THE RELATIONSHIP OF ORGANIZATIONAL, PERSONAL, AND INTERPERSONAL FACTORS TO ROLE CONFLICT, ROLE AMBIGUITY, AND ROLE STRAIN IN HEAD NURSES

by

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A DISSERTATION

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This study described the relationship of organizational interpersonal, and personal factors to head nurse role conflict, role ambiguity, and role strain. Data were collected from 195 head nurses employed in 17 Alabama hospitals.

Personal characteristics measured included age, experience, education, and personality. Organizational characteristics measured were hospital bed size, hospital financial base, clinical area, type of nursing care modality, number of employees supervised, number of role sender groups, and number of non-subordinate role sender groups. The interpersonal factor of leadership style was measured. The dependent variables were role conflict, role ambiguity, and role strain.

Role episode theory guided the study. Data were analyzed using chi-square tests, bivariate correlation coefficients, and multiple regression procedures.

Based on the findings, the following conclusions were drawn:

1. The majority of variance in subjects' role conflict, ambiguity, and strain scores was unexplained by the variables tested.
2. In sub-sample tests on subjects with 2 years or less experience, the amount of variance explained relative to conflict and ambiguity was greater.

3. The variables influencing the occurrence of role stress or strain changed over time, some more strongly related to the phenomena early in the position, others emerging as strongly associated later.

Implications from the study included:
1. Nursing administrators should be aware that head nurses are at risk for role stress and strain.
2. Within the practice setting support systems should be identified and utilized to help head nurses cope with role demands.
3. Educators should introduce more managerial concepts and behaviors to student nurses to prepare them for the resource manager role. Mastery of delegation, organization, planning, and group leadership skills is important to the clinical nurse. These skills later became the basis for successful enactment of the head nurse role. Earlier socialization to the manager role may lessen the potential for role stress or strain.
4. Further research is needed in several areas: (a) replication studies, (b) extension of the present study, and (c) development of experimental designs. Further refinement of the proposed model for head nurses can then be accomplished. Manipulation and control of factors associated with head nurse role stress will then be possible.
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CHAPTER I

Introduction

The health care system in the United States has undergone rapid change since the early 1980s. With the passage of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), hospital reimbursement for inpatient care of Medicare beneficiaries shifted from a cost-based formula to a prospective payment system (PPS). Under the cost-based approach hospitals billed Medicare for their allowable costs and were reimbursed for those costs. Under PPS patients were classified by means of their discharge diagnoses into Diagnostic Related Groups (DRGs), each of which has a pre-determined reimbursement rate. Hospitals receive payment for inpatient care according to each patient's DRG classification regardless of the actual cost to the hospital of providing that care. Hospitals, therefore, are now at risk for financial loss if they expend resources beyond the reimbursement capacity of the DRG payment.

The impact of this change in reimbursement is more dramatic when one considers that Medicare patients occupy approximately 40% of hospital beds on any given day (Andreoli & Musser, 1985). In addition, the proportion of the population aged 65 and older has increased from 10% in 1975 to 11% in 1985 and is projected to be 20% by 2030 (Pegels, 1981). Increasingly, hospitals will find Medicare beneficiaries occupying their beds, yet producing potentially less revenue than in previous years.

The changes described above have taken place in the external environment of hospitals. These changes, which have potential for profound
impact on the revenue-producing capacity of hospitals, should also pro-
duce changes within the hospital organization. This view is consistent
with an open systems model of organizations which holds that the orga-
ization:

Is eternally dependent upon its environment for the absorption of
its products and services, and for providing the necessary input
which reactivates the process of transformation and thereby main-
tains the organization in existence (Kahn, Wolfe, Quinn, Snoek, &

Kahn et al. further stated that the "continuing cycles of input-
transformation-output consist of the motivated acts of human beings"
(employees) (p. 13).

The largest group of employees within a hospital organization is
found in the nursing department. These employees are also the people
who are most closely involved in the hospital's product, patient care.
Given that the external environment of hospitals has changed and that
the internal environment has responded in some way to potential or actual
diminishing resources (inputs), it is assumed that nursing departmen
t employees have also been affected.

The effect of economic changes on health care can be described as
shifting from a goal-driven model to a resource-driven model. Such a
shift appears to be in conflict with the prevailing philosophy of nurs-
ing. Students of nursing are educated according to the nursing process;
assess, plan, implement, and evaluate. Assessment considers patient
needs and planning sets goals. Actions are implemented to meet goals
which are subsequently evaluated for outcome. Traditionally, there has
been little emphasis on resource availability or cost to meet needs or
accomplish goals within the hospital setting. If hospitals have
altered their internal environments to reflect resource availability and
cost, has this alteration conflicted with nurses' view of their role?
The organization of nursing care delivery within hospitals generally involves staff nurses (who deliver hands-on patient care) reporting to a head nurse (also called nurse manager, patient care coordinator, or clinical coordinator). This individual holds both a managerial role and a clinical, professional role. The head nurse is the link in the organization between patient care (the hospital's output) and hospital management (Stevens, 1974). Katz and Kahn (1978) referred to such individuals as at the "boundary between the rank-and-file and the managerial structure" (p. 199) and predicted problems in the reconciliation of the demands of two sub-roles. In their discussion of the head nurse role, Byers and Klink (1978) stated that:

As the nurse moves into . . . nursing management, the actual exercise of clinical skills does decrease, and in the hospital of today, the exercise of knowledge and skills related to management concepts and principles greatly increases . . . . The nursing administrative staff is therefore involved in two distinct roles or professions -- nursing and management -- and mastery of both is essential. Specifically, nursing managers are responsible for the management of nursing care of patients, management of personnel, and operational management (p. 120).

It can be concluded that the potential for conflict exists between the professional nurse role and the managerial role with its increasing emphasis on resource control and substitution.

The head nurse role has been described by various authors as stressful or potentially stressful (Carter, 1980; Darling & McGrath, 1983; Dooley & Hauben, 1979; Gambacorta, 1983; Gleeson, Nestor, & Riddell, 1983; Howarth, 1982; Johnston, 1983; Nyberg, 1982; Thornton, 1982; Traska, 1982). Jennings (1986) reported that there have been very few research studies to support that contention, however. Further, this author stated that:

Perceptions of the demanding head nurse role can, at best, be called speculative problem identification. I do not suggest that
head nurse stress does not exist simply because there is limited empirical evidence . . . stress in head nurses has not been studied adequately (p. 6).

Purpose

The purpose of this study was to describe the relationship of organizational, interpersonal, and personal factors to the occurrence of role conflict, role ambiguity, and role strain in head nurses.

Theoretical Framework

The theoretical framework for this study was the theory of role dynamics developed by Kahn et al. (1964). Within this framework the individual is linked to the organization by means of the concept of office. "Office is essentially a relational concept, defining one position in terms of its relationship to others and to the system as a whole" (Kahn et al., 1964, p. 13).

Role is defined by Kahn et al. (1964) as a set of activities which are associated with each office. The role is to be performed by whoever occupies the office. The focal person is the individual who occupies the office under consideration.

Each office within an organization is directly related to some other offices, indirectly related to some others, and only remotely related to all other offices within the organization (Kahn et al., 1964). Those offices which directly relate to a specific office make up the role set of that office. The individuals occupying the directly related offices to a specific office constitute the role set for the focal person. The role set usually includes the focal person's immediate superior, subordinates, and members of other departments with whom the focal person works closely. The role set can also include people outside the organization who are concerned with the individual's behavior in the
organization (i.e., spouse, customers, and professional organizations). Each of these outside people or groups can also influence the focal person's job behavior (Kahn et al., 1964).

Members of the role set are dependent upon the focal person's performance in some way. Therefore, they hold beliefs and attitudes about what activities the individual should or should not carry out and how those activities should be conducted. This set of beliefs and attitudes constitute role expectations. Each member of the role set holds expectations and they reflect that member's conception of the person's office and of the focal person's abilities (Kahn et al., 1964).

Role expectations do not remain in the minds of role set members. They are communicated verbally, non-verbally, or in writing to the focal person. They become the sent role and the role set is referred to as role senders. The process of role sending is not merely the passage of information. According to Kahn et al. (1964), the acts of role sending are "influence attempts directed toward the focal person and intended to bring about conformity with the expectations of the senders. Such acts are called role pressures" (p. 15). Acts of influence carry with them consequences for compliance or non-compliance. According to Kahn et al., "the strengthening of role pressures with the possibility of sanctions is the major basis for their effectiveness in gaining compliance with the requirements of formal organization" (1964, p. 16).

Role pressures are only a partial determinant of the focal person's behavior. When the role is sent, the focal person responds in terms of individualized perceptions and cognitions of what was sent. These perceptions and cognitions form the received role. The received role has the most immediate influence on the focal person's behavior. The sent role releases psychological forces within the focal person which form
the basis for motivation to behave in certain ways. These are called
role forces and are not necessarily congruent with the role pressures
which caused them (Kahn et al., 1964). In addition to role forces, the
focal person brings to the role a set of attitudes and beliefs about
personal behavior and abilities which were acquired through socialization
and education. Accordingly, the focal person is "conceived of as having
an occupational self-identity and as motivated to behave in ways which
affirm and enhance the valued attributes of that identity" (Kahn et al.,
1964, p. 17).

The theory of role dynamics accounts for situations of role stress,
delineated as role conflict and role ambiguity. Sent role conflict re­
results when "there is the simultaneous occurrence of two or more sets of
pressures such that compliance with one would make more difficult com­
pliance with the other" (Kahn et al., 1964, p. 19). The authors refer
to this phenomenon as objective conflict and distinguish it from the
internal, psychological conflict experienced within the focal person.
Five types of sent role conflict have been identified by Kahn et al.
(1964):

1. Intra-sender - when the activity sought by a role sender is
prohibited by another role expectation from the same sender.

2. Inter-sender - when role pressures from one role sender are in
opposition to those of one or more other role senders.

3. Inter-role - when the focal person experiences conflicting role
pressures due to membership in more than one organization or group.

4. Person-role - when the personal needs and values of the focal
person conflict with the role pressures generated by the role set.
5. Role overload - when the role senders hold legitimate expectations for the focal person which are impossible to accomplish within a given time frame.

Kahn et al. (1964) described role ambiguity as the:

degree to which required information is available to a given organizational position. To the extent that such information is communicated clearly and consistently to a focal person, it will produce in him an experience of certainty with respect to his role requirements and his place in the organization. To the extent that such information is lacking, he will experience ambiguity (pp. 25-26).

The authors further postulated that the relationship between objective ambiguity and the intensity of experienced ambiguity is moderated by the focal person's personality.

Ambiguity can result under three circumstances: (a) organizational complexity, (b) rapid organizational change, and (c) prevailing managerial philosophies (Kahn et al., 1964). As organizations increase in size, their structure becomes more complex. There is more highly specialized division of labor, more levels of supervision, and more people involved in organizational planning. Advanced technology also increases complexity. The organization becomes so large or complex that the ability of single individuals to comprehend such complexity is exceeded. This leads to role ambiguity (Kahn et al., 1964).

Size and complexity are difficult enough to deal with when the organization is in a stable environment. During periods of rapid change the potential for ambiguity increases. Kahn et al. (1964) described three kinds of changes dominating American organizations which contribute to ambiguity:

1. Organizational growth - increases in size at a rapid rate.
2. Technological changes - require associated changes in the social structure of organizations. Such restructuring causes new role expectations and, often, work group restructuring.

3. Frequent personnel changes - many American organizations are characterized by frequent transfers and reassignments within the organization which can generate role ambiguity. High employee turnover also can generate role ambiguity.

The third circumstance which generates role ambiguity occurs when the prevailing management philosophy limits the spread of adequate and dependable information about issues of concern to people within the organization (Kahn et al., 1964). Sometimes the restricted flow of information is unintentional, sometimes it is purposeful on the part of management.

Role ambiguity most commonly causes employees to develop tension, anxiety, and fear (Kahn et al., 1964). Anger and hostility can also occur. "Ambiguity about role expectations tends to lead to dissatisfaction with the job in general and to feelings of futility" (Kahn et al., 1964, p. 86).

The entire role sending-receiving-responding process is called the role episode. Impacting upon each episode are three sets of factors -- organizational, personal, and interpersonal -- which constitute the context in which the role episode takes place. Organizational factors include characteristics of the whole organization (e.g., size, number of rank or status level, the product produced, and the financial base) and ecological characteristics (e.g., rank of the focal person in the organization and the number of positions of others directly concerned with performance of the focal person). These factors are seen as antecedents to the sent role. As Kahn et al. (1964) stated, "the
organizational conditions surrounding and defining the positions of
one's role senders will determine in part their organizational experi­
ence, their expectations, and the pressures they impose" (p. 32).

Personal factors were originally defined as a "person's propensities
to behave in certain ways, his motives and values, his sensitivities and
fears, his habits, and the like" (Kahn et al., 1964, p. 32). In later
work, Katz and Kahn (1978) expanded the definition to include attributes
of the person in the role which they called "enduring properties"
(p. 212). These enduring properties include demographic, experiential,
and personality characteristics. Kahn et al. (1964) found that:

the introvert tends to be highly ego-involved in achievement situa­
tions, concerned with security, and apt to be acutely bothered by
tension and anxiety. The extrovert is seldom troubled by tension
or anxiety and sees problems as existing in the environment, not
in himself (p. 265).

Personal factors can alter the role episode in several ways. Some
traits will evoke certain responses from role senders. Second, personal
factors can act as conditioning variables for the focal person, alter­
ing the relationship between objective and experienced situations.
Finally, personal factors are also related to coping responses (Kahn
et al., 1964).

Interpersonal factors were described by Kahn et al. (1964) as the
relatively stable patterns of interaction between the focal person and
the role senders along four dimensions. Those dimensions included:
(a) power to influence, (b) affective bonds (i.e., respect, trust),
(c) dependence on one another, and (d) communication style between the
focal person and the role senders.

In their research, Kahn et al. (1964) found that those role senders
who were highly dependent upon the focal person for job performance
also were in most frequent communication with the focal person, usually
on a daily basis. One group with high functional dependence upon the focal person was the subordinate group. When the focal person does not make appropriate decisions or take the appropriate action, subordinates' work suffers (Kahn et al., 1964). However, some of the concern of subordinates about the focal person's performance had to do with supervisory responsibilities, specifically, "the fairness with which the focal person allocates tasks among or takes disciplinary action with his subordinates" (Kahn et al., 1964, p. 190). Kahn et al. also found that role pressures sent by subordinates induce significant forces on the focal person which that person takes seriously in performing the role.

The last component in the framework of Kahn et al. (1964) focused on coping responses and feedback cycles. Three responses to role stress were identified by the authors:

1. Tension and frustration of the focal person may arouse hostile feelings which give rise to aggressive behavior toward the role senders.
2. The focal person may reject or avoid role senders who present difficult demands.
3. The focal person may choose to approach the role senders to enhance communication and solve the problem.

The focal person may develop maladjustive behavior which negatively influences the role episode. Prolonged role stress and inability to perform as expected can lead to impaired physical or mental health and loss of self-esteem (Kahn et al., 1964). When the focal person experiences subjective role stress, it is referred to as role strain.

Each of the theoretical elements within the role episode model are inter-related. Those relationships are illustrated in Figure 1.

In summary, the theory of role dynamics delineates four basic events which comprise a role episode. It also describes the contextual
Figure 1. Role Episode Model (Kahn et al., 1964).
factors which surround and influence the role sending-receiving-enactment process. The theory describes conditions under which the sent role may conflict with other roles or conditions in which information necessary for role enactment is inadequate. These role stress conditions can originate from within the role sender-focal person communication or be influenced by organizational, personal, or interpersonal factors. Role strain occurs when objective conditions of role stress are internalized within the focal person and may result in the impairment of physical or mental health. This study used the role episode model to test a specific set of factors thought to influence role conflict, role ambiguity, and role strain in head nurses.

