employees and the institutions in which they work. The findings from these studies have been used to support restructuring of organizations in an effort to aid in the recruitment and retention of employees who are satisfied with their employment situation and contribute to the provision of quality patient care. In general the effectiveness of those interventions has been measured through surveys of employee and patient satisfaction and scrutiny of vacancy and retention rates.

While this information may support overall determination of institutional effectiveness, it does little to shed light on how individual employees physically and psychologically respond to the stressors associated with the work environment. Nor does it discriminate for the effectiveness of institutions in meeting employee expectations regarding defined components of the professional practice model including autonomy, collaboration and decentralization. Evaluation of these variables from the perspective of individual nurses offers a depth of understanding not possible in general assessments and provides a means of evaluating incongruities between organizationally determined perceptions and the needs of the individual.

This becomes increasingly important as a pending nursing shortage looms on the horizon. The ability to recruit and retain qualified employees will become critical for organizations competing for the attention of a labor pool which is inadequate to meet the demands of the market. As employment decisions are made one individual at a time, institutions which are cognizant of the issues associated with individual decision-making have the opportunity to benefit from structuring their organizations to take those factors into account.

Nursing Implications

This research provides an employee-centered evaluation of the work environment. In doing so, it confirms the importance of the professional practice environment as the primary source of satisfaction and institutional commitment. It also provides new insights into the nature of the relationship an employee shares with that practice environment. From the standpoint of the individual, while satisfied employees may express an association between the experience of satisfaction and the presence of a practice environment which meets their expectations, not all hypothesized components contribute to that environment equally.

For the purposes of this research, a strong sense of autonomy was central to feelings of satisfaction and a low intent to leave. However, the anecdotal remarks associated with the diminished contributions of collaboration and decentralization indicates those variables represent a major source of job-related frustration. More research is necessary to evaluate the impact this incongruity may have on the overall

perception of nurses regarding their practice environment and the consequences that organizations may experience secondary to those perceptions.

Job strain, as a predictor of job satisfaction and propensity to leave, is well documented and empirically supported. However, providing direct evidence of job strain for individuals in the work environment has been elusive. This study, through measurement of the physical and psychological outcomes of job strain, demonstrates a direct relationship between the self-assessment of health status and propensity to leave. This outcome not only supports the findings of previous research; it indicates that the measurement of health status may offer organizations the ability to detect and manage the current effects of job strain as it is experienced by individual nurses in the context of their work environment.

The significance of mental health status to the measurement of job strain provides additional insight to employers regarding the impact of stressors in the environment on employees. To RN employees, the mental health aspects related to the job contribute most to the effective management of job strain. This is especially true as it relates to the importance of social functioning which was identified by subjects as the most influential component in the management of job strain. The importance of mental health status to the model and the contribution of social functioning to the measurement of mental health status indicates a need to better appreciate the role that these variables play in the overall assessment of health status. In addition, investigation of the contribution that social structures and social functioning make to organizational success including employee mentoring models is suggested as a result of these findings.

Coping was related to the theoretical model provided by Orem (2001) which describes coping as a response to self-care deficits. Defined as such, the use of active coping demonstrated a significant positive association with self-assessed health. The association between coping and self-assessed health provides empirical support for the theorized relationship. This association, while appreciated as an important component in the management of health related deficiencies, has been addressed primarily as a factor in the response to illness. This research demonstrates that it is also an important component in the response of otherwise healthy individuals to the maintenance of a healthy lifestyle.

This research also offers a new paradigm related to the understanding of coping behaviors related to health. The determination that balancing and sustaining conceptually define the coping behaviors measured as a part of this study suggest that practical solutions to concrete problems may not benefit from a one size fits all remedy. Issues such as staffing, scheduling and workload as well as the provision of appropriate salary and benefits may require accommodations designed to meet the needs of individual staff members. The predominance of balancing in the research model suggests that those individuals overwhelmed by the complexity of the circumstances with which they are confronted are more likely to experience increased job strain and a greater propensity to leave. Seeking a means to accommodate the need for balance, as is appropriate to the resources of the institution, may promote overall job satisfaction and longevity in the workplace.

Educational Implications

While this research was directed to the retention-related issues facing nurses in the work environment, the skills they bring with them to that environment were first crafted through nursing education programs. The continued development of those skills after completion of formal education is characterized as professional socialization. This process is relational in nature and builds upon previously developed skills, culminating in integration at the level of expert nurse (Benner, 2001).

The findings from this study associated with the use of active coping behaviors in response to the health consequences of job strain suggest applicability to educational curriculum and in the ongoing process of professional development. Research has established that active coping behavior is learned behavior (Ceslowitz, 1989; Lazarus, 1991, 1999; Lazarus & Folkman, 1984). Incorporation of skills associated with coping into education and mentoring programs offers a platform upon which retention-related assessment and intervention efforts could be based. It may also provide the means for identification of barriers to the use of those skills. As one nurse offered:

Overall I am a healthy individual and do all I can to lead a healthy life, but at work as an RN, I find it very difficult to take time for myself including time to eat, use a restroom, or even sit down for a few minutes.

In addition, the process of professional socialization may incorporate traditional values long associated with nursing practice that are contrary to the use of active coping skills. For example, one respondent wrote, “As you are aware Nursing is a profession of caring for others! I as well as others, I am sure, put ourselves last”. The “primacy of caring” is considered a core value of the nursing profession (Benner, Tanner & Chesla, 1996). If, as this comment suggests, communication of the importance of this value

results in the nurse devaluing himself or herself; it may encumber the use of active coping behaviors. This assessment indicates that further research is necessary to evaluate educational curriculum regarding the incorporation of skill-building related to coping and to determine the impact of current practices upon coping behavior.

Institutional Implications

Focusing attention on the individual offers nurse managers a strategic approach which emphasizes the importance of the manager's role in resolving retention-related issues. Manager leadership behavior, as exhibited by the manager's regard for the comfort, well-being, status and contribution of individual staff members, is significantly correlated with staff retention (Taunton et al., 1997). Supporting an intervention strategy which assesses an individual's health status, coping and response to the practice environment allows for the use of skills familiar to even the novice leader – those associated with the nursing care plan.

This is especially important as the management skills of first line leaders are not always well developed (Russell & Scoble, 2003). Key deficits have been documented in the knowledge and ability of nurse managers as those skills relate to organizational constructs, systems theory, and human resources management. Use of already mastered clinical skills associated with the formulation of a nursing diagnosis based upon the holistic needs of an individual does not require that nurse managers develop new skills. Instead, staff nurses can be placed in a client-centered model and managers can respond to individually determined needs using their skills as clinical practitioners. This permits leaders to provide for the needs of their staff using an approach with which there is

practice and familiarity. These skills may then be enhanced through manager development educational programs which are centered on retention-related human resource strategies.

A shift in focus to individual evaluation of the job-related circumstances which impact a nurse's job satisfaction and sense of well-being has the potential to improve employee retention efforts. This benefits the organization through realization of significant cost savings due to that improved retention. Jones (2005) determined through empirically supported methods that the total turnover costs for each vacant RN position ranged from \$62,000 to \$67,000. Within the State of Florida, annual costs associated with nurse vacancies were estimated to exceed \$150 million (FHA, 2005). Any improvement in nurse retention rates has the potential to impact significantly the fiscal burden associated with attracting and retaining nurses.

