1994

Applying Boyer's scholarship model to nurse faculty role behaviors.

Deanna Janette Ross Naddy
University of Alabama at Birmingham

Order Number 9425324

Applying Boyer's scholarship model to nurse faculty role behaviors

Naddy, Deanna Janette Ross, D.S.N.

University of Alabama at Birmingham, 1994

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

APPLYING BOYER'S SCHOLARSHIP MODEL TO NURSE FACULTY ROLE BEHAVIORS

by

DEANNA JANETTE ROSS NADDY

A DISSERTATION

Submitted in partial fulfillment of the requirements for
the degree of Doctor of Science in Nursing in the
School of Nursing in the Graduate School,
The University of Alabama
at Birmingham

BIRMINGHAM, ALABAMA

1994

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Deanna J. Naddy

Major Subject Community Mental Health Nursing

Title of Dissertation Applying Boyer's Scholarship Model to Nurse Faculty Role Behaviors

Dissertation Committee:

Linda Chair, Chairman

James Maddirala

Joan S. Hart

Carol J. Clark

Elizabeth Stullenbarger

Director of Graduate Program Elizabeth Stullenbarger

Dean, UAB Graduate School

Date 8/19/94

ABSTRACT OF DISSERTATION
GRADUATE SCHOOL, UNIVERSITY OF ALABAMA AT BIRMINGHAM

Degree D.S.N. Major Subject Community Mental Health Nursing

Name of Candidate Deanna Janette Ross Naddy

Title Applying Boyer's Scholarship Model to Nurse Faculty Role Behaviors

Nurse faculty scholarship is a critical issue for nursing administrators and faculty. Present conditions in higher education challenge nurse faculty to fulfill their scholarly role. How nurse faculty manage their increased loads is important not only to the individual but also for the future of nursing as a scholarly academic discipline. Nursing education literature demonstrates a lack of valid and reliable instruments quantifying nurse faculty role behaviors. If nurse faculty wish to ensure better recognition as academicians, there is a need to have valid and reliable measures of their role behaviors. The purpose of this descriptive study was to explore whether Boyer's (1990) conceptualization of scholarship, as composed of four dimensions--research (discovery), integration, service (application), and teaching--could be used to categorize nurse faculty role behaviors. The conceptual formulations for this study were derived from Boyer's model of scholarship. Research questions addressed the validity and reliability (internally consistent) of faculty role behaviors as a four-dimension construct.

The purposive sample for this study included nurse faculty who attended the 1993 NLN convention in Boston. The 20-item Faculty Scholarship Instrument (FSI), developed by the investigator, reflected Boyer's (1990) four dimensions of scholarship. Data (n = 398) were analyzed using descriptive statistics, factor analysis, Cronbach's alpha coefficient, and t-test. Reliability (internal consistency) was supported for the FSI and the research dimension. Principal component analysis with varimax rotation resulted in two factors labeled, Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship and accounted for 41% of the variance. Internal consistency for these two subsets of items were adequate. Comparisons of contrasted groups using factor scores supported construct validity of the FSI.

The results of this study did not support reliability and validity of nurse faculty role behaviors as a four-dimension construct, but rather for this sample, nurse faculty role behaviors were characterized as a two-dimensional construct, Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship. Recommendations were made to refine and test the FSI with different populations.

Abstract Approved by: Committee Chairman Linda A. Davis

Program Director

Date 4/26/94 Dean of Graduate School Joan L. Lorden

ACKNOWLEDGEMENTS

I wish to express my deepest appreciation to my chair, Linda L. Davis, for her leadership, assistance, expertise, and patience in the dissertation process. A special appreciation for the assistance of Joan S. Grant whose timely challenges made this work more interesting. I also wish to thank the other members of my committee, Elizabeth Stullenbarger, Ann Clark, and James Maddirala, for their time, assistance, interest, and expertise.

I dedicate this work to my late mother, Viola M. Ross, who instilled in me a value for education, life-long learning, and the persistence to achieve important goals. To my husband, B. I., I wish to thank him for his support, encouragement, and his unique way of keeping me humble throughout this process. My deepest appreciation goes to my children, Sami, Debbie, Rami, and Gibran, whose love, support, and encouragement made this process more tolerable. A special thanks to my grandchildren, Lindsey, Badia, Talia, and Ramzi, who give my life special meaning and help me to keep my perspective and to remember the important priorities in life.