**Problem Statement**

The problem was stated as follows: What is the relationship of organizational, interpersonal, and personal factors to the occurrence of role conflict, role ambiguity, and role strain in head nurses?

**Definition of Terms**

The following terms, derived from the theoretical framework, were defined:

**Personal Factors** - "enduring properties of the focal person" (Katz & Kahn, 1978, p. 212) which can act as conditioning variables for the focal person, altering the relationship between objective and experienced situations (Kahn et al., 1964). These properties include demographic, experiential, and personality characteristics. Operationally, personal factors were defined as age of the head nurse, number of years experience in the current position, and educational level of head nurse (i.e., diploma, baccalaureate in nursing, baccalaureate in another field, master's degree in nursing, master's in another field doctorate in nursing, doctorate in another field) and were measured
by self-report. Personality type (introversion versus extroversion) was also measured, using the Myers-Briggs Type Indicator - Abbreviated Version (Briggs & Myers, 1983).

**Head Nurse** - the nurse appointed by the hospital organization to oversee the day-to-day operations of one patient care unit, generally, and who has responsibility and accountability for the quality of nursing care delivered to the patients housed on the patient care unit as well as for the personnel and material resources utilized by the unit. The head nurse carries out periodic performance evaluations of the staff assigned to the patient care unit and has input into hiring, firing, counselling, and promotion of employees on the unit. Other labels commonly associated with the position are nurse manager, first-level supervisor, clinical coordinator, and patient care coordinator. Operationally, head nurses were defined as those persons designated as such by the employing hospital organization.

**Interpersonal Factors** - the relatively stable patterns of interaction between the focal person and the role senders along four dimensions: (a) power to influence, (b) affective bonds (i.e., respect, trust), (c) dependence upon one another, and (d) communication style between the focal person and the role senders (Kahn et al., 1964). Operationally, this factor was defined as leadership style of the head nurse, the prevailing pattern of communication between the focal person and others, particularly subordinates, by which the focal person seeks to influence organizational outcomes. Leadership style was measured using the Least Preferred Coworker Scale developed by Fiedler and Chemers (1984).

**Organizational Factors** - characteristics of the whole organization such as size, the type of product produced or service performed, and
the financial base (Kahn et al., 1964). Operationally, these factors were defined as the number of hospital beds in the hospital where the head nurse worked, the type of clinical area the head nurse managed (i.e., medical-surgical, critical care, obstetric/gynecologic-pediatric), the type of nursing care modality used in the clinical area where the head nurse worked (i.e., team, functional, primary, total patient care), the number of employees supervised by the head nurse, the number of role sender groups (diversity of the role set), the number of role sender groups over whom the head nurse had no formal authority, and the type of hospital ownership.

Data regarding the number of hospital beds and the type of hospital ownership were obtained from the American Hospital Association's (AHA) Guide to Hospitals (1986). The type of clinical area managed, the type of nursing care modality used, and the number of employees supervised were measured by self-report. The number of role sender groups and the number of role sender groups over whom the head nurse had no authority were measured using the Role Set Inventory (adapted from Alderman, 1985).

**Role Ambiguity** - a problem which can occur in the enactment of the role episode when information required for role enactment is lacking (Kahn et al., 1964). Ambiguity can occur in large or complex organizations, when organizations experience rapid change, and when management fails to disseminate information of concern to employees. Role ambiguity was measured using the Role Ambiguity Scale (Rizzo, House, & Lirtzman, 1970).

**Role conflict** - a problem which can occur in the enactment of the role episode when "there is the simulatenous occurrence of two or more sets of pressures such that compliance with one would make more
**Interpersonal Factors**
- Leadership style

**Role Senders**
- Diversity of role set

**Organizational Factors**
- Bed size
- Type of hospital ownership
- Number of employees reporting to the head nurse
- Type of clinical area
- Type of nursing care modality
- Number of role sender groups
- Number of role sender groups not under direct authority

**Head Nurse**
- Role conflict
- Role ambiguity
- Role strain

**Personal Factors**
- Age
- Years experience in role
- Personality type
- Educational preparation

---

**Figure 2.** Role Episode Model Operationalized for Head Nurses
difficult compliance with the other" (Kahn et al., 1964, p. 19). Operationally, role conflict was measured using the Role Conflict Scale developed by Rizzo et al. (1970).

**Role Strain** - a subjective response to role stress (conflict and ambiguity) which may be characterized by tension and frustration of the focal person. Operationally, role strain was defined as job-related tension and was measured using the Tension Index (Lyons, 1971).

The operationalized role episodes model, specific to the head nurse role, is shown in Figure 2. This model illustrates relationships among the operational variables tested in this study.

**Assumptions**

For the purpose of this study, the following assumptions were made:

1. Changing economic conditions for hospitals have caused changes in the internal operations (throughputs) of the organization.

2. Changes in hospitals' internal operations have caused changes in role expectations of hospital employees.

3. As first-level supervisors, head nurses are in boundary positions within the organization, between the rank-and-file and managerial structure, and must reconcile the demands of those two sub-roles (Katz & Kahn, 1978).

**Research Questions**

The research questions for this study were:

1. Can variance in the amount of role conflict experienced by head nurses be explained by organizational, interpersonal, and personal factors?

2. Can variance in the amount of role ambiguity experienced by head nurses be explained by organizational, interpersonal, and personal factors?
3. Can variance in the amount of role strain experienced by head nurses be explained by organizational, interpersonal, and personal factors?

**Hypotheses**

The research hypotheses for this study were:

1. The set of variables - bed size, type of ownership, type of clinical area, type of care modality, personality type, age, education level, leadership style, number of employees supervised, number of role sender groups, number of role sender groups over whom the head nurse has no formal authority, and years in the current position - explains a significant amount of the variance in head nurse role conflict scores.

2. The set of variables - bed size, type of ownership, type of clinical area, type of care modality, personality type, age, education level, leadership style, number of employees supervised, number of role sender groups, number of role sender groups over whom the head nurse has no formal authority, and years in the current position - explains a significant amount of the variance in head nurse role conflict scores.

3. The set of variables - bed size, type of ownership, type of clinical area, type of care modality, personality type, age, education level, leadership style, number of employees supervised, number of role sender groups, number of role sender groups over whom the head nurse has no formal authority, and years in the current position - explains a significant amount of the variance in head nurse role strain scores.

**Significance of the Study**

Numerous studies of role stress and role strain have been conducted and several have drawn subjects from nursing populations. Research conducted in other disciplines has tended either to look at nurse populations heterogeneously, measuring role stress or role strain in groups...
of employees comprised of nursing assistants, orderlies, and nurse supervisors in the same population, or to look only at registered nurses without regard for organizational rank (Bedeian, Armenakis, & Curran, 1981; Bedeian, Mossholder, & Armenakis, 1983; Brief & Aldag, 1976; Brief, Van Sell, Aldag, & Melone, 1979; Lyons, 1971; Manning, Ismail, & Sherwood, 1977; Szilagyi & Sins, 1974). According to the American Nurses' Association (1981), 15.4% of nurses working in hospitals are head nurses (more than 96,000 persons). Yet, within the nursing literature, only three published studies which dealt specifically with role stress in head nurse populations (Gribbens & Marshall, 1984; Kennedy, 1984; Leatt & Scheck, 1980) and one unpublished dissertation study (Alderman, 1985) were found. According to Jennings (1986), findings from the published studies have limited utility due to research design and methodology issues. In addition, no published studies were found which addressed role stress or role strain in head nurses since the widespread implementation of PPS.

Head nurses have been linked to staff nurse satisfaction and to burnout (Alexander, Weisman, & Chase, 1982; Duxbury, Armstrong, Drew, & Henly, 1984; Kilpack, 1976; Rozelle, 1977; Shaefer, 1973; Sheridan & Vredenburgh, 1978; Weisman, 1982). Nursing staff satisfaction, in turn, was related to turnover, retention, productivity, and labor relations. In an era of increased competition in health care, increased pressure for cost containment, and a growing shortage of registered nurses, elucidation of issues related to the head nurse role is imperative. The role is critical to the mission of the hospital organization (Jennings, 1986).

In summary, this study investigated the occurrence of role stress and role strain in a head nurse population. The relationship of
specific organizational, interpersonal, and personal variables to the occurrence of stress and strain was explored. The significance of the study for nursing practice was derived from the strong linkage of head nurse role performance to both staff nurse and organizational mission outcomes. The study was conducted at a time when the potential for role stress and role strain was high due to environmental forces impacting on hospital organizations. Knowledge gained from this study can be used by nursing administrators in the selection, development, and support of head nurses in the performance of their roles, roles critical to the hospital organization. On a theoretical level, knowledge gained from the study can be used for an initial specification of the head nurse role episode model. Such a model can be refined through testing on subsequent head nurse populations.
CHAPTER II

Review of Selected Research

Guided by the theoretical framework and the research problem, the areas selected for review were: (a) role theory research published in the organizational behavior and social psychology literature, and (b) role theory research published in the nursing literature.

Role Theory Research in Other Disciplines

Role theory literature published outside nursing encompassed a large body of knowledge spanning almost 40 years (1949 to the present). Reviewing, organizing, and comprehending findings from such a volume of works has presented a challenge to investigators. Since 1981, however, two comprehensive reviews of role research have been published which provide meaningful frameworks for organizing and understanding this literature. This chapter begins by examining these major works.


Van Sell, Brief, and Schuler (1981) selectively reviewed research (89 studies) using the role episode model of Kahn et al. (1964) as a framework for examining the findings. The authors categorized the research studies into four groups: "(a) role sender-focal person relationships, and the effects of; (b) personal factors; (c) interpersonal factors; and (d) organizational factors on such relationships" (p. 48).

Methodologic Issues. Val Sell et al. (1981) first examined the methods by which the major constructs were measured. They found that measurement of role conflict and role ambiguity in the studies reviewed
was based on either self-report instruments developed by the investigators, or on the scale developed by Rizzo et al. (1970). Rizzo et al. originally developed a 30-item scale to measure role conflict and role ambiguity (15 items pertaining to each construct) in studies involving 290 subjects. After psychometric testing on two samples (N = 199, N = 91), the 30-item scale was reduced to 14 items (8 items related to role conflict and 6 items related to role ambiguity). Both the longer version and the 14-item version have been used in research studies since 1970. The Rizzo et al. scale has been psychometrically evaluated further by Schuler, Aldag, and Brief (1977) and found to warrant further use. However, Van Sell et al. (1981) concluded that, despite the apparent soundness of the Rizzo et al. scale, much of the research on role conflict and role ambiguity has been based on instruments of unknown quality.

Outcomes of Role Conflict. Role sender-focal person relationship studies have attempted to link role conflict and role ambiguity to affective and objective responses. According to Van Sell et al. (1981), the best-documented outcomes related to role conflict were job dissatisfaction and job-related tension (reported by Brief & Aldag, 1976; Brief et al., 1979; House & Rizzo, 1972). Hamner and Tosi (cited in Van Sell et al., 1981), however, reported no relationship between role conflict and job satisfaction.

Role conflict has been correlated with other outcomes as well. Rizzo et al. (1970) found inadequate perceived leader behavior to be related to conflict and Kahn et al. (1964) reported that high conflict was related to less confidence in the organization. Positive
associations have also been found between conflict and propensity to leave the organization (Brief & Aldag, 1976; Hamner & Tosi, cited in Van Sell et al., 1981).

**Outcomes of Role Ambiguity.** Role ambiguity has been frequently associated with job dissatisfaction (Johnson & Stinson, cited in Van Sell et al., 1981; Rizzo et al., 1970), however, this has not been consistent across occupations (Van Sell et al.). "Studies among nurses' aides (Brief & Aldag, 1976), managers (Tosi, 1971), teachers (Tosi & Tosi, 1970), and supervisors and operating employees (Ivancevich & Donnelly, 1974) found no relationship" (Van Sell et al., 1981, p. 50).

Other outcomes of high role ambiguity included anxiety, depression, physical symptoms, lower self-esteem, and lower levels of organizational commitment (Brief & Aldag, 1976). Lyons (1971) and Brief and Aldag also found positive correlations between ambiguity and turnover. The relationship between role ambiguity and performance was inconsistent in the studies reviewed by Van Sell et al. (1981), and they concluded that it remains unclear.

In summary, Van Sell et al. (1981) reported that research on the role sender-focal person relationship has shown inconsistent results across studies. They further concluded that the magnitudes of relationships between role conflict and ambiguity and different focal person responses have varied widely.

**The Role Sender-Focal Person Relationship and Personal Factors.** Van Sell et al. (1981) stated that results of research on personal factors "is no more consistent than the research results of the simple role sender-focal person relationships" (p. 52). They supported their conclusion by comparing the results of Lyons (1971) and Miles and Petty (cited in Van Sell et al.). Lyons found that the need for clarity
moderated ambiguity-turnover, satisfaction, and propensity to leave; but it had no moderating effect on the correlation between ambiguity and tension. Miles and Petty reported the opposite. In their study, need for clarity moderated the ambiguity-tension association, but did not affect the relationship between ambiguity and satisfaction.

Van Sell et al. (1981) concluded that personal factors may be important moderator variables. However, they believed that lack of consistency in the results and the lack of replication has made it difficult to interpret the influence of such factors.

The Role Sender-Focal Person Relationship and Interpersonal Factors. Research using interpersonal factors has been limited, according to Van Sell et al. (1981), but the results suggest that:

the structuring and supportive behavior of role senders (e.g. supervisors and co-workers), power of role senders, their functional importance to the focal person and the communication frequency between the role sender and focal person influence the focal person's perceptions of role conflict and ambiguity (p. 55). These findings were congruent with the work done by Kahn et al. (1964) as the theory of role dynamics was developed.

The Role Sender-Focal Person Relationship and Organizational Factors. According to Van Sell et al. (1981), boundary-spanning requirements are the best documented correlates of role conflict. Both Miles (1976) and Snoek (1966) reported role set diversity as associated with role conflict, and Kahn et al. (1964) found that middle managers report high levels of role conflict. Snoek (1966) also reported that role conflict-induced tension increased as a function of role set diversity and supervisory responsibility, regardless of the size of the organization.

Organizational level has been found to moderate role ambiguity (Szilagyi & Sims, cited in Van Sell et al., 1981). The investigators also found that organizational level moderated relationships between
role conflict and both performance and job satisfaction. Sorenson and Sorenson (cited in Van Sell et al., 1981) found organizational level to moderate role conflict in a group of public accountants.

Schuler (1977b) demonstrated that participation in decision-making interacts with either role conflict or ambiguity, depending upon organizational level, to moderate satisfaction and performance outcomes. Schuler (1977a) also hypothesized that employee ability (operationalized as years of education and years of experience in the current job) would moderate relationships between satisfaction and performance in the presence of conflict and ambiguity. However, there was no support for the specific hypothesis that better educated, more experienced workers would adapt to role ambiguity (Van Sell et al., 1981).

In summary, Van Sell et al. (1981) found that only recent research has focused on organizational factors as causes or moderators of role conflict and role ambiguity. They concluded that "experienced role ambiguity and role conflict may be a function of an interaction of job content, role incumbent characteristics, leader behavior, and organizational level and dimensions of structure" (p. 58).

Fisher and Gitelson's (1983) Meta-Analysis of Role Theory Research

Fisher and Gitelson (1983) conducted a meta-analysis of the correlational literature in role research published from 1970 to 1982. Schmidt-Hunter meta-analysis procedures were applied to the results of 42 studies in order to draw valid and meaningful conclusions about the magnitude and direction of the relationships reported.