In addition, adverse patient care outcomes such as increased morbidity and mortality following complications have been associated with environments in which nurses experience higher emotional exhaustion and dissatisfaction (Aiken et al., 2002). Buerhaus and Needleman (2000) estimate these costs may exceed \$2 billion per year, not including malpractice costs. Realizing a reduction in any of these costs secondary to the promotion of the health and well-being of the nurse could be significant.

Focusing an organization's policies to be inclusive of matters associated with the health and well-being of the individual nurse can result in a healthier workforce which impacts patient as well as nurse satisfaction. A healthier workforce also may result in improved patient outcomes and an improvement in perceived quality of care. The result is a direct economic benefit to organizations adopting health oriented policies, and an

indirect benefit to the organization as a result of savings which accrue secondary to preventive health care practices.

Policy Implications

Additional public benefit ensues as a result of increased nurse retention in the workforce. The projected shortfall of 800,000 nurses by 2020 will impinge on access to health care due to an imbalance between the demand for nurses and the available supply of qualified practitioners (HRSA, 2002). It also has the potential to influence the quality of care due to high nurse patient ratios and further compromise of a work environment already challenged to meet patient safety standards (Aiken et al, 2003; Page, 2003). The burden of this outcome will most likely be experienced disproportionately by seniors who are the largest consumers of health services, minority populations and residents of underserved regions which already experience inequity in health care access (Bushy, 2004; HRSA, 2002; Smedley, Stith & Nelson, 2003).

While considerable effort has been directed to the recruitment of additional nurses, those efforts are hindered by inadequate funding, faculty shortages and the lack of access to training facilities (AACN, 2002). Nurse education programs will face additional growth-related challenges as large numbers of faculty reach retirement age and institutions have difficulty attracting younger faculty members (AACN, 2003). Faced with an inability to increase supply quickly, additional attention must be directed to efforts which retain nurses in the workforce. Broad-based policy recommendations intended to encourage nurses to remain in the workforce have been offered by numerous organizations (Kimball et al., 2002). Many of these recommendations address the need

for re-evaluation and modification of institutional practices associated with nursing education and the professional work environment.

This research suggests that emphasis also needs to be placed upon maintenance of a healthy workforce and individual nurse response to the professional practice environment. This will become increasingly important as the nurse workforce continues to age and institutions are confronted with the need to adapt an already strenuous work environment to the physical capabilities of older workers (AHA, 2002). While promotion of healthy communities is a national priority (U.S. Department of Health and Human Services, 2001), much of that attention has been directed to vulnerable populations. These findings suggest that policy focused upon the health and well-being of individuals vulnerable to high levels of workplace injury and stress such as registered nurses also is indicated. This may have a direct influence upon the desire of nurses to remain in the workplace which, in turn, contributes to a decrease in the anticipated deficit in the supply of available nurses. Secondary benefit occurs as the overall perception of nursing as a satisfying career choice improves and recruitment of additional nurses increases, helping to restore economic equilibrium. The net result is a healthier workforce, healthier organizations and improved public health.

Limitations

The cross-sectional design of this study limits the predictive value of the anticipated findings. Further analysis using a longitudinal design would offer the opportunity to explore the causal relationships suggested by the model. This research is also limited by its focus upon the perceptions of the individual nurse without

consideration of the larger practice environment. In particular, issues identified by staff as they related to decentralization and collaboration, would benefit from a more comprehensive review.

The findings are influenced by the selected methodology. While the analysis of the structural equation model indicated an excellent fit of the model to the data, that fit is based upon the theoretical associations hypothesized for this study. Data analysis may have also been affected by the relatively low response rate in one regional healthcare system. Although this response rate is consistent with those previously achieved in the study setting, a larger response rate might have offered greater sensitivity in the measurement of study variables. Finally, the focus upon the health aspects of coping may need to be broadened to also include other coping behaviors more clearly associated with the professional practice component of the model.

In addition, while the findings are intended to meet the assessment needs of nurse leaders, the specific limitations of the research design allow generalizability only to those managers involved in the assessment of registered nurses working on nursing units providing care to a medical-surgical patient population. Caution must be exercised in the interpretation of the results based upon the size and location of the facilities. The healthcare system accessed for this study, while regionally diverse in the location and size of satellite facilities, is one of the largest providers of comprehensive health services in the United States. Finally, the hospital network used as the research site is private and maintains a strong religious affiliation. The influence of this structure is not a controlled variable.

Bias is introduced by distributing the research instrument within in a single health care network, subject self-selection based upon survey return, and by using nursing leadership endorsement to encourage participation. Theoretically this method may encourage the participants to believe that there are employment associated outcomes. Efforts were made to minimize this influence by ensuring confidentiality and anonymity. In addition, as anecdotal reports suggest a high frequency of staff surveys through-out the medical center secondary to the nursing shortage, bias may be tempered as a result of previous experience.

Conclusion

This research confirms the hypothesized relationship between job strain, professional practice and propensity to leave. The relationship between professional practice, satisfaction and turnover had been confirmed previously at the organizational and unit level (Mark et al., 2003). The outcome of this study indicates that there is also an individual component associated with that relationship. This relationship is strong and statistically significant. For individuals, the robust influence of autonomy upon the model was the predominate correlation. Of particular interest was the dichotomy between the contribution of autonomy and the lesser contributions associated with collaboration and decentralization. Anecdotal comments suggest that inequalities in the model may contribute to a perception of insufficiency in the professional practice environment, even while staff report overall satisfaction with that environment and low intent to leave.

Data analysis determined that the measurement of high job strain as a function of low self-assessed generic health status was predictive of propensity to leave. While the

relationship between job strain and health status had been previously confirmed (Cheng et al., 2000), and the association between job strain and satisfaction had been demonstrated (Laschinger et al., 2001a); this research confirms a direct association between health status, job satisfaction and intent to leave. The strongest contributors to that association were variables associated with mental health status. The relative ease with which health status may be measured offers employers new avenues to not only predict which nurses are at risk for retention related issues, but initiate intervention strategies.

The theoretical relationship between active health-related coping behavior in response to health status is well established (Orem, 2001) and empirically supported (Callaghan, 2003). However, application of the theoretical model has primarily addressed the needs of populations with diminished health. This study demonstrates that evaluation of coping behaviors is relevant to the appreciation of an individual's response to work related stressors. The structural equation model confirmed that there is a strong and statistically significant relationship between elevated self-assessed health status and the use of active coping behavior.

Of particular interest was the determination that study indicators associated with Orem's (2001) model of self-care practices factored into two distinct components. Sustaining was associated with actions undertaken to meet ongoing health care requirements. Actions associated with balancing were related to a need to maintain a stable lifestyle. Balancing shared the strongest association with coping which emphasizes the necessity of understanding each employee's needs as they relate to the

work environment. Anecdotal evidence suggests that interpretation of stressors in the environment may be unique to each individual and require flexibility in resolution.