I wish to thank the National League of Nursing for allowing me to do my data collection at the convention and

to the faculty for their willingness to take the time to complete the survey.

I also want to thank my secretary, Betty Drumwright, who has been a tremendous help and support throughout this process; the computer center staff, especially Ellen Mead, who was always available to help me figure out just one more problem; and Veronica Goodloe, who helped me learn to use pagemaker in creating and formatting tables and figures. A special thanks to my typist Kathy Reid, who provided invaluable assistance in preparing the final manuscript. Last, but not least, thanks to my friend, Dannylu Wilson, who was always there for me, and to whom I am eternally grateful.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

CHAPTER I

Introduction

All faculty in institutions of higher education are expected to be productive in areas of teaching, research/scholarship, and service; however, promotion and tenure decisions often focus more on research and scholarship rather than teaching and service. Mission statements and job descriptions set parameters for full-time faculty expectations. Although the relative emphasis on teaching, research/scholarship, and service may vary according to institutional type and focus, the generation of new knowledge--once the exclusive emphasis of research and doctoral degree universities--is the expectation for faculty in almost every type of institution (Blackburn, Bieber, Lawrence, & Trautvetter, 1991). While functioning in the triparte roles is an expectation for all faculty in higher education, pressure from the Carnegie Foundation for the Advancement of Teaching, the American Association for Higher Education, state legislatures, faculty, and students has moved institutions to reconsider the importance of teaching (Eastman, 1989; Mooney, 1990; Watkins, 1990; Weaver, 1989).

Historically, nurse faculty in institutions of higher education have been expected to achieve only in teaching

and service areas. Coudret (1981) reported that nurse faculty have not been held to the same scholarship standards as faculty from other disciplines because nursing programs were new to higher education and because they brought in generous federal funding and high enrollments. While teaching and service historically were given priority, nurse faculty placed little work emphasis on research (Fawcett, 1979). The research/scholarship role has received less emphasis among nurse faculty than members of other academic disciplines. In a literature review on faculty role activities, Wakefield-Fisher and Frank (1989) reported a low incidence of scholarship activities among nurse faculty.

Nurse faculty currently are expected to meet the same standards as other academic faculty (Megel, 1987; Williams, 1989). Excellence in teaching is necessary to prepare future practitioners and leaders in nursing. Excellence in research/scholarship is necessary to generate a sound knowledge base unique to nursing and communicate this information to practitioners. Excellence in service is necessary to maintain competence and define the unique role of the profession to the public.

Nursing is a relative newcomer to college and university settings that has been lacking in the scholarly rigor of other disciplines (Andreoli, 1979; Megel, 1987). Typically, nurse faculty are accountable for teaching, service, and scholarship. Teaching includes preparation, classroom and clinical teaching, student advisement and

counseling, and course administration. Research/ scholarship are expected outcomes for nurse faculty in higher education settings. Research/scholarship includes publications that may focus on the teaching-learning process, clinical topics, and the research process. Research activities, publications, and presentations are secondary expectations of faculty. Teaching has traditionally been the major nurse faculty role.

The service role of faculty typically focuses on school, college/university, community, and professional activities that extend the influence of faculty and thereby the college/university (Bowen & Schuster, 1986). Clinical practice has become a service role expectation for nurse faculty in some academic settings (Herr, 1989; Mauksch, 1980; Parsons & Felton, 1987; Royle & Crooks, 1986). The clinical practice role is thought to enhance classroom teaching, improve the quality of patient care, strengthen relationships between service and education, and give credibility to the professional role in a practice discipline (Herr). Because of the diversity of the faculty service role (e.g., committee work, student advisement, administrative assignments), service is often rejected as a serious scholarly role. Boyer (1990) differentiates between "citizenship" activities and those service activities that adhere to more rigorous scholarly standards. Citizenship activities are necessary to the functioning of the school, college/university, profession, and community and tend to be social and civic functions.