The 18 most frequently researched correlates of role conflict and role ambiguity were identified from the 42 studies. Those correlates
are listed in Table 1. The correlational data available on those factors were subjected to meta-analysis techniques.

Table 1

**Most Frequent Correlates of Role Conflict (RC) and Role Ambiguity (RA)**

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Range of Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity to leave</td>
<td>(RC) .06 to .52</td>
</tr>
<tr>
<td></td>
<td>(RA) -.07 to .63</td>
</tr>
<tr>
<td>Organizational commitment</td>
<td>(RC) -.12 to -.41</td>
</tr>
<tr>
<td></td>
<td>(RA) -.27 to -.43</td>
</tr>
<tr>
<td>Job involvement</td>
<td>(RC) .00 to -.21</td>
</tr>
<tr>
<td></td>
<td>(RA) -.12 to -.37</td>
</tr>
<tr>
<td>Tension/anxiety</td>
<td>(RC) .12 to .69</td>
</tr>
<tr>
<td></td>
<td>(RA) -.07 to .78</td>
</tr>
<tr>
<td>Overall job satisfaction</td>
<td>(RC) .13 to -.55</td>
</tr>
<tr>
<td></td>
<td>(RA) .05 to -.57</td>
</tr>
<tr>
<td>Satisfaction with pay</td>
<td>(RC) -.06 to -.33</td>
</tr>
<tr>
<td></td>
<td>(RA) .11 to -.56</td>
</tr>
<tr>
<td>Satisfaction with co-workers</td>
<td>(RC) -.11 to -.40</td>
</tr>
<tr>
<td></td>
<td>(RA) -.07 to -.33</td>
</tr>
<tr>
<td>Satisfaction with supervisor</td>
<td>(RC) -.28 to -.49</td>
</tr>
<tr>
<td></td>
<td>(RA) -.16 to -.53</td>
</tr>
<tr>
<td>Satisfaction with promotion</td>
<td>(RC) -.14 to -.41</td>
</tr>
<tr>
<td></td>
<td>(RA) -.12 to -.44</td>
</tr>
<tr>
<td>Satisfaction with work itself</td>
<td>(RC) -.07 to -.58</td>
</tr>
<tr>
<td></td>
<td>(RA) -.07 to -.61</td>
</tr>
<tr>
<td>Performance self-rated</td>
<td>(RC) .12 to -.37</td>
</tr>
<tr>
<td></td>
<td>(RA) .18 to -.49</td>
</tr>
<tr>
<td>Performance superior-rated</td>
<td>(RC) .08 to -.29</td>
</tr>
<tr>
<td></td>
<td>(RA) .11 to -.36</td>
</tr>
<tr>
<td>Boundary-spanning</td>
<td>(RC) .08 to .36</td>
</tr>
<tr>
<td></td>
<td>(RA) -.13 to -.31</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Range of Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in decision-making</td>
<td>(RC) -.19 to -.30</td>
</tr>
<tr>
<td></td>
<td>(RA) -.25 to -.60</td>
</tr>
<tr>
<td>Formalization</td>
<td>(RC) .24 to -.40</td>
</tr>
<tr>
<td></td>
<td>(RA) -.23 to -.57</td>
</tr>
<tr>
<td>Tenure</td>
<td>(RC) .28 to -.21</td>
</tr>
<tr>
<td></td>
<td>(RA) -.03 to -.24</td>
</tr>
<tr>
<td>Education</td>
<td>(RC) .26 to -.18</td>
</tr>
<tr>
<td></td>
<td>(RA) .04 to .18</td>
</tr>
<tr>
<td>Age</td>
<td>(RC) .29 to -.27</td>
</tr>
<tr>
<td></td>
<td>(RA) -.13 to -.29</td>
</tr>
</tbody>
</table>

Results of the meta-analysis showed role ambiguity to be significantly correlated with organizational commitment, job involvement, satisfaction with co-workers, satisfaction with promotion, boundary-spanning, tenure in the position, age, and education across all 42 studies. All correlations were negative except for education. Fisher and Gitelson's (1983) mean correlation coefficients are displayed in Table 2.

Role conflict was found to be significantly correlated with organizational commitment, job involvement, satisfaction with pay, satisfaction with co-workers, satisfaction with supervision, boundary spanning, and participation in decision-making across all 42 studies (Fisher & Gitelson, 1983). All significant correlations were negative, except for boundary-spanning. The meta-analysis mean correlation coefficients for role conflict are displayed in Table 3.
Table 2
**Significant Role Ambiguity Correlates**

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Mean r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational commitment</td>
<td>-.34</td>
</tr>
<tr>
<td>Job involvement</td>
<td>-.26</td>
</tr>
<tr>
<td>Satisfaction with co-workers</td>
<td>-.22</td>
</tr>
<tr>
<td>Satisfaction with promotion</td>
<td>-.24</td>
</tr>
<tr>
<td>Boundary-spanning</td>
<td>-.14</td>
</tr>
<tr>
<td>Tenure</td>
<td>-.13</td>
</tr>
<tr>
<td>Education</td>
<td>.15</td>
</tr>
<tr>
<td>Age</td>
<td>-.17</td>
</tr>
</tbody>
</table>

\( p \leq .05 \)

Table 3
**Significant Role Conflict Correlates**

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Mean r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational commitment</td>
<td>-.25</td>
</tr>
<tr>
<td>Job involvement</td>
<td>-.15</td>
</tr>
<tr>
<td>Satisfaction with pay</td>
<td>-.20</td>
</tr>
<tr>
<td>Satisfaction with co-workers</td>
<td>-.31</td>
</tr>
<tr>
<td>Satisfaction with supervisor</td>
<td>-.37</td>
</tr>
<tr>
<td>Boundary-spanning</td>
<td>.25</td>
</tr>
<tr>
<td>Participation in decision-making</td>
<td>-.28</td>
</tr>
</tbody>
</table>

\( p \leq .05 \)
Fisher and Gitelson (1983) also looked at the intercorrelations between role conflict and role ambiguity. Data from 14 studies were subjected to meta-analysis. The mean correlation was .37, however, chi-square was significant, indicating that the relationship of role conflict to role ambiguity did vary across samples.

The relative strength of role conflict and role ambiguity in predicting outcomes was assessed by Fisher and Gitelson (1983). They found that role ambiguity was more strongly related to organizational commitment, job involvement, formalization, and participation in decision-making than was role conflict. Role conflict was more strongly related to satisfaction with co-workers and overall job satisfaction. The latter finding is in opposition to Rizzzo et al. (1970) and to House and Rizzo (1972) who had reported role ambiguity to be the stronger correlate of job satisfaction.

Fisher and Gitelson (1983) applied job type and organizational level as moderator variables for role conflict and role ambiguity. They found that professional employees (which included nurses) demonstrated a stronger correlation between role conflict and propensity to leave ($r = .39$), than did lower level employees ($r = .20$). Managerial employees demonstrated a stronger correlation between role ambiguity and job satisfaction variables ($r = -.48$) than did lower level workers ($r = -.41$).

In summary, Fisher and Gitelson (1983) succeeded in reducing the discrepancies in role research described by Van Sell et al. (1981), but only for some correlates. The results of their meta-analysis demonstrated that many relationships are still unclear. They concluded that further research on moderators is needed to explain variance across samples.
Role Theory Research in Nursing

The research literature related to role stress among head nurses in the nursing literature was not abundant. Four studies were found which used the Kahn et al. (1964) framework alone or in combination with another theory. Three of the four studies had head nurse subjects; one sampled nursing directors. Three other studies on head nurses were located which were somewhat related to the present study. Finally, the works of Kramer (1968a, 1968b, 1969, 1970) were reviewed for a general understanding of role conception and role enactment problems encountered previously within the nursing discipline.

Studies Using the Kahn et al. (1964) Framework

In a study of 72 head nurses, Alderman (1985) examined various correlates of role conflict and role ambiguity. The constructs were measured using the 30-item version of Rizzo et al.'s (1970) scale.

Results showed significant (p ≤ .05) correlations of role conflict with the number of staff reporting to the head nurse (r = .31), education outside nursing (r = .36), and time in the head nurse role (r = -.56). Role ambiguity was significantly (p ≤ .05) correlated with education outside nursing (r = .29).

The head nurses in Alderman's (1985) study had significantly higher amounts of role conflict than role ambiguity (p ≤ .0001). Alderman also reported a mean item index score of 4.03 for role conflict. This was concluded to be a moderately high score (possible range was 1 to 7, with higher amounts of conflict represented by ascending scores). Alderman further concluded that nursing education was not significantly related to role conflict or ambiguity (r = .09, p = .33; r = .23, p = .15).
Kennedy (1984) described role conflict and role ambiguity among military head nurses. The Rizzo et al. (1970) scale was administered to 18 subjects working in one military medical facility. Kennedy reported non-significant role conflict and role ambiguity mean scores ($p > .05$), indicating low levels of both within the sample. Analysis of variance for role ambiguity scores revealed no difference among head nurses working in different clinical areas. However, there were significant differences ($p \leq .05$) in the amount of role conflict experienced across clinical areas. Maternal-child head nurses experienced the least role conflict while head nurses working on medical units experienced the greatest amount of role conflict.

Kennedy (1984) also examined perceptions of the head nurse role by physicians and by the head nurses themselves. Results showed no significant differences between physicians' and head nurses' perceptions of time spent in head nurse role activities ($p > .05$).

Arndt and Laeger (1970a, 1970b) looked at role set diversity among directors of nursing ($N = 47$) in small and large hospitals. The dependent variable was role strain, measured by Snoek's (1966) Job-Related Tension Index. Hospital size, age, education level, years of experience in the director job, and years of experience in the institution were examined as possible moderators of tension. The investigators reached the following conclusions:

1. There was a trend (though not significant) toward greater role strain among directors working in larger hospitals.

2. There was no significant correlation between role strain and age or educational level.

3. There was no significant correlation between either experience in the role, or experience in the institution, with role strain.
Arndt and Laeger (1970a, 1970b) further examined the role strain scores and determined that 14 of 18 high score items related to either role conflict or role ambiguity. This finding was consistent with the theoretical position set forth by Kahn et al. (1964) in which they postulated that role strain (also called tension) is the result of internalized role conflict and role ambiguity.

Utilizing the Kahn et al. (1964) framework in combination with components of general stress theory, Leatt and Scheck (1980) identified sources of stress for head nurses working in various specialties. An investigator-developed questionnaire was administered to 153 Canadian head nurses. The resulting data identified five types of stress: (a) patient-based, (b) role-based, (c) task-ambiguity, (d) staff movement, and (e) physician-based. The frequency of occurrence of each type of stress varied across specialties, except for role-based stress. The authors interpreted the constancy of role-based stress to reflect that the administrative component of the head nurse role varied little from area to area.

Moderators were also examined by Leatt and Scheck (1980). They found age and experience had no influence on the frequency of stressors reported. They tentatively concluded that the frequency of some types of stress appeared to be influenced by education level. However, methodological constraints in the study limited the strength of their conclusions regarding education as a moderator.

**Related Studies Involving Head Nurses**

Stahl, Querin, Rudy, and Crawford (1983) compared 115 head nurses' reported activities with their immediate supervisors' (N = 53) expected activity preferences in order to measure the congruence in role expectations between the role sender and the focal person. In general,
there was agreement between head nurses and supervisors on the ranking of three major categories of activities. However, the amount of time which head nurses spent on patient care activities was twice as much as their supervisors preferred they spend (25% versus 12.5%). The researchers concluded that the potential for role conflict between role senders and focal persons was high in the area of patient care management.

Harris (1984) studied burnout among head nurses (N = 55) and their supervisors (N = 16). Results showed no significant differences in burnout scores among nurses who worked in critical care, general care, or mixed units. It was also found that supervisors' burnout scores were significantly lower than head nurses' scores. This finding suggested that organizational level may moderate the experience of burnout. Although burnout has been conceptualized as distinct from role conflict and role ambiguity, similar outcomes from burnout and role stressors have been reported (i.e., tension, anxiety, lack of job involvement, and propensity to leave) (Harris, 1984).

Gribbens and Marshall (1984) conducted a case study of supervisory nurses working in a neonatal intensive care unit in order to identify sources of stress between the management group and other interacting groups. The other groups were physicians, hospital administrators, nursing administrators, and staff nurses. The subjects (N = 10) included one head nurse, several shift charge nurses, orientation nurses, and an outreach education nurse. They were interviewed to determine the frequency of interaction between each subject and the other groups and the intensity of perceived stress. The researchers found interaction with physicians and with staff nurses to be the greatest source of stress for the management group in that neonatal intensive care unit.
Kramer (1968a, 1968b, 1969, 1970) conducted a series of studies in the late 1960s and early 1970s, examining the results of professional role socialization on new nurse graduates of baccalaureate programs. The theoretical premise upon which Kramer's work was founded postulated that "when individuals who have been socialized into the professional system are employed in organizations operating within the bureaucratic system, some degree of conflict can be expected" (Kramer, 1968a, p. 461). Kramer believed that when the new graduate perceived an inability to enact the professional role conception acquired during the educational process, role deprivation resulted. Kramer's work built upon earlier work by Corwin and Taves (1962) which demonstrated that baccalaureate graduates retained a professional role conception after employment while diploma nurses did not.

Kramer (1968a, 1970) demonstrated that new baccalaureate graduates did experience role deprivation when first employed, that role conception changed over time, and that nurses perceived as highly successful by the organization had higher bureaucratic role conceptions. Although Kramer's work dealt with a specific sub-population within the nursing discipline (baccalaureate graduates), the inherent possibility for conflict in enacting both a managerial and clinical role found in the head nurse position may be similar in nature. Education level moderated the experience of role deprivation in the new graduate nurse (Corwin & Taves, 1962), and the same moderating effect may be possible among head nurses, particularly those recently promoted into the position.

**Summary**

A number of factors related to role conflict, role ambiguity, and role strain have been investigated by researchers in other disciplines. Many of their studies were based on the theoretical framework developed
by Kahn et al. (1964). Results from those studies have been inconsistent, however, and the implications sometimes unclear, due to differences in instrumentation, methodology, and sampling.

The meta-analysis conducted by Fisher and Gitelson (1983) has given some clarity and comparability to the results of 42 correlational studies. Van Sell et al.'s (1981) review of the literature published since 1949 utilized the Kahn et al. (1964) framework to organize findings and to provide direction for future research. Van Sell et al.'s review illustrated the inconsistencies in results and methodologic issues which persist in the role theory research literature.

Published role research in nursing has been somewhat limited. A few studies were based on parts of the role episode model (Kahn et al., 1964). Those variables tested previously for head nurses included education, years of experience in the role, number of role sender groups, number of non-subordinate role sender groups, number of staff reporting to the head nurse, and clinical area. All were tested as single correlations. Simultaneous testing of organizational, personal, and interpersonal components of the model for head nurses was not found. Clearly, expansion of knowledge in this area was warranted.
CHAPTER III

Methodology

The purpose of this study was to describe the relationship of organizational, interpersonal, and personal factors to the occurrence of role conflict, role ambiguity, and role strain in head nurses. The research design and the research methods used to accomplish the purpose are described in this chapter.

Design of the Study

This was a descriptive study. The independent variables of interest were: (a) age of the head nurse, (b) number of year's experience in the current position, (c) highest level of education, (d) number of hospital beds in the employing hospital, (e) the type of clinical area which the head nurse supervised, (f) the type of hospital ownership, (g) the nursing care modality utilized on the patient care unit, (h) personality type of the head nurse, (i) leadership style of the head nurse, (j) the total number of role sender groups, (k) the number of role sender groups over whom the head nurse had no authority, and (l) the number of employees reporting to the head nurse. The dependent variables were: (a) role conflict, (b) role ambiguity, and (c) role strain.