The failure of the model to support a relationship between professional practice and coping and coping and propensity to leave suggests a weakness in model design. Further evaluation of the measurement of coping, as it relates to professional practice, may enhance the understanding of the contribution of coping to overall model sufficiency. In addition, further testing of the model using a larger sample and system-wide inclusion of nurse practice settings may support further discernment regarding the contributions of the hypothesized variables to the model tested in this study.

The structural equation model provides an excellent fit of the model to the data. While goodness of fit statistics supports the use of the conceptualized model to explain the experiences of individual nurses in response to the work setting, it does not provide a complete picture of all of the actions and interactions associated with that setting. This was apparent in the descriptions that staff provided as anecdotal remarks. Further research is necessary to develop a better understanding of the full picture before taking action based solely on the snapshots those responses provide. A more complete understanding of other influences upon the conceptual model may augment the interpretation of the findings from this study.

In conclusion, the findings associated with this study indicate the need for additional discrimination in the application of policies and practices related to employee retention. While commitment to nurse retention necessitates system-wide strategies which promote improvements in professional practice and the work environment, those strategies alone may be insufficient. This research underscores the need to consider the

perception of the individual employee. It advocates the use of health promoting behaviors and promotes development of the professional practice setting based upon the identified needs of the individual nurse. If successful, the outcome will foster a healthy workforce and address the looming shortfall of qualified care-givers through improved retention.

It also offers nurse managers a framework to evaluate and respond to influences which may impact staff decision-making related to organizational commitment. This is a substantial change in approach from models which traditionally focus on hierarchal processes in the implementation of strategies and policy. This research model validated the previously demonstrated importance of communication processes, managed at the level of the nursing unit, on employee satisfaction; and supports the conclusion that the ability to provide individualized attention to the needs of staff nurses enhances employee satisfaction (Mark et al, 2003). Recognition that the key to retention of nurse employees may rest with first line nurse managers necessitates substantial changes in management models, if these managers are to be successful in this role. Current statistics suggest that the first line nurse managers do not have the time to comprehensively assess and respond to the individual needs of each staff member (AONE, 2002; Kimball et al., 2002). Reassessment and adjustment of manager/employee ratios may be as important to nurse retention as suggested improvements in nurse/patient ratios are to patient care quality (Aiken et al., 2002).

Implementation of the individualized strategies suggested by this model will require additional changes in the way that hospitals approach nurse retention efforts. Rather than rely upon institutional models which assume that employees are defined by

the institutions in which they work, employers will increasingly need to support a mutually satisfying relationship crafted between the employer and individual employees. The nurse manager has been identified by numerous studies as the critical link in this process (Irvine & Evans, 1995; Kimball et al., 2002; McNeese-Smith, 1997; Severinsson & Kamaker, 1999; Taunton et al., 1997). These findings offer nurse managers a client-centered model by which they may initiate individualized retention-oriented strategies. However, these managers will need ongoing development of skills which support implementation of that model. They will also require greater flexibility in determining solutions which meet the identified needs of individual staff members while not exceeding the resources of the institution. This will necessitate re-evaluation of hierarchal structures, adjustments in the interface between human resource managers and nurse managers and support of decentralized decision-making.

Organizations will need to consider strategies and policies related to employee health. A commitment to optimize employee health will require assessment of health care plans and related employee benefits as well as an investment in practices and equipment which promote a healthy work environment. Attention will also need to be directed at programming which supports the development of active coping skills and promotion of healthy behavior and a healthy lifestyle for employees. This commitment to employee health is only one aspect of organizational policy-making which will require re-evaluation and change. The strong influence of professional practice upon the model indicates a need for reflection upon policies related to that variable. This will necessitate the endorsement of systems which promote behaviors related to the professional practice

model and support for employees who face challenges when organizational standards are not met.

The impetus for the conduct of this research was the looming shortage of qualified nurse care-givers and the ramifications of that deficit on the health and well-being of both those providing the care and those in need of qualified nurses. It focused upon the necessity of retaining nurses in the workforce in order to minimize the anticipated shortfall of qualified care-givers. The challenges presented by the overwhelming need for qualified personnel has resulted in recommendations for system-wide changes which support the development of the profession of nursing and creates a professionally satisfying work environment. This research demonstrates that attention also needs to be directed to modifications which address the needs of individual nurse employees. The conceptual model provided in this study presents a first step in that process and offers opportunity for further research and evaluation. It suggests that actions taken to promote a healthy workforce and sustain an effective practice model will benefit employees, the organizations in which they work and the overall needs of the community for a sustainable health care delivery system.

APPENDIX A: PERMISSION LETTERS

DSCPI-90®

February 17, 2005

Diane Randall Andrews, MS, RN
dcra@cfl.rr.com
407-333-9026

Dear Ms. Andrews:

I am pleased to grant you permission to use the Denyes Self-Care Practice Instrument (DSCPI-90) in your proposed dissertation research on nurse retention from the perspective of the individual nurse and his/her self-care. Your work at University of Central Florida in Orlando appears to break new ground in this important area of research. In granting permission I would ask that you not use it in other work or allow others to use it in their research unless you/they contact me in advance. I have previously sent copies of the instrument and scoring instructions. I will attach here also some initial reliability and validity information, and a list of references. Unfortunately these materials have not been updated recently, but I will assume you have updated information from the literature.

As I hold the copyright for the instrument you are requesting to use, and am continuing with the development and use of it, I will make a couple of requests of you in return for sharing the instrument with you. I would ask that you include the copyright information on any instrument copies you use, and that you share with me data that you obtain from use of the instrument. I am in the continuing process of compiling aggregate data files that will enable me to further strengthen the reliability and validity support for the instruments, and would appreciate your assistance with this. I would not use those data without clearly crediting your work, and would request only those data from my instruments and any accompanying demographics that may assist in comparing them with other sample data. I appreciated receiving a copy of information about your planned research and would be very interested and pleased to receive copies of any further abstracts/reports/papers you prepare in which your work with the instrument is described. The major piece however, that I am requesting when your research is completed, is the actual raw data (individual item scores) from the instruments (and accompanying demographics). I am both eager to be supportive of your work, and cognizant of concerns people may have about "sharing" data, thus, if you have any concerns or questions about the instrument or about my requests, I would be happy to discuss them further with you. I would appreciate you contacting me in the future if you wish to consider use of the instrument in subsequent work you undertake.

Please do not hesitate to contact me if you have need of further information. My best to you as you move forward with your proposal.

Sincerely yours,
Mary J. Denyes, PhD, RN, FAAN
Associate Professor
College of Nursing, Wayne State University
5557 Cass Avenue, Detroit, MI 48202
313-577-4076 phone; 313-577-0414 fax
m.denyas@wayne.edu



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Mark, Sayler & Wan (2003): Outcomes in Nursing Administration Project

Received via e-mail April 12, 2005 from Barbara Mark, Ph.D.

Tom and Diane:

The only one of the scales that is "mine" is the participation in decision-making scale, and Diane has my permission to use it.

The autonomy scale was developed by Rose Gerber and her group at the University of Arizona, but I don't know where she is now. Joyce Verran, who is still at Arizona, is a friend of Rose's, and might know where she is.

The nurse-physician collaboration scale was developed by Judith Baggs, and, unfortunately, I don't have a clue where she is now, although I do think she still publishes.