While important, they are not scholarly endeavors and, therefore, should be differentiated. Another faculty role dimension frequently cited in the literature was that of professional development (Andreoli, 1979; Dinenemann & Shaffer, 1992; Solomons, Jordison, & Powell, 1980). Development activities are those that keep faculty abreast of current knowledge and skills in their disciplines. Boyer incorporates development as requisite for scholarship and not a separate role.

The idea of scholarship existing solely for the purpose of knowledge for its own sake is challened by Rice (1991) and Boyer (1990). According to Rice, because of changes that have occurred in higher education since World War II, scholarship must incorporate a broader focus to meet the needs of a more diverse student population and a changing society. As president of the Carniege Foundation, Boyer suggested that institutions of higher education must recognize that faculty scholarship can be demonstrated in four dimensions: research (discovery), integration, service (application), and teaching. The meaning of scholarship is one of the most crucial issues affecting higher education. How it is defined affects not only the academic discipline but also the whole of higher education. Boyer saw a need to define the work of faculty in such a way that would enrich the quality of campus life, and that could be related to the reward system and to the missions of the higher education institution. If scholarship is defined as discovering knowledge for its own sake, how then

can institutions or academic disciplines define, with clarity, their own special purposes? The goal of this study was to explore whether nurse faculty role behaviors could be categorized according to Boyer's four areas of scholarship.

Significance of the Study

Nurse faculty scholarship is a critical issue to both nursing administrators and faculty in institutions of higher education. Currently, nurse faculty are expected to publish, to be excellent teachers, to retain clinical competence, to conduct research, and to participate on school of nursing and college/university committees. This represents a challenge for nurse faculty who need to maximize their role behaviors. Enrollment increases in schools of nursing, institutional budgetary constraints, reduction in faculty, and increased teaching loads challenge nurse faculty to fulfill their role. How nurse faculty manage their increased teaching loads and concurrently initiate and maintain personal research/scholarship and service programs is important to the job satisfaction of nurse faculty, to institutions with nursing programs, and for the future of professional nursing as a scholarly academic discipline.

The American Association of Colleges of Nursing (AACN) revealed that 56% of 246 deans surveyed reported difficulty in retaining and recruiting highly qualified nurse faculty (Redman, Cassells, & Jackson, 1985). Redman et al. also reported a 12.5% average annual turnover rate for nurse

faculty. The supply of credentialed nurse faculty has not kept pace with the rapid growth in nursing programs and growth in numbers of students pursuing nursing (Bergman, 1991). Lack of clarity about faculty role expectations may also influence recruitment and retention of qualified nurse faculty. If academic institutions and educational administrators wish to ensure that nurse faculty reach their potential as academicians, there is a need to have valid and reliable measures of their role behaviors.

While nurse faculty activities have been studied extensively (Andreoli & Musser, 1986), no studies were found classifying faculty role behaviors according to the four dimensions of scholarship identified by Boyer (1990). These four dimensions are: research (discovery), integration, service (application), and teaching. The importance of developing valid and reliable instruments to measure nurse faculty role behaviors is evident from a review of the literature (Anderson, 1986; Baird et al., 1985; Holzemer, 1987; Megel, Langston, & Creswell, 1988; Nieswiadomy, 1984; Ostmoe, 1986; Solomons et al., 1980; Wakefield-Fisher, 1987). The nursing education literature demonstrates a lack of valid and reliable instruments for quantifying nurse faculty role behaviors. This study will add to the foundational knowledge about the role behaviors of nurse faculty in higher education.

Purpose

The purpose of this study was to explore whether Boyer's (1991) conceptualization of scholarship as composed

of four dimensions--research (discovery), integration, service (application), and teaching--could be used to categorize nurse faculty role behaviors. For the purposes of this study, Boyer's terms have been modified at his suggestion; his original terms are indicated in parentheses.

Research Question

The following research question and two subquestions were generated:

1. Can nurse faculty role behaviors be categorized as research (discovery), integration, service (application), and teaching?

   A. Can validity for nurse faculty role behaviors be demonstrated as a four dimension construct?

   B. Are the four item sets which characterize nurse faculty role behaviors reliable (internally consistent)?

Definition of Terms

The following terms have been defined for the purpose of this study.

Role Behaviors - faculty activities related to research, integration, service, and teaching (adapted from the works of Boyer, 1990). The extent of self-reported participation in activities by nurse faculty is used to operationalize the construct of scholarship role behaviors.