Instrumentation

Six instruments were used in the study: (a) the Role Conflict and Role Ambiguity Scale (Rizzo et al., 1970), (b) the Tension Index (Lyons, 1971), (c) the Myers-Briggs Type Indicator—Abbreviated Version
(Briggs & Myers, 1983), (d) the Least Preferred Co-Worker Scale
(Fiedler & Chemers, 1984), (e) the Role Set Inventory (adapted from
Alderman, 1985), and (f) an investigator-developed questionnaire. These
instruments were chosen or developed based on the theoretical framework,
previous use for measuring the designated construct, and brevity. Each
subject was asked to complete all six instruments. Descriptions of each
instrument are presented below.

Role Conflict and Role Ambiguity

The Role Conflict and Role Ambiguity Scale is a 14-item tool
developed by Rizzo et al. (1970). It was originally developed as a 30-
item scale (15 items related to role conflict; 15 items related to role
ambiguity) and tested on 199 manufacturing plant employees and on 91
professional level personnel employed in research and development.
Based on the results obtained in testing those two groups, the 30-item
scale was reduced to 14 items following factor analysis with selection
of those items which loaded .30 or greater on the specified construct.
The resulting scale was composed of eight items measuring four types of
role conflict (intra-role conflict, intra-sender conflict, role over­
load, and conflicting expectations) and six items measuring role ambig­
uity (lack of information necessary for job performance and lack of
clarity regarding performance expectations). The instrument is shown
in Appendix A.

In their two-sample test, Rizzo et al. (1970) reported reliabilities
of .82 and .816 for the role conflict sub-scale and .78 and .808 for the
role ambiguity sub-scale. Reliabilities for role conflict reported by
other researchers using nurse populations ranged from .81 to .89
Reliabilities for role ambiguity in nurse populations ranged from .76 to .82 (Bedeian et al.; Szilagyi; Szilagyi & Sims, 1974).

Construct validity was evaluated by Bedeian et al. (1981), Szilagyi (1977), and Szilagyi and Sims (1974) using factor analysis. All concluded that the items loaded on two factors.

Schuler et al. (1977) examined the factor structure, internal reliabilities, congruency, test-retest reliability, and correlations of role conflict and role ambiguity with various affective and behavioral variables. The investigators concluded that continued use of the scale was warranted.

Scoring of the instrument was obtained by using a 5-point Likert-type format ranging from 'strongly agree' to 'strongly disagree.' These had a value of 1 through 5 when scored. The role conflict item scores (numbers 2, 4, 6, 8, 10, 12, 13, 14) were transformed in order to reflect higher levels of role conflict as higher scores.

Role Strain

Role strain was measured using the Tension Index developed by Lyons (1971). This 9-item tool was adapted from a longer instrument used by Kahn et al. (1964) and Snoek (1966) in national studies of organizational stress. Respondents were asked to think about how often they 'feel bothered' by nine work-related factors, expressed as statements. The response choices were numbered 1 to 5 and correspondingly labelled 'never', 'rarely', 'sometimes', 'rather often', and 'nearly all the time'. The responses for each item were summed to determine the role strain score. Role strain levels were interpreted as increasing as the numerical job-related tension score increased. The instrument is displayed in Appendix B.
Lyons (1971) reported a median intercorrelation of items .36, a median item-index correlation of .59, and a split-half reliability of .70. Bedeian et al. (1981) reported a coefficient alpha of .86. They also conducted a factor analysis of the instrument which confirmed its unidimensionality.

**Personality Type (Introversion-Extroversion)**

The Myers-Briggs Type Indicator (MBTI)--Abbreviated Version (Briggs & Myers, 1983) was used to measure personality on several dimensions: (a) introversion-extroversion (I - E), (b) sensing-intuition (S - N), (c) thinking feeling (T - F), and (d) judging-perceiving (J - P). The dimension of interest in this study was introversion-extroversion. The MBTI Abbreviated Version was chosen for the study because the theoretical development for the I - E dimension was derived from Jung's conception of personality (Myers & McCauley, 1985); the same theoretical perspective which Kahn et al. (1964) used in examining the effect of personality type on the role occurrence of job-related tension.

The Abbreviated Version is shorter than the original MBTI instrument (50 items versus 126 items). The longer version has been used extensively since the early 1960s and has good test-retest reliability reported for both the I - E sub-scale and for the other sub-scales (Myers & McCauley, 1985). The 50 items in the Abbreviated Version represented 63% of the possible scored points from the longer instrument (Myers & McCauley). The Abbreviated Version of the MBTI was recommended for use in classifying individuals into type which was its purpose in this study. The instrument is displayed in Appendix C.

**Least Preferred Co-Worker Scale**

Leadership style was measured using the Least Preferred Co-Worker Scale (LPC) developed by Fiedler (1967) as part of the contingency
theory of leadership effectiveness. The most current version was used in this study (Fiedler & Chemers, 1984). The LPC scale can be found in Appendix D.

According to Fiedler (1967, 1973) and Fiedler and Chemers (1984), a relatively high LPC (favoring the least preferred co-worker) has been conceived as indicative of a relationship-motivated person. A low LPC score, which rejects the least preferred co-worker, indicates a task-motivated person (Fiedler; Fiedler & Chemers). Internal consistency reliabilities for the original LPC ranged from .85 to .95 (split-half) (Fiedler, 1973). Rice (cited in Bass, 1981) reported coefficient alpha's of .79 to .81 in five samples for the newer version used in the current study. Factor validity was demonstrated by Shiflett and Yukl (cited in Bass, 1981) who found that the LPC contained two factors, one associated with task-oriented items and one associated with relationship-oriented items.

The LPC score was obtained by asking subjects to think of the one person in past work situations with whom they had the most difficulty working. Subjects described their least preferred co-worker using a set of 18 bi-polar descriptors modeled after the Semantic Differential Scale. The scale ranged from 1 to 8 for each bi-polar item, 8 being the most favorable pole and 1 representing the unfavorable pole. LPC scores were obtained by summing the numerical scores for each bi-polar item. Scores ranging from 18 to 64 were interpreted as task-oriented leadership style, scores from 73 to 144 were interpreted as relationship-oriented leadership style, and scores ranging from 65 to 72 were interpreted as socio-independent. The latter classification was added by Fiedler and Chemers (1984) to identify individuals who were readily able to adapt their leadership styles to fit the demands of the situation.
The Role Set Inventory

The independent variables of the number of different role sender groups and the number of role sender groups over whom the head nurse had no formal authority were measured by self-report on the Role Set Inventory, adapted from Alderman (1985). The instrument is displayed in Appendix E.

The inventory listed 14 common groups of employees found in hospitals, such as physicians, medical students, nursing administrators, and patients. Head nurses were asked to check off, in Column A, all those groups with whom they interacted at least three times per week in order to perform their job. In Column B, head nurses were asked to check off all those groups with whom they interacted at least three times per week but over whom they had no formal or line authority. Head nurses were given space to indicate additional role set members under "other."

In Alderman's study (1985), the Role Set Inventory measured two other variables in separate sections of the instrument. Those sections were not used in this study. Alderman (1985) reported no problems associated with the Inventory; however, in the present study there were numerous problems with measurement of role sender groups not under the authority of the head nurse (those found in Column B). The instrument required the subjects to check off some groups twice, both in Column A and B. That appeared to be confusing for subjects. Sometimes Column B was left empty; sometimes groups not checked off in Column A were checked off in Column B making it impossible to interpret. These problems occurred with sufficient frequency to raise doubt about the
reliability of the data relative to role senders not under the head nurse's authority. The decision was made to exclude those data from the tests of hypotheses.

**Investigator-Developed Questionnaire**

An investigator-developed questionnaire was used to obtain the following demographic and organizational information from each respondent: (a) age, (b) education level, (c) years of experience in the head nurse position, (d) type of clinical area supervised, (e) number of employees reporting to the head nurse, and (f) type of nursing care modality utilized on the unit (see Appendix F). In addition, the investigator determined type of hospital ownership (for-profit or not-for-profit) and bed size from the AHA Guide to Hospitals (1986).

**Subjects**

The subjects for this study were head nurses who met the following selection criteria:

1. They were identified as head nurses by the nurse administrator at each participating hospital, using a definition supplied by the investigator (Appendix G).

2. They were employed in short-term, non-federal, non-specialized hospitals located in Etowah, Jefferson, Mobile, Montgomery, Madison, and Tuscaloosa counties of Alabama.

3. They were supervising medical-surgical (MS), critical care (adult, pediatric, and neonatal) (CC), or obstetrical/gynecologic-pediatric (OB/G-P) units.

Psychiatric, emergency department, and operating room head nurses were excluded from the study because there were insufficient numbers of these types of units for data analysis and their clinical uniqueness did not allow them to be readily combined with other types of units.
Procedure

Institutional Review Board (IRB) approval to conduct research on human subjects was obtained (see Appendix H). Consent to allow head nurses' participation in the study was obtained from the nursing service administrator at each participating hospital. Consent from each subject was assumed when the completed questionnaires were returned to the investigator and was so stated in the letter of explanation received by each potential subject.

Participation was voluntary and code numbers were used on all questionnaires. A coding key, matching subjects' names to instrument number and to employing hospital, was retained by the investigator and was used to send out one follow-up letter (Appendix I) to those subjects who did not return their questionnaires in a 2-week period. Coding also permitted matching of the subjects' responses with the hospital specific variables (i.e., ownership and bed size). The key was destroyed at the completion of the study. This procedure was explained to each potential subject when the questionnaires were distributed. Confidentiality was further ensured since no personal, identifying data were requested and the data were pooled for the purposes of analysis and reporting results.

After IRB approval, a letter was sent to the nurse administrator in each short-term, non-federal, non-specialized hospital located in six Alabama counties (Appendix G). The AHA Guide to Hospitals (1986) was used to identify those hospitals (N = 31). In the letter, the investigator explained the study and sought permission to collect data from the head nurses employed by the hospital. The nurse administrators indicated their approval or disapproval for the study to take place in their hospitals on a form supplied by the investigator (Appendix G). This form was mailed back to the investigator in a postage-paid envelope.
It took approximately 6 weeks to negotiate access to the head nurse subjects; hospitals had varying policies concerning approval for research. Of the 31 hospitals approached, 17 agreed to allow the investigator access to their head nurses (54.8%).

In 15 of 17 hospitals, the study materials were handed out to head nurses by the investigator, usually at a regularly scheduled head nurse meeting. At two hospitals, the questionnaires were distributed by the nurse administrators, at their request. A letter to the participant which included a written explanation of the study, assurance of confidentiality, and instructions for completing the instruments was included in the materials distributed to each head nurse (see Appendix J). A stamped envelope addressed to the investigator was included if the instruments were to be mailed back. Some hospitals allowed the head nurses time to complete the instruments during their meetings and to return them directly to the investigator. Respondents who mailed their questionnaires back were asked to return them within 2 weeks.

**Data Analysis Procedures**

Data were analyzed using the SPSSPC+ Statistical Package (SPSS, 1986). Analysis was conducted in five steps: (a) inspection of the raw data, (b) descriptive statistics and frequency distributions for each variable, (c) preliminary analysis, (d) hypotheses testing, and (e) supplementary analyses.

**Descriptive Statistics**

Descriptive statistics and frequency distributions were used to: (a) develop a profile of the head nurse subjects on demographic characteristics, and (b) ascertain how each variable was distributed in the sample. The demographic profile was used to compare the head nurses in this study to those found in other studies and to demographic data.
available on the general population of nurses employed in Alabama.

Other descriptive data and the frequency distributions were examined for trends. Such trends gave direction to both preliminary and supplementary analyses.

**Preliminary Analyses**

Preliminary analyses were of two types: (a) bivariate correlations of all interval and ratio level variables with each other and with each dependent variable, using the Pearson product moment correlation coefficient; and (b) tests of independence for each categorical variable with each dependent variable using chi-square. Significance was set at .10 alpha for both types of analyses. Each bivariate correlation was also plotted and the regression lines drawn to check the assumptions of regression analysis. Results of the chi-square tests allowed collapsing of categories for two of the categorical variables (nursing care modality and education level) prior to their entry into the multiple regression analysis.

Internal consistency reliabilities were also calculated for the Rizzo et al. (1970) ambiguity and conflict scales, for the Tension Index (Lyons, 1971), and for the Least Preferred Co-Worker Scale (Fiedler & Chemers, 1984). The coefficient alpha (Cronbach's alpha) was used.

**Hypothesis Testing**

The null hypotheses for this study were as follows:

1. The set of variables -- bed size, type of ownership, type of clinical area, type of nursing care modality, personality type, age, education level, number of employees reporting to the head nurse, total number of role sender groups, number of role sender groups over which the nurse lacks authority, leadership style, and years in current
position -- does not explain a statistically significant amount of the variance in head nurse role conflict (RC) scores.

2. The set of variables -- bed size, type of ownership, type of clinical area, type of nursing care modality, personality type, age, education level, number of employees reporting to the head nurse, total number of role sender groups, number of role sender groups over which the head nurse lacks authority, leadership style, and years in current position -- does not explain a statistically significant amount of the variance in head nurse role ambiguity (RA) scores.

3. The set of variables -- bed size, type of ownership, type of clinical area, type of nursing care modality, personality type, age, education level, number of employees reporting to the head nurse, total number of role sender groups, number of role sender groups over which the head nurse lacks authority, leadership style, and years in current position -- does not explain a statistically significant amount of the variance in head nurse role strain (RS) scores.

Statistically, these hypotheses were stated:

1. $H_0$: Multiple $R^2_{RC} = 0$
   $H_A$: Multiple $R^2_{RC} \neq 0$

2. $H_0$: Multiple $R^2_{RA} = 0$
   $H_A$: Multiple $R^2_{RA} \neq 0$

3. $H_0$: Multiple $R^2_{RS} = 0$
   $H_A$: Multiple $R^2_{RS} \neq 0$

The hypotheses were tested using multiple regression analysis. The level of significance was .10 alpha due to the exploratory nature of the study. The variables entering the regression equation against the dependent variable score were age, years in the position, bed size of the hospital, total number of role sender groups, number of employees
reporting to the head nurse, type of care modality, education level, personality type, clinical area, leadership style, and whether the hospital was investor-owned or not-for-profit. The latter seven variables were categorical and were entered as dummy variables in the equation. There were three regression equations, one for each dependent variable. The number of role sender groups over whom the head nurse lacks authority was not used in hypothesis testing due to the measurement issues discussed earlier in this chapter.

The assumptions of regression -- linearity, homoscedasticity, normality, and independence of errors -- were also tested. This was accomplished using scatterplots, histograms, and normal probability plots involving standardized predicted values and standardized residuals. Casewise plots of standardized residuals were inspected in order to check for independence of errors.

**Supplementary Analyses**

After examining the frequency distribution for years of experience for the sample, it was determined that one third of the subjects had 2 years or less experience in the role, although the total range of experience was 1 month to 30 years. Knowing that role conception changes over time (Kramer, 1968a), it was theorized that a majority of the sample may represent those head nurses who have successfully coped with role stressors and role strain. Accordingly, tests of a partial role episode model on the sub-sample with 2 years or less experience was conducted using multiple regression. The variables selected for inclusion in the supplementary analysis were determined by significance of the previous chi-square analysis and by significant bivariate correlations within the sub-sample (N = 64). Null hypotheses for the sub-sample analyses were as follows:
1. The set of variables — personality type, education level, number of employees reporting to the head nurse, and total number of role sender groups — does not explain a statistically significant amount of the variance in sub-sample role conflict (SSRC) scores.