So, sorry to make this more difficult, but I can't give permission to use the two scales that I didn't develop.

Barbara

In e-mail correspondence of 4/12/05 with Judith Baggs, Ph.D., it was confirmed that the nurse-physician scale referred to by Dr. Mark was not the scale developed by Dr. Baggs.

Further research determined that it was the widely used and previously published nurse portion of the Collaborative Practice Scale (Weiss & Davis, 1985).

The satisfaction scale was developed from the widely used Minnesota Satisfaction Questionnaire – communication from Dr. Barbara Mark 4-12-05

April 16, 2005

Diane Randall Andrews, MS, RN
1821 Alaqua Drive
Longwood, FL 32779

Dear Ms. Andrews:

Thank you for your interest in using the Control Over Nursing Practice Scale (CONPS) in your doctoral research. You have our permission to use the instrument. I understand that you will measure the concept of control over practice with the individual R.N. as the unit of analysis, the original intent of the scale. Since the instrument has not yet been published, I will include some additional information related to the CONPS. For our records, please send me the completed Request Form (or a copy) as soon as possible. You may use my Maine address. *I must also ask that you not share this instrument with others or publish it in its entirety since we are in the process of writing a manuscript for publication.*

Conceptual Basis for the CONPS: Control over nursing practice is conceptualized as the *perceived* freedom to evaluate and modify nursing practice, make independent and interdependent decisions related to patient care, exercise authority and take on accountability for the outcomes of those decisions as well as to influence the work environment at the unit level of the organization. "Control", as a noun, refers to the power to direct, manage or regulate; that is, to be in charge. "Freedom to" implies unrestricted authority to act.

CONP vs. Autonomy: Autonomy is a related but somewhat different concept that implies self-governing or functioning independently. Occasionally the two terms, autonomy and control, are combined to form another concept labeled professional autonomy (McKay, 1983; Prescott & Dennis, 1985; Schutzenhofer, 1987) that focuses on *independence in the role* of the professional practitioner. Conceptually, control over nursing practice and professional autonomy differ primarily in whether emphasis is placed on the *authoritative management (control) of the practice itself* or on *role independence (autonomy)*. Spitzer-Lehman (1994) suggested that the concept of empowerment of teams of nurses, rather than autonomy per se, is what enhances accountability and productivity in the delivery of nursing care. Control over nursing practice, then, might be viewed as an outcome of the empowerment of nurses.

Background Information on Scale Development: Maintaining a balance between position power and expert power is a critical issue for professionals employed in bureaucratic organizations. Control of nursing practice, or expert power, has been proposed as one way to increase job satisfaction (Hinshaw, Smeltzer & Atwood, JONA, 1987). The CONPS was created to overcome some of the instrumentation issues in the Hinshaw & Atwood study of anticipated turnover. Different characteristics of professional and technical nursing practice have been described within the National Commission on Nursing Implementation Project (NCNIP, 1987). The commission stated, "professional nurses will be skilled in nursing practice as caregivers, case managers, and problem solvers...[they] will analyze health care data and diagnose problems for clients in all types of care settings" (p.4). They went on to describe various aspects of professional nursing practice. Many of the items in the CONPS were based on the 1987 NCNIP statement for the purpose of measuring *professional nursing practice*. The first extensive use of the CONPS occurred within the 5-year, federally funded Differentiated Group Professional Practice (DGPP) in Nursing project conducted by Verran, Gerber, Milton & Murdaugh (NINR/NIH #UO1 NR02153, 1988-1994). The CONPS continues to perform well when used with RNs employed in a variety of clinical settings.

My colleagues and I wish you success with your research and trust you will send me a brief summary of the results of your study, particularly as related to the use of the CONPS. If I can be of additional assistance, please let me know. During this summer I can be reached at 207-667-9444 or via e-mail at rgerber@dakotacom.net. After November 1, 2005, I will be at 520-908-8714.

Sincerely,


Rose M. Gerber, PhD, RN
Associate Professor Emerita

3100 S. Kinney Road, #246 (Home)
Tucson, AZ 85713-5505



Department of Community
Health Systems
School of Nursing
University of California
San Francisco

San Francisco, Ca 94143-0608
tel: 415/476-1504
fax: 415/476-6042

May 11, 2005

Diane R. Andrews, MS, RN
Doctoral Candidate
College of Health and Public Affairs
HPAI- Suite 365
University of Central Florida
Orlando, FL 32816-2200

Dear Ms. Andrews:

You have my permission to use the Collaborative Practice Scales in your upcoming research. Please send me an abstract of your findings when the study has been completed. Good luck in your research.

Sincerely,

Sandra J. Weiss, RN, PhD, DNSc, FAAN
Professor and Eschbach Endowed Chair
Department of Community Health Systems



Affiliated with the:
WORLD HEALTH ORGANIZATION
Collaborating Center for Research
and Clinical Training in Nursing

APPENDIX B: RESEARCH INSTRUMENT

Environmental Response Questionnaire

You have been selected to participate in a study of registered nurses which is being conducted as doctoral research in public affairs at the University of Central Florida. It is being undertaken to better understand how nurses respond to the work setting. The survey will take approximately 30 minutes to complete. By participating you will be taking part in an effort to support improvements in the practice setting.

Your participation in this study is completely confidential. The results of this research will be available to you and your employer in a collective form as part of a final report. Your individual responses will be used by the researcher for analytical purposes only and no individual responses be shared with your employer.

This survey consists of two sections

- ◇ The first requests demographic information. This information is for statistical purposes only and will not be used to either identify you or the setting in which you practice.
- ◇ The second is a series of questions which ask you to rate your response to each item.

The decision to respond to each item is completely voluntary. Your responses to each of these questions is confidential and anonymous. Completion and return of the survey indicates your consent to participate in this research.

**PLEASE DISCARD THE OUTER ENVELOPE.
USE THE ENCLOSED ENVELOPE TO RETURN
THE COMPLETED SURVEY.**

FOR ADMINISTRATIVE PURPOSES ONLY

Please Continue 

These questions are intended to help describe your professional background. Please answer each question to the best of your ability.

1. Are you a **registered nurse**?
 Yes No
2. In what month and year did you **begin** your current job?

month
year
3. In what type of **basic** nursing education program were you prepared to become a **registered nurse**?
 Diploma Baccalaureate Degree
 Associate Degree Master's/Doctorate Degree
4. In what month and year did you graduate from that program?

month
year

5. What is your **highest** educational level in nursing?
 Diploma Baccalaureate Degree
 Associate Degree Master's/Doctorate Degree

6. What is the year of your birth?

year of birth

7. What is your gender?
 Male Female
8. What is your ethnic/racial background?
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White, Hispanic
 White, Non-Hispanic

9. What is your current marital status?
 Now married
 Widowed, Divorced, Separated
 Never Married
10. Are you responsible for the care of any dependent family members?
 Yes No

11. What is the approximate bed capacity of the nursing unit on which you work?

bed capacity of nursing unit

12. How would you describe the primary needs of your patients?
 Medical Surgical

These questions are intended to help describe your demographic characteristics. Please answer each of the following questions to the best of your ability using the choices which follow each statement.