Research - faculty activities directly related to the process of research that contribute or disseminate knowledge (Boyer, 1990).

Integration - faculty activities focusing on the meaning of findings that are interpretive in nature and make connections across disciplines (Boyer, 1990).

Service - professional, practice, and community service activities related to professional knowledge and skill of faculty members (Boyer, 1990).

Teaching - faculty activities related to classroom and clinical instruction of students that incorporate preparation and evaluation (Boyer, 1990).

Nurse Faculty - individuals who are licensed registered nurses and employed full-time in associate, baccalaureate, masters, or doctoral degree nursing programs in institutions of higher education.

Conceptual Framework

The conceptual formulations for this instrument development study were derived from Boyer's (1990) model of scholarship. This section describes Boyer's model of scholarship.

Faculty Scholarship

Studies investigating the scholarship behaviors of faculty have been limited primarily to exploration of research activities. Boyer (1990) suggested that knowledge development is not a linear process originating exclusively from research. Rather, he proposed a more dynamic view of knowledge development, one that recognizes that theory may

lead to practice, practice may lead to theory, and teaching will influence both research and practice. In Boyer's model, teaching and application of knowledge are considered to grow out of research (discovery). Boyer portrays distinctive, yet related, functions of such scholarship in which all four areas are of value to the development of new knowledge.

The scholarship of discovery refers to "research" endeavors. This process contributes to the volume of knowledge and to the climate of the college or university. The climate, in turn, affects individual scholarly behaviors of faculty. Scholarly investigations in every discipline are essential to academic life and, therefore, must be cultivated and preserved (Boyer, 1990).

Giving meaning to discovered knowledge and placing it in perspective is what Boyer (1990) describes as the scholarship of integration. Integration refers to making connections across the disciplines, to interpreting, and bringing new insights on original research. Integration answers the question, "What do the findings mean?"

The scholarship of service answers the question, ". . . how can it be helpful to individuals as well as institutions?" (Boyer, 1990, p. 21). Theory is applied and provides a rich source of problems for scholarly investigation. Application is a dynamic process, one that both applies knowledge and contributes to the development of knowledge.

The fourth component of scholarship is the scholarship of teaching. Good teaching requires that the scholar is also a learner. For teaching to be defined as a scholarly enterprise, faculty must be well-informed. According to Boyer (1990), those who teach are not only well-informed, but also widely read and intellectually engaged. Teaching at its best is described as ". . . not only transmitting knowledge, but transforming and extending it as well" (Boyer, p. 24); thus, teaching is a form of scholarship. As seen in Figure 1, when applied to nursing this view of scholarship gives credence to the multiple roles of nurse faculty and especially recognizes the potential for knowledge acquisition from a practice discipline.

Assumption

There was one primary assumption for this study. This assumption was that nurse faculty role behaviors are measurable through self-report.

Chapter II consists of a review of the literature on faculty scholarship and includes a focus on studies of nurse faculty scholarship role behaviors. This literature provided an empirical foundation for this study.