2. The set of variables — personality type, age, and number of employees reporting to the head nurse — does not explain a statistically significant amount of the variance in sub-sample role ambiguity (SSRA) scores.

3. The variable — total number of role sender groups — does not explain a statistically significant amount of the variance in sub-sample role strain (SSRS) scores.

The variable of experience was not entered into the equations of the sub-sample since it was the criterion by which the sub-sample group was selected.

Statistically, the hypotheses for the sub-sample analyses were stated as follows:

1. $H_0$: Multiple $R^2_{SSRC} = 0$
   $H_A$: Multiple $R^2_{SSRC} \neq 0$

2. $H_0$: Multiple $R^2_{SSRA} = 0$
   $H_A$: Multiple $R^2_{SSRA} \neq 0$

3. $H_0$: Multiple $R^2_{SSRS} = 0$
   $H_A$: Multiple $R^2_{SSRS} \neq 0$

The assumptions of multiple regression were tested in the same manner as previously described under the hypothesis testing section of this chapter.

Finally, a post hoc power analysis was carried out to determine the statistical power for both the total sample regression analyses and
the sub-sample analyses. Adequate power, based on magnitude of effect and sample size, minimizes the likelihood of a Type II error. Power is considered adequate at .80 or greater (Cohen & Cohen, 1975).

**Limitations**

The limitations of this study were as follows:

1. The sample included only head nurses employed in hospitals located in six Alabama counties and may not be generalized beyond the population.

2. No direct measurement of the impact of recent changes in health care reimbursement practices on the occurrence of role stressors or role strain in head nurses was made.

3. Only a limited selection of variables was used to test the role episode model. Other variables not included in this study may have influenced the occurrence of role stressors and role strain in head nurses.

4. Methodologic problems encountered in measuring the number of role sender groups over whom the head nurse has no formal authority did not allow that variable to be included in the analysis as planned.
CHAPTER IV

Findings

This chapter includes the findings from a descriptive study which was designed to answer the research question: What is the relationship of organizational, interpersonal, and personal factors to the occurrence of role conflict, role ambiguity, and role strain in head nurses? Data were collected and analyzed from 193 head nurses practicing in six Alabama counties. The results have been organized into six sections: (a) response rate, (b) description of the subjects, (c) instrument reliability, (d) preliminary analyses, (e) hypotheses testing, and (f) supplementary analyses.

Response Rate

Permission to collect data from head nurse employees was sought from 31 hospitals meeting the selection criteria. Seventeen hospitals (54.8%) consented to allow the investigator access to head nurse potential subjects. Employed within those 17 hospitals were 223 head nurses who met the selection criteria for inclusion in the study. Questionnaire booklets containing all six study instruments were delivered to all of the 223 potential subjects; a total of 195 questionnaire booklets were returned for an overall response rate of 87.44%. Two questionnaire booklets were not usable, resulting in 193 subjects' data available for analysis.
Description of the Subjects

Each variable measured in the study helped to describe the sample.

The personal and interpersonal characteristics of age, experience in the head nurse job, education level, personality type, and leadership style are displayed in Table 4.

Table 4

| Personal and Interpersonal Characteristics of the Sample |
|---------------------------------|-----|-----|-----|-----|
| Variable                        | N   | Mean| SD  | Range | %   |
| Age (years)                     | 192 | 38.3| 8.45| 24-63 | 99.4|
| Experience (years)              | 193 | 5.73| 5.42| .08-30| 100.0|
| Education level                 | 193 |     |     |       | 100.0|
| diploma                         | 68  |     |     | -     | 35.2|
| associate                       | 32  |     |     | -     | 16.6|
| bachelors                       | 76  |     |     | -     | 39.4|
| masters                         | 17  |     |     | -     | 8.8 |
| doctorate                       | 0   |     |     | -     | 0.0 |
| Personality type                | 193 |     |     |       | 100.0|
| extrovert                       | 106 |     |     | -     | 54.9|
| introvert                       | 87  |     |     | -     | 45.1|
| Leadership style                | 192 |     |     |       | 99.5|
| task-oriented                   | 103 |     |     | -     | 53.4|
| relationship-oriented           | 61  |     |     | -     | 31.6|
| socio-independent               | 28  |     |     | -     | 14.5|

The data showed almost half of the head nurses in the study had bachelor's degrees or higher (48.2%). There was also a large range in years of experience as well as a standard deviation which was almost as large as the mean value. Further inspection of the frequency distribution for experience revealed that 33.2% of subjects had 2 years or less experience, 34.2% had 3 to 6 years experience, while the remaining one
third of subjects had 7 to 30 years experience. There were slightly more extroverts than introverts, and the majority of head nurses used a task-oriented leadership style.

Characteristics of the organizational setting in which the subjects worked also helped to describe them. Table 5 displays those characteristics.

Table 5
Organizational Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean (S.D.)</th>
<th>Range</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed size of employing hospital</td>
<td>17</td>
<td>475.98 (185.39)</td>
<td>219-792</td>
<td>-</td>
</tr>
<tr>
<td>Type of hospital employed in</td>
<td>193</td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>163</td>
<td>-</td>
<td>-</td>
<td>84.5</td>
</tr>
<tr>
<td>For-profit</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>15.5</td>
</tr>
<tr>
<td>Clinical area</td>
<td>192</td>
<td></td>
<td></td>
<td>99.5</td>
</tr>
<tr>
<td>Med-Surg</td>
<td>94</td>
<td>-</td>
<td>-</td>
<td>48.7</td>
</tr>
<tr>
<td>Critical Care</td>
<td>59</td>
<td>-</td>
<td>-</td>
<td>30.6</td>
</tr>
<tr>
<td>Ob-Peds-Gyn</td>
<td>39</td>
<td>-</td>
<td>-</td>
<td>20.2</td>
</tr>
<tr>
<td>Nursing care model</td>
<td>193</td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Team</td>
<td>41</td>
<td>-</td>
<td>-</td>
<td>21.3</td>
</tr>
<tr>
<td>Total patient care</td>
<td>85</td>
<td>-</td>
<td>-</td>
<td>44.0</td>
</tr>
<tr>
<td>Functional</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>2.6</td>
</tr>
<tr>
<td>Primary</td>
<td>62</td>
<td>-</td>
<td>-</td>
<td>32.1</td>
</tr>
<tr>
<td>Number of employees reporting to HN</td>
<td>189</td>
<td>32.63 (15.03)</td>
<td>2-85</td>
<td>97.9</td>
</tr>
<tr>
<td>Number of role sender groups</td>
<td>192</td>
<td>10.62 (1.99)</td>
<td>3-14</td>
<td>99.4</td>
</tr>
<tr>
<td>Number of non-subordinate role sender groups</td>
<td>185</td>
<td>7.17 (2.30)</td>
<td>1-13</td>
<td>95.8</td>
</tr>
</tbody>
</table>

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Most head nurses in the study worked in not-for-profit hospitals, usually in the medical-surgical clinical area. Total patient care and primary nursing were used most often to deliver nursing care to patients. The number of employees reporting to the head nurse varied considerably (2 to 85). The 193 head nurses in the study directly supervised 6,167 employees.

Head nurses reported a very diverse role set; they interacted, on the average, with almost 11 different groups of role senders three or more times per week in order to perform their jobs. The number of role sender groups over whom the head nurse lacked formal authority was also reported, but was thought to lack reliability, as discussed in Chapter III. Tentatively, the data suggested that head nurses interact frequently with a diverse role set, over the majority of whom they have no authority. The frequency distributions for the dependent variables are displayed in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
<th>Mean (S.D.)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role ambiguity</td>
<td>190</td>
<td>98.4</td>
<td>14.54 (4.09)</td>
<td>6-28 (actual)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6-30 (possible)</td>
</tr>
<tr>
<td>Role conflict</td>
<td>188</td>
<td>97.4</td>
<td>27.47 (5.44)</td>
<td>14-39 (actual)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8-40 (possible)</td>
</tr>
<tr>
<td>Role strain</td>
<td>193</td>
<td>100.0</td>
<td>26.73 (5.72)</td>
<td>12-45 (actual)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9-45 (possible)</td>
</tr>
</tbody>
</table>
The mean scores for each dependent variable were not directly comparable since each instrument had a different number of items and, therefore, a different possible range. However, some comparisons can be made using the ranges for item mean scores, shown in Table 7.

Table 7
Range of Item Mean Scores for Each Dependent Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Range</th>
<th>Actual Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role conflict</td>
<td>1-5</td>
<td>2.89-4.10</td>
</tr>
<tr>
<td>Role ambiguity</td>
<td>1-5</td>
<td>1.89-2.89</td>
</tr>
<tr>
<td>Role strain</td>
<td>1-5</td>
<td>2.80-3.60</td>
</tr>
</tbody>
</table>

For each dependent variable, higher scores meant higher levels of conflict, ambiguity, or strain. Head nurses in this sample reported higher levels of role conflict than either role ambiguity or role strain. Role strain levels were intermediate between role conflict and role ambiguity.

In summary, head nurses in the present study worked mostly in not-for-profit hospitals in medical-surgical areas and used total patient care or primary nursing to deliver care. Their average age was 38. There was almost an even split between technical (diploma and associate degree) and professional (bachelor's and master's degrees) education levels (51.8% versus 48.2%). There were slightly more extroverts than introverts. Most head nurses used a task-oriented leadership style and they supervised an average of 32 employees. They had a diverse role set (> 10 role sender groups), and the number of years' experience in
the role of head nurse varied widely (1 month to 30 years). Overall, subjects reported higher levels of role conflict than role ambiguity or role strain.

The representativeness of this sample to the general population of head nurses was examined by comparing demographic data to those reported elsewhere. Alderman (1985) found that 47% of head nurses in a California study worked in medical-surgical areas, 18% worked in critical care, and 35% worked in other areas. The Alabama State Board of Nursing reported that as of December, 1986, 45.7% of head nurses employed in the six sampled counties worked in medical-surgical areas, 20.3% worked in critical care, and 23.9% worked in obstetrics-gynecology-pediatrics (personal communication, January 11, 1988).

Alderman (1985) reported that 18.6% of the California head nurses held diplomas only, 11.4% had only associate degrees, 42.8% had baccalaureate degrees, 25.7% had master's degrees, and 1.4% had doctorates. The Alabama Board of Nursing reported the following data relative to education level for head nurses working in the six county area of Alabama where the study took place: (a) 38% of head nurses held diplomas, (b) 27.2% had associate degrees, (c) 28% had baccalaureate degrees, (d) 3.2% had master's degrees, and (e) less than 1% held doctorates as of December, 1986 (personal communication, January 11, 1988). Alderman (1985) also reported that 54% of the California head nurses were between 30 and 39 years of age.

Data from the present study were generally similar to those data reported from the Alabama Board of Nursing. There were several unexplained differences between Alderman's (1985) study and this study: (a) more head nurses in Alabama were employed in critical care areas, and (b) fewer head nurses in Alabama held bachelor's and master's
degrees. Also, head nurses participating in the study were more highly educated than the general population of head nurses working in the six county area sampled (39.4% bachelor's degrees versus 28%, and 8.8% master's degrees versus 3.2%).

**Instrument Reliability**

Cronbach's Alpha was calculated to assess for internal consistency for the Role Ambiguity Scale and the Role Conflict Scale (Rizzo et al., 1970), the Tension Index (Lyons, 1971), and the Least Preferred Co-Worker Scale (LPC) (Fiedler & Chemers, 1984). The results are displayed in Table 8.

Table 8

**Internal Consistency Reliabilities (Cronbach's Alpha)**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Number of Items</th>
<th>N</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role ambiguity</td>
<td>6</td>
<td>190</td>
<td>.805</td>
</tr>
<tr>
<td>Role conflict</td>
<td>8</td>
<td>188</td>
<td>.913</td>
</tr>
<tr>
<td>Tension index</td>
<td>9</td>
<td>193</td>
<td>.848</td>
</tr>
<tr>
<td>LPC</td>
<td>18</td>
<td>192</td>
<td>.924</td>
</tr>
</tbody>
</table>

Internal consistency estimates "the extent to which different sub-parts of an instrument are equivalent in terms of measuring the critical attribute" (Polit & Hungler, 1983, p. 391). Cronbach's Alpha can be interpreted as higher values reflecting a higher degree of internal consistency.

The reliability coefficient obtained from the present study for role ambiguity was similar to those reported previously (Rizzo et al., 1970; Bedeian et al., 1981; Szilagyi, 1977; Szilagyi & Sims, 1974).
Reliability for the role conflict scale was higher (.913) in this head nurse sample than reported previously (.81 to .89) by Bedeian et al. (1981), Rizzo et al. (1970), and Szilagyi (1977). Reliability for the Tension Index (Lyons, 1971) was similar to other studies (Bedeian et al., 1981) and Cronbach's Alpha for the LPC was higher (.924) than those values reported in other studies (.79 to .91) by Rice (cited in Bass, 1981).

Preliminary Analyses

Two types of preliminary analyses were conducted. First, all interval and ratio level variables were plotted and correlated with each other and with each dependent variable, using the Pearson product moment correlation coefficient. Scatterplots revealed no non-linear relationships. The bivariate correlations ranged from -.003 to .59. Those correlations are displayed in Table 9.

Significant negative correlations between role ambiguity and both age and experience were found. There were significant positive correlations between role ambiguity and both bed size of the hospital and number of employees reporting to the head nurse.

Significant negative correlations were also found between role conflict and both age and experience. Significant positive correlations were found between conflict and the number of employees reporting to the head nurse.

Role strain was negatively and significantly related to age and experience. There was a significant positive correlation between role strain and the number of employees reporting to the head nurse.

Several significant correlations were found among the independent variables. Bed size of the hospital was positively related to number of employees reporting to the head nurse but negatively related to number
Table 9

Bivariate Correlations (N = 193, 1-tailed significance)

<table>
<thead>
<tr>
<th></th>
<th>Beds</th>
<th>Age</th>
<th>Experience</th>
<th>Employees</th>
<th>Role Senders</th>
<th>RA</th>
<th>RC</th>
<th>RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beds</td>
<td>-.169</td>
<td>-.107</td>
<td>.307</td>
<td>-.098</td>
<td>.157</td>
<td>.029</td>
<td>.047</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.013**</td>
<td>.080*</td>
<td>&lt;.001***</td>
<td>.100*</td>
<td>.019**</td>
<td>.350</td>
<td>.270</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.549</td>
<td>-.225</td>
<td>.103</td>
<td>-.261</td>
<td>-.142</td>
<td>-.154</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;.001***</td>
<td>.001***</td>
<td>&lt;.001***</td>
<td>.032**</td>
<td>.022**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>-.114</td>
<td>.143</td>
<td>.170</td>
<td>-.008</td>
<td>-.040</td>
<td>-.085</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.068*</td>
<td>.030**</td>
<td>.013**</td>
<td>.001***</td>
<td>.031**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>-.008</td>
<td>-.427</td>
<td>.456</td>
<td>-</td>
<td>-</td>
<td>.549</td>
<td>&lt;.001***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-.040</td>
<td>.486</td>
<td>.303</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role Senders</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td>-.085</td>
<td>-.085</td>
<td>.134</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td>-.486</td>
<td>-.486</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ .10; **p ≤ .05; ***p ≤ .001
of role senders. Age was moderately and positively correlated with experience but was negatively related to number of employees reporting to the head nurse. Experience was related to age as mentioned and also negatively correlated with number of employees supervised. The number of employees reporting to the head nurse was positively related to the number of role senders.