Please Continue 

Questions 13 through 19 ask about your participation in decision-making on your nursing unit.

To what degree do you participate in decisions about:

For each question, place a check mark in the box that most closely corresponds to your level of participation.


	Do not participate at all	Participate rarely	Participate to some degree	Participate to a great degree	Participate to a very great degree
13. Determining the budget for this unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Hiring nursing staff on this unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The evaluation of nursing care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Planning and organizing the nursing care on a day-to-day basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Long-range plans for this unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The adoption of new nursing policies on this unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The adoption of new nursing care programs on this unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questions 18 to 28 ask about working together with physicians.

To what degree do you:

For each question, place a check mark in the box that most closely corresponds to your level of participation.

	Almost never	Rarely	Sometimes	Often	Quite frequently	Almost always
20. Ask physicians about their expectations regarding the degree of your involvement in health care decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Negotiate with physicians to establish their responsibilities for discussing different kinds of information with patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Clarify the scope of your professional expertise when it is greater than physicians think it is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Discuss with physicians the degree to which you want to be involved in planning aspects of patient care.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Suggest to physicians patient care approaches you think would be useful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Discuss with physicians areas of practice that reside more within the realm of medicine than nursing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Tell physicians when, in your judgment, orders seem inappropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Tell physicians of any difficulties you foresee in the patient's ability to deal with treatment options and their consequences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Inform physicians about areas of practice that are unique to nursing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


Please Continue 

Questions 29 to 49 ask about your freedom to engage in a variety of different activities.

For each question, place a check mark in the box that most closely corresponds to your level of agreement.

You are free to:

	Strongly Disagree	Disagree	Disagree Slightly	Agree Slightly	Agree	Strongly Agree
29. Evaluate current nursing policies and procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Evaluate the outcomes of nursing care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Consult with others when solving complex care problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Influence standards of nursing practice in this hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Modify or adapt patient care procedures and protocols	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Implement nursing care in an efficient manner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Provide holistic, patient-oriented care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Plan strategies to meet your own developmental needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Practice clinical skills to the best of your ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Analyze problems critically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Plan care with other members of the health care team such as physicians, dieticians and therapists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Act on your own decisions related to care giving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Be creative in the delivery of nursing care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Introduce new nursing practices and procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Identify problems in the delivery of nursing care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Coordinate care between patients and health care services outside the hospital ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Adjust nursing care plans to meet patients' changing needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Negotiate your time off duty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Exert the authority need to fulfill your job responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Ask for assistance from other staff members when needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Utilize research findings to improve nursing practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


Please Continue 

Questions 50 to 57 ask about your experiences.

Each question has a somewhat different response option.

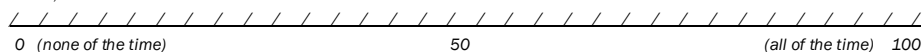
Place a check mark in the box that most closely corresponds to your circumstance.

50. All in all, how satisfied would you say that you are with your job?
- Very satisfied
 - Somewhat satisfied
 - Somewhat dissatisfied
 - Very dissatisfied
51. All in all, if you knew what working in this hospital would be like, do you think you would...
- without hesitation take the same job
 - have some second thoughts about taking the same job
 - definitely not take the same job
52. All in all, would you say that you....
- are more satisfied with your current job than most nurses
 - are less satisfied with you current job than most nurses
 - have about the same level of satisfaction with you current job as most nurses
53. All in all, you are...
- very satisfied with overall working conditions
 - somewhat satisfied with overall working conditions
 - somewhat dissatisfied with overall working conditions
 - very dissatisfied with overall working conditions
54. To the best of your ability to recall, during the last three months how many times have you missed regularly scheduled work?
- | | |
|-------------------------------|---------------------------------------|
| <input type="checkbox"/> none | <input type="checkbox"/> three |
| <input type="checkbox"/> one | <input type="checkbox"/> four |
| <input type="checkbox"/> two | <input type="checkbox"/> five or more |
55. To the best of your ability to recall, during the last three months how may days have you missed from regularly scheduled work?
- | | |
|-------------------------------|---------------------------------------|
| <input type="checkbox"/> none | <input type="checkbox"/> three |
| <input type="checkbox"/> one | <input type="checkbox"/> four |
| <input type="checkbox"/> two | <input type="checkbox"/> five or more |
56. All in all, during the next 12 months, how likely are you seek a job on another nursing unit or in another organization?
- very unlikely
 - somewhat unlikely
 - somewhat likely
 - very likely
57. All in all, how much longer do you expect to work on this nursing unit?
- | | |
|---|--|
| <input type="checkbox"/> less than 1 year | <input type="checkbox"/> 3 to 4 years |
| <input type="checkbox"/> 1 to 2 years | <input type="checkbox"/> 4 to 5 years |
| <input type="checkbox"/> 2 to 3 years | <input type="checkbox"/> more than 5 years |

Please Continue 

Questions 58 to 75 ask about behaviors related to self-care (DSCPI-90©). Please fill in the number that best answers each question for you. There are no right or wrong answers and please feel free to write in comments.

Please fill in any number from 0 to 100 that best answers each question for you. 0 means none of the time; 100 means all of the time; numbers in between mean you answer is between none and all of the time. You can think of it like a line with 0 at one end, 100 at the other end, and all the other numbers in between like this.



- _____ 58. What percent of the time do you do things that are good for your health?
- _____ 59. What percent of the time do you take good care of your health?
- _____ 60. What percent of the time do you follow through on decisions you make about your health?
- _____ 61. What percent of the time do you put off doing things that would be good for your health?
- _____ 62. What percent of the time do you eat breakfast?
- _____ 63. What percent of the time do you eat the kinds of foods you think are necessary for your health?
- _____ 64. What percent of the time do you eat a balanced diet?
- _____ 65. What percent of the time do you do things to maintain or achieve good nutrition for yourself?
- _____ 66. What percent of the time do you do things to get the amount of activity you think is necessary for your health?
- _____ 67. What percent of the time do you do things to get the amount of rest you think is necessary for your health?
- _____ 68. What percent of the time do you do things to maintain or achieve a balance between rest and activity?
- _____ 69. What percent of the time do you do things to get the amount of time alone you think is necessary for your health?
- _____ 70. What percent of the time do you do things to get the amount of time with others that you think is necessary for your health?
- _____ 71. What percent of the time do you do things to maintain or achieve a balance between time alone and time with others?
- _____ 72. What percent of the time do you do things to keep you bladder and bowel habits normal?
- _____ 73. What percent of the time do you do things to keep yourself safe?
- _____ 74. When you feel stressed, what percent of the time do you do things to feel less stressed?
- _____ 75. What percent of the time do you do things that help you to "be all that you can be" as a person?

Questions 76 to 82 ask about your health.

For each of the following questions, please place a check mark in the one box that best describes your answer.

76. In general, would you say your health is:

- excellent
- very good
- good
- fair
- poor

77. The following questions are about activities you might do during a typical day. Does your health limit you in these activities? If so, how ?

Yes, Limited a lot	Yes, Limited a little	No, not limited at all
-----------------------	-----------------------------	---------------------------

- a Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.....
- b Climbing several flights of stairs.....

78. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
--------------------	---------------------	---------------------	-------------------------	---------------------

- a Accomplished less than you would like.....
- b Were limited in the kind of work or other activities.....

79. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
--------------------	---------------------	---------------------	-------------------------	---------------------

- a Accomplished less than you would like.....
- b Did work or other activities less carefully than usual.....

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 (SF12v2 Standard, US Version 2.0)

Please Continue 

80. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

- not at all
- a little bit
- moderately
- quite a bit
- extremely

81. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks..

All of the time	Most of the time	Some of the time	A little of the time	None of the time
-----------------	------------------	------------------	----------------------	------------------

- a Have you felt calm and peaceful?.....
- b Did you have a lot of energy.....
- c Have you felt downhearted and depressed?.....

82. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

*Thank you for completing these questions.
Please continue to the back page.*

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(SF12v2 Standard, US Version 2.0)

Please Continue 

Thank you for taking the time to complete this survey.

Please use the following space to share any additional comments.

Please place completed survey in the enclosed envelope and seal.

The pre-posted and addressed envelope is to be mailed via the US postal system.

Mail the sealed and posted envelope through any conventional US postal service outlet.

If you would like a report of the results at the completion of this study please send the attached request form under separate cover to:

*Diane Andrews MS, RN
Doctoral Candidate
University of Central Florida
1821 Alaqua Drive
Longwood, FL 32779*

Response Form

I would like to receive a copy of the final report. Please send to:

First Name

Last Name

Street Address

City

State

Zip Code

THANK YOU FOR TAKING THE TIME TO PARTICIPATE IN A STUDY OF REGISTERED NURSE RESPONSE TO THE WORK ENVIRONMENT. IF YOU WOULD LIKE A COPY OF THE FINAL REPORT, PLEASE COMPLETE THIS FORM AND MAIL UNDER SEPARATE COVER TO:

Diane Randall Andrews, MS RN

Doctoral Candidate

University of Central Florida

1821 Alaqua Drive

Longwood, Florida 32779

APPENDIX C: INSTITUTIONAL REVIEW

University of Central Florida: Institutional Review Board



Office of Research

March 7, 2005

Diane Andrews
1821 Alacqua Drive
Longwood, FL 32779

Dear Ms. Andrews:

With reference to your protocol entitled, "The Effect of Job Strain in the Hospital Environment: Applying Orem's Theory of Self-Care" I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office. **The expiration date for this study will be 3/5/06.** Should there be a need to extend this study, a Continuing Review form must be submitted to the IRB Office for review by the Chairman or full IRB at least one month prior to the expiration date. This is the responsibility of the investigator.

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board through use of the Addendum/Modification Request form. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur.

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Barbara Ward

Barbara Ward, CIM
IRB Coordinator

Copy: IRB file

Florida Hospital: Office of Research Administration



**FLORIDA
HOSPITAL**

601 East Rollins Street
Orlando, Florida 32803
407/896-6611

May 16, 2005

Lindell Joseph, RN
Research Coordinator
FH Nursing Research

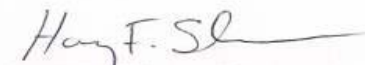
Re: Sponsor Protocol # N/A
FH Project #1384-1850 – **APPROVED**
FH IRB #2005.05.02
Diane Andrews, RN, MS
Clinical review gds
Budget review J/A J/K

Dear Lindell:

Florida Hospital Medical Center has given administrative approval effective May 16, 2005, for the performance of the investigative protocol **“The Effect of Job Stain in the Hospital Environment: Applying Orem’s Theory of Self-Care”** at its Orlando campus with Diane Andrews, RN, MS as the Principal Investigator.

The hospital has assigned project number 1384-1850 to the protocol for internal reference and accounting processing. Please use this project number when working with the Office of Research Administration and on all documents (purchase orders, vouchers, memoranda, reporting patients, etc.) relating to this project.

Sincerely,


Harry F. Skidmore, Director
Office of Research Administration

cc: Laura Orem, IRB

Florida Hospital: Institutional Review Board

IRB Approval Date:
04/25/05
Approval expires no
later than: 04/11/06



Florida Hospital
Institutional Review Board
601 East Rollins St.
Medical Plaza, Suite 402
Orlando, FL 32803
Telephone: (407) 303-1965
Fax: (407) 303-3638

Diane R. Andrews
1821 Alaqua Dr.
Longwood FL 32779

Dear Ms. Andrews:

Concerning the following Study: FH IRB #: 2005.05.02; Sponsor #: N/A
Title: The Effect of Job Strain in the Hospital Environment: Applying Orem's Theory of Self-Care
Sub-Inv.: None; Est. enr. At FH 700

Supporting Documents: Study Proposal dated April 2005; Draft Environmental Response Questionnaire; Letter of approval from UCF dated 03/07/05; Letter dated 04/01/05 requesting waiver of informed consent; Waiver of Authorization Form dated 04/01/05; Informed Consent Waiver Granted Based on minimal risk of the study; Waiver of Authorization Granted Based on: The investigator will de-identify subject information and no other entities will have access to completed surveys prior to de-identification. The IRB received and accepted the HIPAA Waiver of Authorization Form signed and dated by the investigator on 04.01.05

In response to your request and on behalf of the Florida Hospital IRB, on April 25, 2005, the IRB granted expedited approval to the study as noted above, based on categories approved in 21 CFR 56.110 and 45 CFR 46.110. Unless the informed consent requirement was waived, you are required to use the IRB approved informed consent.

Approval of the research project(s) is granted until **April 11, 2006**. At that time the IRB must be made aware of the status of your project(s). A progress report will be required. [21 CFR 56.109 (f)] If the project has not been completed, you may request renewed approval.

It is your responsibility to ensure that approval has been gained for this study from the Office of Research Administration and other appropriate hospital committees and/or departments prior to enrolling subjects into this study at Florida Hospital.

It is your responsibility to remain in compliance with all applicable state and federal regulations regarding research as well as adhering to the Florida Hospital IRB *Handbook for the Protection of Human Research Subjects*.

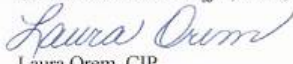
You are reminded that a change in the protocol of the project requires resubmission and approval of the IRB prior to initiation of the change in protocol or informed consent.

It is the responsibility of the principal investigator to report to the Chair of the Institutional Review Board within 5 days, and in writing, any related unanticipated problems involving risks to subjects or others, such as adverse reactions to biological drugs, radioisotopes or to medical devices.

Florida Hospital Institutional Review Board complies with federal and state regulations and GCP guidelines. Failure of the principal investigator or members of his/her research team to abide by the Florida Hospital IRB *Handbook for the Protection of Human Research Subjects* or failure to abide by FDA/OHRP Regulations governing this research may result in suspension and/or termination of this study.

Florida Hospital Institutional Review Board has the authority to review all documentation and the informed consent process for studies approved through the Florida Hospital IRB.