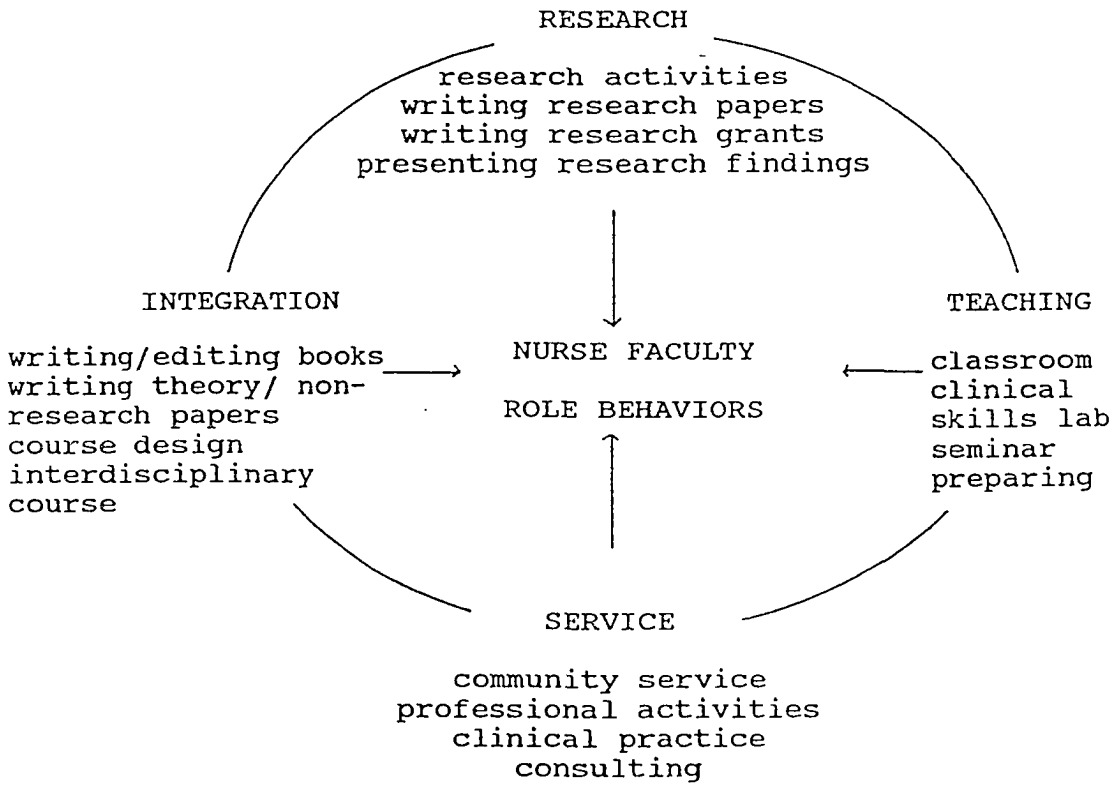

Figure 1. Boyer's Hypothesized Four-Factor Model Scholarship Model as Applied to Nurse Faculty Role Behaviors

CHAPTER II

Review of Research

The focus of this study was to explore whether Boyer's (1990) conceptualization of scholarship as composed of four dimensions--research, integration, service, and teaching--could be used to categorize nurse faculty role behaviors. This section contains a review of research literature related to faculty scholarship role behaviors in higher education and nursing.

Faculty Role Behaviors in Higher Education

Bowen and Schuster (1986) identified research, instruction, public service, and institutional governance and operation as the work of college and university faculty, with instruction being the main function. According to these authors, all sectors of higher education--even 2-year colleges--are involved at least to some degree in research activities.

Research Scholarship Behaviors

Creswell (1985) identified three common measures of individual research performance which represented both the quantity and quality of the individual's work and the reputation of the scholar. Research was defined by this author as all activities that advance knowledge including its discovery, interpretation, and dissemination. The

measures included publication counts, citation counts, and peer and colleague ratings. Creswell found these three measures to be intercorrelated; faculty who are prolific publishers also are heavily cited.

Service Scholarship Behaviors

There are few published studies on the service role of faculty. Seiler and Dunning (1983) and Boyer and Lewis (1985) examined faculty consulting. Both studies identified faculty consulting as an important form of service to individuals and organizations, one that extends the professional and scholarly expertise of faculty. Generally, their research supports the findings that faculty who consult are more likely to be the "achievers in academe," they teach as much, do as much research, and publish more than their peers who do not consult.

Teaching Scholarship Behaviors

Aside from the investigations by Blackburn, Bieber et al. (1991) and Blackburn, Lawrence et al. (1991), research pertaining to faculty in the teaching role was limited to studies which examined relationships between teaching effectiveness and contextual variables (Feldman, 1987) and correlational studies with student learning (Cohen, 1981). According to Feldman, these studies focused on student ratings as a measure of teaching effectiveness while contextual variables included such things as class size and required course. No other studies were found which examined effort or productivity.

Multiple Scholarship Behaviors

Using cognitive motivation theory as the theoretical framework, Blackburn, Bieber et al. (1991) and Blackburn, Lawrence, et al. (1991) examined the relative effectiveness of different kinds of motivators (commitment, competence, and efficacy) of faculty behaviors and their propensity to engage in the roles of teaching, research, scholarship, and service. The sample for this study was a stratified random sample of faculty in the nine Carnegie Institution classification types, representing eight disciplines. A response rate to a mailed survey of 54% (4,400 faculty) was reported and determined to be representative of the population. The instrument was designed to assess faculty perceptions of their work environments and their research, scholarship, teaching, and service behaviors. Analysis included descriptive and regression statistics.