The dependent variables were significantly and moderately correlated with each other. The data indicated that role conflict and role ambiguity scores tended to increase together and that the presence of either role conflict or role ambiguity tended to increase with increases in role strain.

The second type of preliminary analysis performed was chi-square tests of independence between the categorical independent variables and each dependent variable. The dependent variable scores were divided into low, medium, and high ranges using standard deviations. Scores which were greater than one standard deviation above the mean were categorized as high; scores more than one standard deviation below the mean were classified as low. Those scores of one or less standard deviations above or below the mean were considered medium scores. Any score greater than three standard deviations from the mean was considered an outlier for the purposes of these tests.

Tests of independence were conducted using all levels of the categorical independent variables with the three levels of each dependent variable. The size of each contingency table, chi-square statistics, and significance levels are reported in Table 10.

After reviewing the data, the education variable was collapsed into two categories, a technical category (diploma and associate degree nurses) and a professional category (bachelor's and master's prepared education).
Table 10

Chi-square Results Using All Levels of Categorical Variables (N = 193)

<table>
<thead>
<tr>
<th>DVAR</th>
<th>IVAR</th>
<th>Table Size</th>
<th>Chi^2</th>
<th>p</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role Ambiguity</td>
<td>Hospital type</td>
<td>2 X 3</td>
<td>.73</td>
<td>.69</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Education level</td>
<td>4 X 3</td>
<td>8.92</td>
<td>.18</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Clinical area</td>
<td>3 X 3</td>
<td>7.50</td>
<td>.11</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>4 X 3</td>
<td>10.79</td>
<td>.09*</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Personality type</td>
<td>2 X 3</td>
<td>6.80</td>
<td>.03*</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Leadership style</td>
<td>3 X 3</td>
<td>2.58</td>
<td>.63</td>
<td>4</td>
</tr>
<tr>
<td>Role Conflict</td>
<td>Hospital type</td>
<td>2 X 3</td>
<td>4.54</td>
<td>.10*</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Education level</td>
<td>4 X 3</td>
<td>3.28</td>
<td>.77</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Clinical area</td>
<td>3 X 3</td>
<td>5.11</td>
<td>.28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>4 X 3</td>
<td>4.98</td>
<td>.54</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Personality type</td>
<td>2 X 3</td>
<td>.32</td>
<td>.85</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Leadership style</td>
<td>3 X 3</td>
<td>1.07</td>
<td>.89</td>
<td>4</td>
</tr>
<tr>
<td>Role Strain</td>
<td>Hospital type</td>
<td>2 X 3</td>
<td>.59</td>
<td>.74</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Education level</td>
<td>4 X 3</td>
<td>7.62</td>
<td>.27</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Clinical area</td>
<td>3 X 3</td>
<td>6.15</td>
<td>.19</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>4 X 3</td>
<td>5.09</td>
<td>.53</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Personality type</td>
<td>2 X 3</td>
<td>.46</td>
<td>.79</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Leadership style</td>
<td>3 X 3</td>
<td>1.53</td>
<td>.82</td>
<td>4</td>
</tr>
</tbody>
</table>

*p ≤ .10

It was also decided to collapse nursing care into three categories, eliminating functional nursing from the analyses. This decision was made to eliminate cells with expected frequencies of less than five and to reduce the number of variables which would subsequently enter the multiple regression equations.

Subsequent tests of independence for education level and nursing care with collapsed categories were conducted. Those chi-square results are displayed in Table 11.
Table 11
Chi-square Results for Collapsed Variables

<table>
<thead>
<tr>
<th>DVAR</th>
<th>IVAR</th>
<th>Table Size</th>
<th>Chi²</th>
<th>p</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role ambiguity</td>
<td>Education level</td>
<td>2 x 3</td>
<td>.86</td>
<td>.65</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>3 x 3</td>
<td>10.06</td>
<td>.04**</td>
<td>4</td>
</tr>
<tr>
<td>Role conflict</td>
<td>Education level</td>
<td>2 x 3</td>
<td>.70</td>
<td>.69</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>3 x 3</td>
<td>2.58</td>
<td>.63</td>
<td>4</td>
</tr>
<tr>
<td>Role strain</td>
<td>Education level</td>
<td>2 x 3</td>
<td>6.52</td>
<td>.04**</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Nursing care</td>
<td>3 x 3</td>
<td>2.38</td>
<td>.67</td>
<td>4</td>
</tr>
</tbody>
</table>

**p < .05

The initial chi-square results showed that role ambiguity was not independent of personality type, and that role conflict was not independent of the type of employing hospital. More introverts had high levels of role ambiguity than expected. More head nurses working in for-profit hospitals experienced high levels of role conflict than expected.

After collapsing the education and nursing care model variables, the data revealed that role ambiguity and the type of nursing care model used were not independent. More head nurses using a team nursing model experienced high levels of role ambiguity than expected. More head nurses using a total patient care model experienced low levels of role ambiguity and fewer experienced moderate levels than expected. Fewer head nurses using a primary nursing model experienced high and low role ambiguity, with the majority (85.2%) reporting moderate levels.

Education was found to be associated with role strain. Fewer head nurses with a technical education background experienced high levels of role strain while more experienced moderate levels than expected.
More head nurses with a professional education experienced high role strain and fewer experienced moderate levels of role strain.

In summary, statistically significant relationships were found between role ambiguity and age, experience, bed size of the hospital, and number of employees reporting to the head nurse. Statistically significant relationships were also found between role conflict and age, experience, and the number of employees reporting to the head nurse. Role strain also had statistically significant relationships with age, experience, and the number of employees reporting to the head nurse.

Statistically significant associations were found between role ambiguity and both nursing care model and personality type. Role conflict had a statistically significant association with type of employing hospital, and role strain demonstrated a statistically significant association with education level.

**Hypothesis Testing**

Multiple regression analysis was performed to test each of the three hypotheses. All variables were forced into the equation simultaneously. Listwise deletion of cases with missing data were used. The correlation matrix was presented earlier in this chapter (Table 9). The sums of squares and cross products can be found in Appendix K. In order to enter categorical variables such as personality, leadership style, and nursing care model into the regression equations, dummy coding was performed. The coding scheme and resultant variable labels are listed in Appendix L.

**Hypothesis One**

The set of variables -- bed size, type of hospital ownership, type of clinical area, type of nursing care model, personality type, age,
education level, number of employees reporting to the head nurse, number of role sender groups, leadership style, and years in the current position -- explains a statistically significant amount of the variance in head nurse role ambiguity scores.

Results of the regression analysis are presented in Table 12. Variables in the equation are listed in Appendix M. The null hypothesis of $R^2 = 0$ was tested using the $F$ statistic. The calculated $F$ was 2.048 (14, 158 df, $p = .017$) for the regression equation considering all 14 variables simultaneously. Since $R^2$ was significantly different from zero, the null hypothesis was rejected. In this head nurse sample, the 14 variables accounted for 15.4% of the variance in role ambiguity scores.

Table 12
Results of the Regression Analysis for Role Ambiguity

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>14</td>
<td>447.62</td>
<td>31.97</td>
<td>2.048</td>
<td>.017</td>
</tr>
<tr>
<td>Residual</td>
<td>158</td>
<td>2465.59</td>
<td>15.60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .15365$

Adjusted $R^2 = .07866$

Hypothesis Two

The set of variables -- bed size, type of hospital ownership, type of clinical area, type of nursing care model, personality type, age, education level, number of employees reporting to the head nurse,
number of role sender groups, leadership style, and years in the current position — explains a statistically significant amount of the variance in head nurse role conflict scores.

Results of the second regression analysis are presented in Table 13. (Equation variables are displayed in Appendix M). The null hypothesis of $R^2 = 0$ was tested using the $F$ statistic. The calculated $F$ was 2.110 (14, 158 df, $p = .014$) for the regression equation considering all 14 variables simultaneously. Since $R^2$ was significantly different from zero, the null hypothesis was rejected. For head nurses in this study, the 14 variables accounted for 15.8% of the variance in role conflict scores.

Table 13

Results of the Regression Analysis for Role Conflict

<table>
<thead>
<tr>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>784.45</td>
<td>56.03</td>
<td>2.110</td>
<td>0.014</td>
</tr>
<tr>
<td>158</td>
<td>4194.62</td>
<td>26.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .15755$
Adjusted $R^2 = .0829$

Hypothesis Three

The set of variables — bed size, type of hospital ownership, type of clinical area, type of nursing care model, personality type, age, education level, number of employees reporting to the head nurse, number
of role sender groups, leadership style, and years in the current position -- explains a statistically significant amount of the variance in head nurse role strain scores.

Results of the third regression equation are presented in Table 14. The null hypothesis of $R^2 = 0$ was again tested using the $F$ statistic. The calculated $F$ was 1.664 (14, 158 df, $p = .068$) for the regression equation considering all 14 variables simultaneously. (Equation variables are displayed in Appendix M). Since $R^2$ was significantly greater than zero, the null hypothesis was rejected. In this sample of head nurses, the 14 variables accounted for 12.9% of the variance in role strain scores.

Table 14

Results of the Regression Analysis for Role Strain

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>746.22</td>
<td>53.30</td>
<td>1.664</td>
<td>.068</td>
</tr>
<tr>
<td>Residual</td>
<td>158</td>
<td>5059.90</td>
<td>32.02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .12852$

Adjusted $R^2 = .0513$

The assumptions of regression -- linearity, homoscedasticity, normality, and independence of errors -- were tested for each regression equation. Scatterplots of the continuous independent variables with each dependent variable revealed no non-linear relationships.

Scatterplots of the standardized predicted values of each dependent variable and the standardized residuals showed fairly equal variance.
(homoscedasticity) of each dependent variable for all values of the independent variables. Normality was tested using a histogram of the standardized residuals for each regression equation and normal probability plots of the standardized residuals. For all three equations there were some slight violations of normality, but no data transformations were attempted because "it has been demonstrated that regression analysis is generally robust in the presence of departures from assumptions" (Pedhauzer, 1982, p. 34).

**Supplementary Analyses**

Several supplementary analyses were carried out. First, head nurses with 2 or less years' experience (N = 64), were sorted into a sub-sample. Chi-square tests of independence were conducted for each categorical variable with each dependent variable for the sub-sample using the same procedures described in the preliminary analysis section of this chapter. Education level and nursing care model were collapsed as described earlier. Results of those chi-square tests are shown in Table 15.

For head nurses with less experience, only two categorical variables were associated with role stress scores. For both role ambiguity and role conflict, introversion was associated with greater frequencies of high levels of stress. Extroversion was associated with less frequent occurrence of high levels of conflict and ambiguity. This finding was similar to that reported for the entire sample for role ambiguity only; role conflict was not associated with personality for the entire head nurse group. Nursing care model was not associated with ambiguity for the less experienced group as it was for the entire sample.

Education level was not associated with either conflict or ambiguity for the entire sample but appeared to be associated with conflict in the sub-sample. Fewer professionally educated head nurses
Table 15

Chi-square Results for Categorical Variables (N = 64)

<table>
<thead>
<tr>
<th>DVAR</th>
<th>IVAR</th>
<th>Table Size</th>
<th>Chi²</th>
<th>P</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role ambiguity</td>
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<td>.99</td>
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<td>Education level</td>
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<td>.56</td>
<td>2</td>
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<td></td>
<td>Clinical area</td>
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<td>5.63</td>
<td>.23</td>
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</tr>
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<td></td>
<td>Nursing care</td>
<td>3 X 3</td>
<td>5.57</td>
<td>.23</td>
<td>4</td>
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<tr>
<td></td>
<td>Personality type</td>
<td>2 X 3</td>
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<td>.02*</td>
<td>2</td>
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<td></td>
<td>Leadership style</td>
<td>3 X 3</td>
<td>4.04</td>
<td>.40</td>
<td>4</td>
</tr>
<tr>
<td>Role conflict</td>
<td>Hospital type</td>
<td>2 X 3</td>
<td>1.29</td>
<td>.52</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Education level</td>
<td>2 X 3</td>
<td>4.07</td>
<td>.13</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Clinical area</td>
<td>3 X 3</td>
<td>1.57</td>
<td>.81</td>
<td>4</td>
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<tr>
<td></td>
<td>Nursing care</td>
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<td>2.62</td>
<td>.62</td>
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</tr>
<tr>
<td>Role strain</td>
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<td>2.58</td>
<td>.28</td>
<td>2</td>
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<tr>
<td></td>
<td>Education level</td>
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<td>.08</td>
<td>.95</td>
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<td>4</td>
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<tr>
<td></td>
<td>Nursing care</td>
<td>3 X 3</td>
<td>.57</td>
<td>.97</td>
<td>4</td>
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<tr>
<td></td>
<td>Personality type</td>
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<td>2.06</td>
<td>.36</td>
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</tr>
<tr>
<td></td>
<td>Leadership style</td>
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<td>3.59</td>
<td>.46</td>
<td>4</td>
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</table>

*p ≤ .10

experienced high levels of role conflict than expected, while more technically educated head nurses experienced high levels of conflict. This finding should be interpreted with some caution, however, because the probability value of the test was slightly greater than the alpha level set a priori (.13).

Role strain was not associated with any of the categorical variables in the sub-sample. This finding differed from the entire group of head nurses, in which education level was significantly associated with strain.

The second analysis conducted on the sub-sample was to calculate bivariate correlations of the continuing independent variables with each
other. Pairwise deletion of cases with missing values was used. Those correlations are displayed in Table 16. Sums of squares and cross products are listed in Appendix N.

For this sub-sample of less experienced head nurses, role ambiguity was negatively related to age and positively related to the number of employees reporting to the head nurse. Role conflict was positively related to the number of employees and negatively related to the number of role sender groups. Role strain was negatively related to the number of role sender groups. As in the larger sample, role ambiguity and role conflict were positively related to each other and to role strain. The correlation between role conflict and role ambiguity was somewhat stronger in the less experienced group (.56 versus .44).

Based on the results of the chi-square tests and bivariate correlations, specific variables were selected for inclusion in testing a partial role episode model for the less experienced group. Only those variables found to have statistically significant associations with or relationships to the dependent variables were included in the regression analysis. Role strain was related to only one independent variable in the sub-sample group, number of role sender groups. Therefore, only that variable entered the regression equation.

The null hypotheses for the sub-sample analyses were as follows:

1. The set variables -- number of role sender groups, number of employees reporting to the head nurse, education level, and personality type -- does not explain a statistically significant amount of the variance in the sub-sample role conflict (SSRC) scores.
Table 16
Bivariate Correlations (N = 64, 1-tailed Significance)

<table>
<thead>
<tr>
<th></th>
<th>Beds</th>
<th>Age</th>
<th>Experience</th>
<th>Employees</th>
<th>Role Senders</th>
<th>RA</th>
<th>RC</th>
<th>RS</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td>-.25</td>
<td>.02</td>
<td>.43</td>
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<td>-.07</td>
<td>.03</td>
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<tr>
<td></td>
<td></td>
<td>.02**</td>
<td>.45</td>
<td>&lt;.001***</td>
<td>.20</td>
<td>.12</td>
<td>.29</td>
<td>.40</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>-.12</td>
<td>-.05</td>
<td>-.23</td>
<td>-.02</td>
<td>-.07</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>.35</td>
<td>.18</td>
<td>.35</td>
<td>.04**</td>
<td>.43</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
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<td>.05</td>
<td>-.09</td>
<td>.07</td>
<td>.02</td>
<td>.14</td>
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<td>.23</td>
<td>.30</td>
<td>.44</td>
<td>.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td></td>
<td>-.24</td>
<td>-.25</td>
<td>.03**</td>
<td>.06*</td>
<td>.27</td>
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<tr>
<td>Role Senders</td>
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<td>-.24</td>
<td>.39</td>
<td>.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td></td>
<td>-.56</td>
<td>&lt;.001***</td>
<td>.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td></td>
<td>&lt;.001***</td>
<td>&lt;.001***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ .10, **p ≤ .05, ***p ≤ .001
2. The set of variables -- number of employees reporting to the head nurse, personality type, and age -- does not explain a statistically significant amount of the variance in the sub-sample role ambiguity (SSRA) scores.