On behalf of Fouad Hajjar, M.D., IRB Chairperson, this letter is signed by:


Laura Orem, CIP
Program Manager
Florida Hospital IRB

Florida Hospital: Nursing Research Council



**FLORIDA
HOSPITAL**

601 East Rollins Street
Orlando, Florida 32803

Lindell Joseph, MS, RN
Research Consultant
Institute for Nursing Research and innovation
601 East Rollins Street
Orlando, FL 32803

May 5, 2005

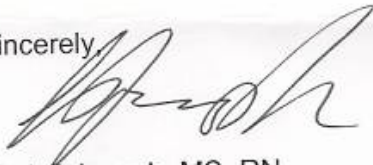
Diane Andrews, RN, MSN
61821 Alaqua Drive
Longwood, FL 32779

Dear Ms. Andrews:

On behalf of the Nursing Research Council at Florida Hospital, congratulations!
Your nursing research proposal (#1384-1850) has been reviewed and approved.

You will be notified by mail about the date of your presentation to the Nursing Research Council. If you have any questions, I may be reached by calling (407) 228-9893. The research council wishes you success as you implement your project!

Sincerely,



Lindell Joseph, MS, RN
Research Consultant

Florida Hospital: Human Resources Department

From: [Tibbits, Dick](#)

To: dcra@cfl.rr.com

Cc: [Marcarelli, Karen](#) ; [Hamilton, Connie](#) ; [Miller, Claire](#)

Sent: Saturday, March 26, 2005 9:50 PM

Subject: RE: Doctoral Research for Diane Andrews

Diane,

Your study has been approved for implementation at Florida Hospital. Please work directly with Karen on implementation. HR will also work closely with Karen in assisting you with obtaining the names of the RN's you wish to communicate with. Claire Miller will be your contact person within HR to obtain the mailing list of RN's. We look forward to your results and its positive impact on our nursing retention and satisfaction initiatives at Florida Hospital.

Dick Tibbits

APPENDIX D: ADVERTISEMENTS

Letter



601 East Rollins Street
Orlando, FL 32803

Please accept my invitation to participate in a nursing research project intended to better understand how registered nurses are affected by and respond to their work environment. This research is being undertaken as a dissertation research project conducted by Diane Andrews. Diane is a registered nurse who is completing a doctorate in public affairs at the University of Central Florida. Her area of special interest is nurse retention.

Diane is surveying full-time registered nurses working in PCU and medical-surgical settings throughout the Florida Hospital system. Any responses you provide will remain completely anonymous and confidential. Upon completion of the study Diane will share her collective results with us in order that we may use the assessment to support the continued development of nursing excellence. She is also happy to provide you with the study's findings and has provided you with a request form if you would like her to send you that information.

The survey should take no more than 30 minutes of your time. The questions have been developed in such a way that you only need to check the box of the response which most accurately represents your viewpoint. When you are finished, your survey is mailed directly to Ms. Andrews in the stamped envelope which accompanies the survey. At no time will anyone associated with Florida Hospital have access to your responses. If you are willing to take advantage of this opportunity, you will have helped support the development of a better understanding of the concerns facing nurses in today's work environment.

Thank-you,

Karen Marcarelli
Vice President
Patient Care Services

Operated by the
Seventh-day Adventist Church

REMINDER: NURSING SURVEY

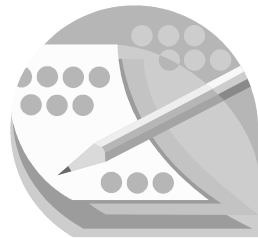
You were recently mailed a survey requesting your participation in a research study intended to better understand how nurses respond to the work setting. Registered nurses working in PCU and medical-surgical settings at all Florida Hospital campuses have been requested to participate. Your responses are important to ensure meaningful interpretation of the data. If you have already returned your survey, thank-you. If not, please consider completing and returning the survey today.

QUESTIONS OR COMMENTS MAY BE ADDRESSED TO:

Diane R. Andrews, MS, RN
Doctoral Candidate, UCF
1821 Alaqua Drive
Longwood, Florida 32779

Phone: 407-333-9026

Email: dcra@cfl.rr.com



Full-time RNs from Florida Hospital PCUs and medical-surgical nursing units are invited to complete a mailed survey as part of a study to better understand how RNs are affected by and respond to their work environment. This study is being conducted as doctoral research at the University of Central Florida. All participants will remain anonymous and responses are confidential.

Registered Nurses

Your Help is Needed!

Surveys will be mailed September 12, 2005. Please watch for your survey and return it as soon as possible.

Questions or Comments May Be Addressed to:
Diane R. Andrews MS, RN
Doctoral Candidate, UCF
407-333-9026

APPENDIX E: CORRELATIONS

Table 24: Correlations for Generic Health Status

	PF	RP	BP	GH	VT	SF	RE	MH
PF	1							
RP	.465**	1						
BP	.469**	.549**	1					
GH	.372**	.354**	.356**	1				
VT	.239**	.228**	.296**	.298**	1			
SF	.138*	.295**	.340**	.335**	.397**	1		
RE	.122*	.396**	.275**	.254**	.302**	.439**	1	
MH	.064	.230**	.212**	.238**	.406**	.469**	.555**	1
N	308	308	308	308	308	308	308	308
Mean	87.8247	84.7403	81.8994	72.3052	54.6266	80.763	85.7143	64.6948
Standard Deviation	19.9219	20.3164	21.898	20.436	23.0268	25.549	18.627	18.56

Note: PF = physical functioning; RP = role physical; BP = pain; GH = general health perception; VT = vitality; SF = social functioning; RE = role emotional; MH = mental health

Note: **correlation significant @ 0.01 (2-tailed); *correlation significant @ 0.05 (2-tailed)

Table 25: Correlations for Decision-Making

	D1	D2	D3	D4	D5	D6	D7
D1	1						
D2	.622**	1					
D3	.415**	.499**	1				
D4	.202**	.265**	.579**	1			
D5	.416**	.502**	.557**	.460**	1		
D6	.415**	.460**	.557**	.363**	.669**	1	
D7	.470**	.481**	.560**	.387**	.660**	.866**	1
N	308	308	308	308	308	308	308
Mean	1.363	1.456	2.564	3.063	2.039	2.167	2.141
Standard Deviation	0.8005	0.9578	1.3686	1.4459	1.1718	1.2221	1.2774

Note: **correlation significant @ $p = .01$ (2-tailed)

Table 26: Correlations for Collaboration

	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1								
C2	.649**	1							
C3	.471**	.557**	1						
C4	.699**	.682**	.554**	1					
C5	.415**	.581**	.396**	.577**	1				
C6	.478**	.558**	.544**	.557**	.596**	1			
C7	.254**	.457**	.412**	.365**	.506**	.503**	1		
C8	.232**	.486**	.417**	.444**	.572**	.479**	.692**	1	
C9	.399**	.498**	.453**	.511**	.438**	.593**	.398**	.471**	1
N	308	308	308	308	308	308	308	308	308
Mean	2.33	2.757	2.65	2.7	3.6	2.508	3.203	3.521	2.2279
Standard Deviation	1.3502	1.3957	1.3827	1.3598	1.2675	1.3067	1.2392	1.2242	1.603

Note: **correlation significant @ $p = .01$ (2-tailed)