3. The variable -- number of role sender groups -- does not explain a statistically significant amount of the variance in the sub-sample role strain (SSRS) scores.

Results of the three regression equations are presented below. Tables 17, 18, and 19 display these results.

Table 17

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>293.61</td>
<td>73.40</td>
<td>3.48</td>
<td>.013</td>
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<tr>
<td>Residual</td>
<td>57</td>
<td>1201.10</td>
<td>21.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2 = .19643$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2 = .14004$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the sub-sample, personality, education, number of role sender groups, and number of employees considered simultaneously did explain a significant amount of the variance in role conflict scores ($F = 3.48$, 4, 57 df, $p = .013$). The amount of variance accounted for by only four variables was 19.6%. Equation variables can be found in Appendix D. This was a larger amount of variance explained with fewer variables than was explained by the total model tested in the entire sample of head nurses.
The results of the regression equation for role ambiguity were also more promising in the sub-sample. The variables -- personality, age, and number of employees -- accounted for 18.6% of the variance ($F = 4.42, 3.58 \text{ df}, p = .007$). In the whole group of head nurse subjects, 14 variables accounted for only 15.3% of the variance. The equation variables are listed in Appendix 0.
Role strain variance was not well accounted for in the sub-sample. Although statistically significant results were obtained ($F = 3.99$, $1,62$ df, $p = .05$), only 6% of the variance was explained by the number of role sender groups. In this sub-sample of less experienced head nurses, the model was not appropriately specified to explain role strain. In addition, testing of the total role episode model on the entire sample of head nurses explained only 12.9% of the variance in role strain. Since so much of the variance was left unexplained in both samples, more refinement is needed with regard to identifying possible influences on the occurrence of role strain in head nurses.

The final supplementary analysis conducted was to assess the statistical power for the regression analyses conducted on the entire sample and on the sub-sample. For the large sample analyses, actual power was calculated as greater than .99 for all three equations. For the sub-sample regression analyses, actual power was found to be greater than .99 for role conflict and role ambiguity. Power for the role strain $R$ value was only .52. This low value resulted from the very low magnitude of effect obtained with regard to role strain ($R = .24$, $R^2 = .06$).
CHAPTER V
Discussion, Findings, Conclusions, and Implications

Discussion
The purpose of the present study was to describe the relationship of organizational, interpersonal, and personal factors to the occurrence of role ambiguity, role conflict, and role strain in head nurses. The sample included 193 head nurses employed in six Alabama counties. Role theory, specifically the theory of the role episode, provided the framework for design, execution, analysis, and interpretation of the study.

Findings
The research hypotheses were supported by the findings of the study. The set of independent variables examined did explain significant variances in the amount of role ambiguity, role conflict, and role strain. However, the amounts of variance explained, although statistically significant, ranged from just 12.9% to 15.7% for the three dependent variables. Role strain results were the lowest. There appeared to be other variables not measured in the present study which were influencing the occurrence of ambiguity, conflict, and strain in this head nurse group.

Findings from the sub-sample of head nurses with 2 years or less experience were somewhat more encouraging. Tests of a partial model for role conflict and role ambiguity were more parsimonious. Two personal factors (personality and education) and two organizational factors (number of employees and number of role sender groups) accounted for
almost 20% of the variance in role conflict scores among less experienced head nurses. One organizational factor (number of employees) and two personal factors (personality and age) accounted for almost 19% of the variance in role ambiguity. Role strain, however, related to only one factor (number of role sender groups) which explained 6% of the variance. For the group of less experienced head nurses, the proposed role episode model did not explain role strain.

The relationship of specific variables to role stress and role strain was also examined. The bivariate correlations for the entire sample revealed several significant findings. First, as head nurses age, the amounts of ambiguity, conflict, and strain decrease. Increasing experience was also related to a decrease in role stress and role strain. Role ambiguity was related to bed size of the hospital, when the size of the hospital increased so did ambiguity scores.

As the number of employees reporting to the head nurse increased, levels of ambiguity, conflict, and strain increased also. Changes in the number of role sender groups did not relate to any of the dependent variables in the large sample of head nurses. These two findings may indicate that head nurses' interaction with one role sender group (their subordinate employees) was more stressful than interaction with a large, mixed role set.

Chi-square tests of independence provided further insight into specific sources of role stress and role strain for this head nurse group. Introversion was associated with higher levels of ambiguity. Team nursing was also associated with higher levels of ambiguity, while total patient care models were associated with lower levels. Primary nursing was associated with moderate levels.
The type of hospital in which head nurses worked was associated with role conflict. Those working in for-profit hospitals experienced high levels of role conflict more often than expected. Education level was associated with the amount of role strain reported. Fewer technically prepared nurses experienced high role strain than expected while more professionally prepared nurses experienced high role strain.

When experience was held constant in the sub-sample, the bivariate correlations were somewhat different. Age of the head nurse was only related to ambiguity. As the less experienced head nurses aged, role ambiguity scores decreased. Conflict and strain scores showed no relationship to age.

The number of employees reporting to the head nurse was positively related to ambiguity and conflict for less experienced subjects but not to role strain, as found in the entire sample. Also, the number of role sender groups was positively related to both role conflict and role strain.

In the group of less experienced head nurses, interaction with their subordinate employees as well as with their diverse role set was related to role conflict. This finding was in contrast to the results from the entire sample. One possible explanation is that head nurses do experience conflict arising from interaction with the entire role set in the early months and years in the position. As experienced grows, successful coping strategies develop to deal with conflicting role demands from some, but not all, members of the role set. Subordinate employees remain a source of conflict, ambiguity, and strain for head nurses despite increasing years in the role.

Among the less experienced head nurse group, personality type was associated with role conflict and role ambiguity. The other categorical
variables — education, clinical area, nursing care model, and type of hospital financial base — were independent of those role stressors. None of the categorical variables was associated with role strain in the sub-sample. In the larger sample, personality was associated with role ambiguity but was not associated with role conflict. In the sub-sample, subjects who were introverts experienced higher levels of both ambiguity and conflict more often than expected. Since introverts with more experience (in the large sample) did not demonstrate an association with high levels of conflict, they may have had enough time in their roles to develop coping mechanisms. They may also have been in their positions long enough to influence sent role messages through confrontation or avoidance, thereby controlling conflicting demands.

There was a much stronger association of education with role conflict in the less experienced group, although it was not statistically significant \( p = .13 \). For the entire sample, the probability value was .69. The data suggested that among the less experienced group, fewer professionally educated subjects experienced high levels of role conflict than expected, while more technically educated subjects experienced high levels of conflict. Further substantiation is needed regarding the influence of education.

Finally, as suggested by Jennings (1986), Byers and Klink (1978), and Katz and Kahn (1978), the head nurse role appears to be at risk for role stress and role strain. Head nurses in this study had mean scores for role ambiguity, role conflict, and role strain which were equal to or greater than midpoints of the possible ranges.

Conclusions

Based on the findings presented, the following conclusions were made:

1. The majority of the variance in head nurse role conflict, role
ambiguity, and role strain scores was unexplained by the variables tested in this model. This indicated that there were other factors, not yet identified, in the head nurse's work environment which were also influencing the occurrence of job-related stress.

2. For the sub-sample of less experienced head nurses, the amount of variance explained relative to role conflict and role ambiguity was higher using fewer variables. This indicated a better fit of those partial models to the subjects early in their head nurse careers.

3. The variables influencing the occurrence of role stress and role strain may change over time, some more strongly related to the phenomena in the early years in the position, others emerging as strongly associated later in the career.

4. All personal factors measured (age, experience, education, and personality type) were related to role stress or role strain. This indicated that some potential sources of job-related stress were present at the time of selection into the head nurse role.

5. The one interpersonal factor measured (leadership style) was not associated with role stress or role strain. This indicated that other interpersonal factors not yet identified may be influencing stress and strain.

6. Among the organizational factors, clinical area of practice did not explain stress or strain. Size of the hospital, type of ownership of the hospital, the type of nursing care model used, the number of subordinate employees, and the number of role sender groups were all related to stress and strain. The latter three factors may be capable of manipulation within the nursing department organization, thereby reducing the potential for role stress and role strain.
Relationship of Results to the Theoretical Framework

Results of hypothesis testing provided some support for the role episode model as a whole. Many of the organizational and personal factors specified related individually to the occurrence of role conflict, role ambiguity, and role strain. Those factors were derived from theory and the findings related to them lent support to the theoretical framework.

Kahn et al. (1964) postulated that role ambiguity would increase as the organization increased in size and, therefore, in complexity. The present study confirmed that premise. As bed size of the hospital increased, role ambiguity scores increased also. They further postulated that the financial base of the organization is a factor influencing role senders and, therefore, sent role messages. The findings from this study indicated that head nurses working in for-profit hospitals experienced higher levels of role conflict than those employed in not-for-profit settings. This may represent a person-role conflict, as described by the theory of role dynamics.

The framework developed by Kahn et al. (1964) theorized that focal persons develop coping mechanisms to deal with role conflict and role ambiguity. Coping strategies were not measured in the present study, however, indirect evidence of coping was found:

1. As head nurses aged and their experience increased, role stress and role strain were decreased.

2. Head nurses new in the role (2 years or less) experienced increasing role conflict related to greater numbers of role senders. However, as experience in the role increased, role stress was no longer influenced by the number of role senders.
Finally, support for the influence of personality on role outcomes was found. Introverts experienced higher levels of role ambiguity than extroverts. In the sub-sample, introverts with less experience also reported higher levels of role conflict than extroverts.

Overall, the findings from the present study were promising but they indicated that selection, operationalization, and measurement of the role episode components requires further refinement. Some refinement was accomplished when there was a better fit of the partial models for conflict and ambiguity in the sub-sample of inexperienced subjects.

In summary, elements of the model which were supported by the findings included hospital size, type of hospital ownership, number of subordinate employees, type of nursing care model, number of role sender groups, age, experience, personality type, and educational preparation. Leadership style, the only interpersonal factor measured, and clinical area, an organizational factor, were not supported by the data as relating to role stress or role strain.

**Relationship of Results to the Review of Research**

Results from the present study corroborated some findings from previous research and were in contrast to other findings. Van Sell et al.'s (1981) and Fisher and Gitelson's (1983) reviews of role theory research both reported significant correlations between boundary spanning and role conflict. Fisher and Gitelson's conclusions were based on a meta-analysis of 42 studies. The present study also found that the number of role sender groups was related to role conflict, but only in the sub-sample of less experienced subjects. Therefore, head nurses from the larger sample differed from other samples with regard to the effect of boundary spanning on role conflict.
Age, education, and experience were all reported as significant correlates to role ambiguity by Fisher and Gitelson (1983) but found to vary across samples. Age and experience were also significant correlates to conflict, ambiguity, and strain in the present study. However, education level was only associated with role strain.

Tension and anxiety were found to be one of the most frequently reported correlates of role conflict and role ambiguity by Fisher and Gitelson (1983), although in their meta-analysis there was variance across samples. Role strain, measured by the Tension Index, was significantly related to both conflict and ambiguity in the present study.

Alderman (1985) reported significant correlations between role conflict and both experience and number of employees reporting to the head nurse. Those correlations were also found in the present study. Alderman (1985) also reported non-significant relationships between the number of role sender groups and both conflict and ambiguity. Such were the findings for the entire head nurse group in the present study; however, for the sub-sample of less experienced head nurses, there was a significant relationship between the number of role senders and role conflict.

Kennedy (1984) found that head nurses working in maternal-child areas experienced the least amount of role conflict while head nurses on medical units experienced greater amounts. The present study found no association between clinical area and role ambiguity, role conflict, or role strain.

Arndt and Laeger (1970a, 1970b) reported a trend toward higher role strain among nursing directors who worked in large hospitals. That finding was not supported by the present study. There was a significant correlation between size of the hospital and role ambiguity, however.
Arndt and Laeger reported no correlation between age, education, or experience with role strain. Leatt and Scheck (1980) also reported no relationship of age and experience to role stress. In this study of Alabama head nurses, those factors were significantly related to role strain and to role conflict and role ambiguity.

Kahn et al. (1964) reported that experienced ambiguity was moderated by the focal person's personality; extroverts experienced less ambiguity. It was expected that support for personality as a moderator would be found in the association of personality type with role strain. Role strain was conceptualized as the subjective response to conflict and ambiguity. No association between role strain scores and personality was found. Role ambiguity, conceptualized as objective ambiguity, however, was associated with personality. As indicated by Kahn et al., introverts had higher levels of role ambiguity.

Alternate Explanations of the Results

Failure to explain a larger amount of the variance may not be due to the variables themselves but to their conceptualization, operationalization, and measurement. The effect of interaction among variables was not considered in the present study and may have influenced the dependent variable scores. Variables not specified but which influenced the occurrence of the phenomena also contributed to the unexplained variance.

The number of role sender groups not under the direct authority of the head nurse was theorized to be an important organizational factor but was not included in the analysis as planned. Non-subordinate role senders included physicians who are major role senders for head nurses. The effects of physician-head nurse interaction on role stress or role strain may be significant. A study by Knaus, Draper, Wagner, and
Zimmerman (1986) found that the nature of physician-nurse manager communication was significantly related to patient outcomes in intensive care units.

Other interpersonal factors may influence role stress and strain. The amount of trust and support which head nurses perceive from immediate supervisors may explain some of the variance. The leadership style of immediate supervisors may also be important.

Implication

Implications serve the purpose of linking research-based knowledge to practice, to education, and to future research. This section addresses each of those linkages.

Implications for Practice

The implications for nursing practice are directed toward nursing service administrators. These leaders play a crucial role in the initial selection and orientation of head nurses, as well as in their long-term development, guidance, and evaluation. In addition, nurse administrators are functionally dependent upon head nurses for positive organizational outcomes.

The first implications for nurse leaders is to recognize that role stress and strain do occur for head nurses. Second, it is important to realize that certain enduring characteristics of the individual can influence role stress and role strain (e.g., personality type, education, age, experience). Since individuals may enter the head nurse role with potential for stress already present, the nursing administrator should evaluate what support systems are available to the new head nurse. Such support systems can include a strong peer group, positive role models, and a supportive immediate supervisor. The data showed that as experience in the head nurse role increases, the amounts of role conflict,
role ambiguity, and role strain decrease. Therefore, nurse administrators should strive to positively support new head nurses so that they can successfully cope with role demands and gain experience in the role.

Span of control for head nurses should be carefully evaluated by each nursing administrator. Thirty-one percent of the head nurses in this study supervised 40 or more employees. The data indicated that role stress increases as the number of employees reporting to the head nurse increases. This was true for all levels of experience. Span of control can be altered by nurse leaders.

The potential for role conflict appears to be higher in for-profit hospitals. Within those institutions, nurse leaders should recognize that potential and provide support when needed.

Finally, team nursing was associated with role ambiguity. Roles and responsibilities for all nursing staff using a team modality may need periodic review in order to minimize that ambiguity.

Implications for Education

Head nurses have varying educational preparation. In the present study, the sample was split between technical preparation and professional preparation. Since there is no one method of education required for either nurses or head nurses, implications derived from this study are directed toward all educational settings.

The data indicated that technically prepared head nurses (diploma and associate degree) experienced higher role conflict early in their careers while professionally prepared head nurses experienced higher role strain across their careers. Within the context of all education programs, those potentials must be recognized. Educators may then begin to introduce more managerial concepts and role behaviors prior to
graduation. The student nurse who is socialized to both the clinical role and the role of resource manager may subsequently cope better with the role demands of both when moving into middle management.

All educators should teach such skills as delegation, organization, planning, and effective group leadership to nursing students. Such skills are important to the clinical nurse and can become the basis for successful enactment of the head nurse role later. Early socialization to the role of nurse as manager may lessen the potential for role stress later in the career.

Finally, it is recommended that leaders in nursing service and nursing education consider a uniform method for preparing nurses to perform as head nurses. Changes in the health care system in this decade have focused on the effective control of limited resources to achieve maximum patient outcomes. The skills necessary to manage patient care effectively and efficiently might best be acquired at the master's educational level.

Implications for Research

Implications for further research fall into three categories: (a) replication of the present study, (b) extension of the study, and (c) development of quasi-experimental or experimental designs. Specific recommendations for each category are discussed in the following paragraphs.

Replication studies are needed to enlarge the data base related to head nurses and to role stress among them. So few studies have been conducted on head nurses that descriptive data for the population is very limited. Replication of all or parts of the present study on other samples would provide correlation coefficients which could subsequently be compared using meta-analysis techniques. Results of such an analysis
should provide credible evidence for the existence of role stress and role strain. Such findings would also provide insight into the factors which are consistently related to role stress within the head nurse population.

Various extensions of the present study are indicated. After refinement of the model, further sub-sampling based on experience is indicated. The influence of various environments on role stress (such as teaching hospitals) should be explored. More interpersonal factors need to be identified and examined in relation to role stress and role strain. The interaction among and between factors must be examined.

Manipulation of variables thought to be related to or causal for role stress and role strain can be attempted after more variance is accounted for by findings from descriptive studies. Experimental designs can be used to isolate and to control extraneous variables. Objective dependent measures such as heart rate and blood pressure might be used to detect anxiety and tension among subjects in an experimental situation. The dependent measures could be compared to subjects' self-reports using existing instruments.

Finally, it is recommended that the Role Set Inventory (adapted from Alderman, 1985) be further tested and refined to reduce the apparent confusion which subjects experienced in the present study. Specific attention needs to be paid to the readability of the directions for completing the instrument.

In conclusion, much work is still needed to identify and, hopefully, to control the sources of role stress and role strain in head nurses. The present study was able to isolate some factors related to the phenomena, but much of the variance was left unexplained. Over 6,000
nursing staff are influenced by the head nurses in the present study on a daily basis. Countless numbers of patients are dependent upon these individuals. Seeking to maximize head nurse role performance by minimizing role stress remains a worthy goal.
REFERENCES


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Appendix A

Role Conflict and Role Ambiguity Scales
(Rizzo et al., 1970)
Role Conflict and Role Ambiguity Scales (Rizzo, House, & Lirtzman, 1970)

Here are some statements which may describe your job. Please indicate the extent to which you agree or disagree with each statement by circling the appropriate response. BE SURE TO ANSWER ALL QUESTIONS.

Key:

SA = strongly agree
A = agree
U = undecided
D = disagree
SD = strongly disagree

1. Clear, planned goals and objectives exist for my job. SA A U D SD
2. On my job, I have to do things that should be done differently. SA A U D SD
3. I know that I have divided my time properly on my job. SA A U D SD
4. I frequently receive an assignment without the right people to complete it. SA A U D SD
5. I know what my job responsibilities are. SA A U D SD
6. I frequently have to ignore a rule or policy in order to carry out a job assignment. SA A U D SD
7. The explanations of what I should do on my job are clear to me. SA A U D SD
8. I work with two or more groups of people who work quite differently.

9. I know exactly what is expected of me on my job.

10. On my job I frequently receive different and conflicting requests from two or more people.

11. I feel certain about how much authority I have on my job.

12. On my job I do things that are likely to be accepted by one person but not by others.

13. I frequently receive an assignment without adequate materials to do it.

14. I have to work on unnecessary things.
Appendix B

Tension Index
(Lyons, 1971)
Tension Index (Lyons, 1971)

All of us occasionally feel bothered by certain kinds of things in our work. Below are a list of things that sometimes bother people. Please indicate how often you feel bothered by these things. Circle the number which corresponds to your answer. PLEASE ANSWER ALL QUESTIONS.

Key:

1 = never
2 = rarely
3 = sometimes
4 = rather often
5 = nearly all the time

How often do you feel bothered by:

1. Being unclear on just what the scope and responsibilities of your job are. 1 2 3 4 5
2. Not knowing what opportunities for advancement or promotion exist for you. 1 2 3 4 5
3. Not knowing what your immediate supervisor thinks of you, how she or he evaluates your performance. 1 2 3 4 5
4. The fact that you can’t get information needed to carry out your job. 1 2 3 4 5
5. Not knowing just what the people you work with expect of you. 1 2 3 4 5
6. Feeling that you have too heavy a work load, one that you can’t possibly finish during an ordinary workday. 1 2 3 4 5

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7. Thinking that the amount of work you have to do may interfere with how well it gets done.

8. Feeling that you have to do things on the job that are against your better judgment.

9. Thinking that you'll not be able to satisfy the conflicting demands of various people over you.
Appendix C

Myers-Briggs Type Indicator (Abbreviated Form)
(Briggs & Myers, 1983)
Myers-Briggs Type Indicator (Abbreviated Form)
(Briggs & Myers, 1983)

Read each question carefully and indicate your answer by making an X in the appropriate box next to the response you select. Do not think too long about any question. If you cannot decide on a question, skip it and return to it later. BE SURE TO ANSWER EVERY ITEM, HOWEVER.
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Appendix D

Least Preferred Coworker (LPC) Scale
Appendix E

Role Set Inventory
(Adapted from Alderman, 1985)
Role Set Inventory
(adapted from Alderman, 1985)

Below is a list of hospital personnel and others with whom you may need to work in your role as a nurse manager. Please do two things with this list. In Column A, CHECK OFF each group with whom you interact at least three times per week in order to get your job done. In Column B, CHECK OFF groups with whom you interact at least three times per week, but whom you do not supervise or have direct line authority over. The people in Column B report to a boss other than you but it is necessary for you to be involved with them, interact with them, or coordinate with them at least three times per week to get your job done.

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Column A</th>
<th>Column B</th>
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</thead>
<tbody>
<tr>
<td>A. hospital administrator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. nursing administrator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. nursing staff on your unit (RN’s, LPN’s, Tech’s, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. ancillary staff on your unit (NA’s, clerks, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. other nurse managers (head nurses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. private, attending physicians</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. medical house staff (fellows, residents, interns)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. students (nursing, medical, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. patients and their families</td>
<td></td>
<td></td>
</tr>
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</table>

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<p>| | |</p>
<table>
<thead>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>J.</td>
<td>other departments heads or managers (housekeeping, dietary, radiology, etc.)</td>
</tr>
<tr>
<td>K.</td>
<td>other health care professionals (physical therapists, respiratory therapists, social workers, etc.)</td>
</tr>
<tr>
<td>L.</td>
<td>other non-professionals (transporters, messengers, housekeepers, technicians, etc.)</td>
</tr>
<tr>
<td>M.</td>
<td>volunteers</td>
</tr>
<tr>
<td>N.</td>
<td>employees outside your institution (educators, public officials, professional organizations, etc.)</td>
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<tr>
<td>O.</td>
<td>others -- please specify</td>
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<td></td>
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</table>
Appendix F

Personal and Organizational Factors
Personal and Organizational Factors

The following information is needed to help analyze the data. Please fill in the blank or check the most appropriate answer for each item. Put only one answer for each question. PLEASE ANSWER ALL QUESTIONS.

1. Your age _______ years

2. How long have you been working in your nurse manager job? _______ years

3. What is the highest level of education that you have completed? Check one.
   - _______ Diploma in nursing
   - _______ Associate in nursing
   - _______ Associate in another field
   - _______ Bachelor's in nursing
   - _______ Bachelor's in another field
   - _______ Master's in nursing
   - _______ Master's in another field
   - _______ Doctorate in nursing
   - _______ Doctorate in another field

   - _______ Adult medical-surgical unit
   - _______ Critical care unit (adult, pediatric, or neonatal)
   - _______ Obstetric, gynecologic, nursery, or pediatric unit (non-critical care)
5. What method of nursing care delivery do you use on your unit? Check the one method which you use most frequently.

______ team nursing

______ total patient care

______ functional nursing

______ primary nursing

6. How many employees (people, not full-time equivalents) report directly to you?
Appendix G

Letter to Nurse Administrators Requesting Permission to Collect Data
Dear NAME:

I am a doctoral candidate in nursing service administration at the University of Alabama at Birmingham conducting dissertation research on job stress in head nurses. As you know there has been very little research done on the head nurse role although it is generally considered a crucial part of the nursing organization. With your permission and assistance I will be able to expand our information about the role of head nurses in complex organizations.

I would like to distribute study questionnaires to your head nurse staff. A copy of the questionnaire is enclosed for your review. Because all hospitals do not use the title 'head nurse', a definition is enclosed. Regardless of actual title, I seek data from those who function in the role described.

In order to collect data from your head nurses I will need a contact person in your office with whom I can work to arrange distribution of the questionnaires. Completed questionnaires will be mailed back to me in postage paid envelopes. Head nurses should be able to complete the instrument in about 30 minutes.

The enclosed Agency Permission Form has spaces for you to indicate your consent (or refusal) for me to survey your staff and a place to indicate a contact person's name and phone number. Please place your completed form in the enclosed postage paid envelope and return to me by DATE.

I am very grateful to you for allowing me to collect data from your staff. All responses (yours and your staff) are confidential; no individual or hospital can be identified from the data. Results of this study will be sent to you when they are available.

Sincerely,

Bonnie Pilon, R.N., M.N.
Birmingham, Alabama
(205) [redacted] (H)
(205) [redacted] (W)

Enclosures
Definition of Head Nurse

The nurse appointed by the hospital organization to oversee the day-to-day operations of one patient care unit (generally) and who has responsibility and accountability for the quality of nursing care delivered to the patients housed on the patient care unit as well as for the personnel and material resources utilized by the unit. This individual carries out periodic performance evaluations of the staff assigned to the patient care unit; this nurse also has input into hiring, firing, counselling and promotion of employees on the unit. Other labels commonly associated with this position are nurse manager, first-level supervisor, clinical coordinator and patient care coordinator.
Agency Permission Form

On behalf of ________________________________ Hospital, I

______consent     _______refuse

to allow Bonnie Pilon, UAB graduate student, to collect
data from head nurses employed here.

signature     title     date

Contact Person in nursing administration:

______________________________  ____________________________
name (please print)             phone number

Place this form in the envelope provided and return to
Bonnie Pilon. Thank You.
Appendix H

Institutional Review Board Permission to Conduct Research on Human Subjects
The University of Alabama in Birmingham
Institutional Review Board for Human Use

FORM 4: IDENTIFICATION AND CERTIFICATION OF RESEARCH PROJECTS
IN VolVING HUMAN SUBJECTS

The Institutional Review Board (IRB) must complete this form for all applications for research and training grants, program project and center grants, demonstration grants, fellowships, traineeships, awards, and other proposals which might involve the use of human research subjects independent of source of funding.

This form does not apply to applications for grants limited to the support of construction, alterations and renovations, or research resources.

PRINCIPAL INVESTIGATOR  Bonita Ann Pilon, R.N., M.N.

PROJECT TITLE  The Relationship of Organizational, Personal, and Interpersonal Factors to Role Conflict, Role Ambiguity, and Role Strain in Head Nurses

1. This is a training grant. Each research project involving human subjects—proposed by trainees must be reviewed separately by the Institutional Review Board (IRB).

2. This application includes research involving human subjects. The IRB has reviewed and approved this application on [date], in accordance with UAB's assurance approved by the United States Public Health Service. The project will be subject to annual continuing review as provided in this assurance.

   This project received expedited review.

   This project received full board review.

3. This application may include research involving human subjects. Review is pending by the IRB as provided by UAB's assurance. Completion of review will be certified by issuance of another FORM 4 as soon as possible.

4. Exemption is approved based on number(s) 3a

   7/18/69

   Date

   Cahome, M.D.
   Chairman of the Institutional Review Board

University Station / Birmingham, Alabama 35294
An Affirmative Action / Equal Opportunity Employer
Appendix I

Follow-up Letter to Head Nurse Subjects

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Dear NAME,

A few weeks ago I visited HOSPITAL to ask for help with my doctoral research. At that time I left a packet for each head nurse, containing a questionnaire and mail-back envelope. You should have received one of those packets.

If you did not receive a questionnaire to fill out, contact me at the address below and I will send you another copy immediately. If you have not yet returned your completed questionnaire, please take a few minutes today to finish it and mail it back to me. Your information is so important to the study, and the study is vitally important to head nurses everywhere. Please help.

If I can answer any questions or concerns you may have, please get in touch with me. I'll be glad to talk with you.

Thank you again for your valuable participation.

Sincerely,

Bonnie Pilon, R.N., M.N.
Doctoral Candidate, UAB
Appendix J

Letter Soliciting Participation of Subjects with
Instructions for Completion of the Instrument
DATE

Dear Nurse Manager,

I am a nurse conducting my doctoral research on the nurse manager role as my dissertation project at the University of Alabama at Birmingham. As you know there is very little written about first level nurse managers in the nursing literature yet we frequently talk of how valuable the nurse manager is to the hospital. With your help I will be able to describe certain characteristics of first level nurse managers.

This study is composed of a six-part short answer questionnaire related to your job. The nursing administrator at your hospital has given me permission to ask you for your input. It will take you about 30 minutes to complete the questionnaire.

Your answers are confidential and cannot be used to identify you. Your responses will be pooled with the responses of all nurses in the study. The questionnaires are numbered only for the purpose of determining the response rate for the study. That number cannot be used to identify you.

Please put the completed questionnaire in the postage-paid envelope I have provided and mail it back to me by DATE. Your return of the completed questionnaire signifies your consent to participate in this study.

I am grateful for your time and effort as a participant. If you would like to know the results of this study they will be sent to your nursing administrator at the conclusion of the research project. If you have further questions about the study you can reach me at the address below.

Sincerely,

Bonnie Pilon, R.N., M.N.

Birmingham, Alabama
(H) 205-
(W) 205-

Enclosures
Appendix K

Sums of Squares and Cross-Products for the Entire Sample (N = 193)
Sums of Squares and Cross-Products for the Entire Sample
\((N = 193)\)

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\(^\text{A}\)Sums of squares; all other values are cross products.
Appendix L

Dummy Coding Used in Regression Equations
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Appendix M

Regression Equation Coefficients,
Entire Sample Analyses
### Variables in the Equation for Role Ambiguity

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### Variables in the Equation for Role Strain

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### Variables in the Equation for Role Conflict

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Appendix N

Sums of Squares and Cross-Products for
the Sub-Sample (N = 64)

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## Sums of Squares and Cross-Products for the Sub-sample (N = 64)

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*sums of squares; all other values are cross products.*
Appendix 0

Regression Equation Coefficients, Sub-Sample Analyses
### Variables in the equation for role conflict (N = 61)

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### Variables in the equation for role ambiguity (N = 61)

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GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate: Bonita Ann Pilon

Major Subject: Nursing Service Administration

Title of Dissertation: The Relationship of Organizational, Personal, and Interpersonal Factors to Role Conflict, Role Ambiguity, and Role Strain in Head Nurses

Dissertation Committee:
Chairman

Director of Graduate Programs

Dean, UAB Graduate School

Date: ____________________