Table 27: Correlations for Autonomy

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
A1	1										
A2	.521**	1									
A3	.334**	.350**	1								
A4	.525**	.410**	.339**	1							
A5	.527**	.524**	.280**	.654**	1						
A6	.119*	.264**	.335**	.300**	.292**	1					
A7	.180**	.218**	.383**	.322**	.264**	.637**	1				
A8	.225**	.427**	.345**	.374**	.329**	.423**	.488**	1			
A9	0.044	.113*	.257**	.247**	.194**	.539**	.565**	.461**	1		
A10	0.089	.184**	.281**	.214**	.167**	.489**	.505**	.502**	.672**	1	
A11	.216**	.395**	.265**	.320**	.273**	.303**	.270**	.371**	.359**	.390**	1
A12	.205**	.221**	.271**	.306**	.397**	.371**	.349**	.284**	.414**	.393**	.435**
A13	0.1	.117*	0.092	.151**	.160**	0.084	.188*	.175**	0.094	.155**	.135*
A14	.431**	.385**	.288**	.565**	.636**	.211**	.289**	.363**	.230**	.260**	.327**
A15	.307**	.354**	.338**	.394**	.406**	.336**	.357**	.403**	.310**	.366**	.374**
A16	.330**	.341**	.267**	.433**	.401**	.174**	.204**	.299**	.193**	.177**	.288**
A17	.217**	.326**	.366**	.368**	.312**	.493**	.448**	.465**	.497**	.475**	.401**
A18	.145*	.143*	.176**	.201**	.220**	.129*	.197**	.255**	.305**	.223**	.216**
A19	.306**	.343**	.386**	.365**	.381**	.388*	.437**	.457**	.452**	.433**	.298**
A20	0.091	.202**	.338**	.211**	.112*	.367**	.363**	.381**	.400**	.390**	.389**
A21	.302**	.385**	.285**	.417**	.434**	.282**	.343**	.357**	.313**	.350**	.401**
N	308	308	308	308	308	308	308	308	308	308	308
Mean	3.544	4.308	5.197	3.463	3.505	5.019	4.899	4.723	5.279	5.295	4.864
Standard Deviation	1.7023	1.4093	1.0619	1.5799	1.5742	1.0614	1.1498	1.1855	0.9331	0.8429	1.1532

	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21
A1										
A2										
A3										
A4										
A5										
A6										
A7										
A8										
A9										
A10										
A11										
A12	1									
A13	.207**	1								
A14	.437**	.179**	1							
A15	.313**	.158**	.481**	1						
A16	.279**	.144*	.469**	.311**	1					
A17	.385**	.180**	.363**	.421**	.420**	1				
A18	.320**	0.073	.287**	.233**	.291**	.306**	1			
A19	.430**	.132*	.407**	.445**	.278**	.531**	.467**	1		
A20	.350**	0.046	.163**	.306**	.172**	.353**	.289**	.404**	1	
A21	.411**	.159**	.517**	.450**	.390**	.406**	.254**	.483**	.340**	1
N	308	308	308	308	308	308	308	308	308	308
Mean	4.912	5.068	3.309	4.58	3.52	5.007	4.803	4.633	5.396	4.023
Standard Deviation	1.0808	3.0456	1.5175	1.1735	1.519	0.9951	1.2992	1.1634	0.7819	1.4357

Note: **correlation significant @ 0.01 (2-tailed); *correlation significant @ 0.05 (2-tailed)

Table 28: Correlations for Self Care Practice

	SCP1	SCP2	SCP3	SCP4	SCP5	SCP6	SCP7	SCP8	SCP9
SCP1	1								
SCP2	.820**	1							
SCP3	.707**	.763**	1						
SCP4	.393**	.431**	.485**	1					
SCP5	.326**	.286**	.320**	.148**	1				
SCP6	.575**	.617**	.568**	.275**	.415**	1			
SCP7	.601**	.652**	.578**	.350**	.368**	.826**	1		
SCP8	.667**	.720**	.615**	.399**	.392**	.806**	.862**	1	
SCP9	.670**	.674**	.611**	.407**	.246**	.473**	.496**	.597**	1
SCP10	.364**	.426**	.393**	.259**	.131**	.322**	.329**	.389**	.425**
SCP11	.515**	.550**	.486**	.343**	.167**	.417**	.412**	.476**	.535**
SCP12	.317**	.354**	.300**	.176**	0.099	.243**	.251**	.320**	.385**
SCP13	.420**	.418**	.401**	.248**	.208**	.363**	.397**	.444**	.429**
SCP14	.376**	.413**	.294**	.212**	.116**	.326**	.339**	.376**	.450**
SCP15	.315**	.336**	.322**	.261**	.203**	.311**	.349**	.321**	.260**
SCP16	.327**	.383**	.370**	.234**	.121**	.326**	.361**	.314**	.231**
SCP17	.398**	.379**	.285**	.228**	0.102	.360**	.346**	.377**	.309**
SCP18	.449**	.474**	.413**	.243**	.136**	.377**	.330**	.399**	.445**
N	308	308	308	308	308	308	308	308	308
Mean	62.64	64.84	64.248	52.23	70.44	67.77	65.428	65.428	52.219
Standard Deviation	22.73	23.23	24.49	25.396	32.805	21.76	22.384	22.284	25.031

	SCP10	SCP11	SCP12	SCP13	SCP14	SCP15	SCP16	SCP17	SCP18
SCP1									
SCP2									
SCP3									
SCP4									
SCP5									
SCP6									
SCP7									
SCP8									
SCP9									
SCP10	1								
SCP11	.774**	1							
SCP12	.513**	.531**	1						
SCP13	.330**	.384**	.459**	1					
SCP14	.380**	.461**	.662**	.662**	1				
SCP15	.293**	.337**	.151**	.309**	.314**	1			
SCP16	.234**	.324**	.143**	.282**	.253**	.496**	1		
SCP17	.383**	.489**	.421**	.411**	.454**	.338**	.395**	1	
SCP18	.379**	.456**	.409**	.412**	.431**	.323**	.357**	.569**	1
N	308	308	308	308	308	308	308	308	308
Mean	61.31	58.702	53.941	56.398	52.37	66.494	83.636	61.197	66.293
Standard Deviation	23.879	22.17	28.018	25.916	26.312	29.718	18.719	25.244	24.219

Note: *correlation significant @ $p \leq .01$ (two-tailed); SCP = self care practice

Table 29: Correlations for Propensity to Leave

	DS1	DS2	DS3	DS4	AB1	AB2	IL1	IL2
DS1	1							
DS2	.588**	1						
DS3	.517**	.452**	1					
DS4	.689**	.595**	.520**	1				
AB1	0.039	-0.028	0.013	0.041	1			
AB2	0.016	-0.039	0.005	0.029	.944**	1		
IL1	.420**	.519**	.408**	.434**	.129**	.125**	1	
IL2	.241**	.216**	.274**	.268**	-0.004	-0.003	.520**	1
N	308	308	308	308	308	308	308	308
Mean	1.997	1.575	1.63	2.256	1.812	1.859	2.166	1.195
Standard Deviation	0.755	0.591	0.665	0.784	1.29	1.32	1.09	0.397

Note: DS = dissatisfaction; AB = absence; IL = intent to leave

Note: **correlation significant @ $p \leq .01$ (two-tailed)

LIST OF REFERENCES

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