Blackburn, Bieber et al. (1991) found that the percent of time devoted to teaching varied with institutional type. Two-year college faculty reported twice as much teaching time compared to research university faculty. Faculty from all types of institutions reported they believed that their institutions expected them to give less effort to teaching than they actually did. Interest in teaching and institutional and college support were strongly correlated with the percent of time devoted to teaching.

Blackburn, Lawrence et al. (1991), using the same data, reported on research and service. These authors identified three research activity levels. Level 1

included seven items related to publishing activities. Level 2 included activities related to research presentations. Level 3 activities included frequency of collegial conversations. Blackburn and his colleagues differentiated between research and scholarship. Scholarship was defined as time spent enhancing knowledge or skill in ways which may not necessarily result in concrete products. Activities included library work, reading, exploratory inquiries, and computer use. Self-competence was reported as a significant predictor of publishing and scholarship.

Blackburn, Bieber et al. (1991) identified three types of service: (a) public (nonacademic), (b) professional, and (c) campus. Public service was dropped as a viable variable because there were not enough acceptable behavioral items identified for this category. Self-efficacy was a significant predictor of service activities. When faculty believed they had influence on specific decisions, they devoted more time and effort to those activities.

This study is valuable because it provides information about faculty activity in the four faculty roles of teaching, research, scholarship, and service. The study was theoretically based, and the framework was used to guide the study. The investigators examined a large sample of faculty in a variety of disciplines and types of institutions. A limitation of this study was that

sufficient information was not provided about development, validity, and reliability of the instrument.

Blackburn, Lawrence et al. (1991) identified a principal weakness of many correlational studies on faculty research as having weak predictor variables. Weak and sometimes contradictory predictor variables were gender, marital status, age, field of specialization, educational experience, characteristic of the graduate institution, and characteristics of the employer institution. Age, for example, has been both a positive and negative predictor of faculty scholarly output (Bentley & Blackburn, 1990). Another reported weakness was the lack of a theoretical basis to guide studies and their findings.

In summary, faculty role behaviors identified in the higher education literature include research, instruction, public service, scholarship, and institutional governance and operation. Some variety exists in the way in which specific faculty scholarship behaviors are defined and measured. Studies which focus on determining nurse faculty scholarly role behaviors were examined in the following section.

Nurse Faculty Scholarship Behaviors

Solomons et al. (1980) categorized nurse faculty work activities in four categories--teaching, scholarly productivity (research), service, and professional growth--to determine how faculty use their time. Faculty were asked to identify every possible work-related activity. These activities were grouped under the four broad areas.

Research and scholarly productivity was defined as preparation time, including library, think time, planning, consulting, writing proposals, collecting and analyzing data, and presenting findings (for publication and/or presentations at scientific meetings). Subjects were asked to keep a time log of their activities for a week at two different time periods, 1 month apart. Responses were obtained from 48 of 78 faculty members. An average of faculty work hours per week for the two time periods were compared for reliability and found to be satisfactory.

Findings of this study centered around time spent in faculty work activities. Teaching accounted for the largest percentage of time spent. While more faculty were found engaging in research (52%) than in Potter's (1959) study, time spent in research activities still represented the smallest proportion of faculty time. Significant differences were found among groups according to faculty rank, with associate and full professors spending more time in research activities. Solomons et al. (1980) reported reliability of the instrument used for the study as a comparison of the average work hours for the two response sets, 53.5 hours and 53.6 hours, respectively. One of the weaknesses is related to the validity of the instrument. The instrument was developed by the same faculty who served as subjects for the actual study. A major strength of this study was the use of a time log to identify time faculty spent in work activities. The time period that faculty kept a log of their activities may not be representative of

all of their activities and, therefore, may limit generalizability.

Dienemann and Shaffer (1992) used content analysis to investigate faculty performance appraisal systems and identify domains, dimensions, and subdimensions of faculty performance in a study of 86 NLN accredited graduate nursing programs. Data for this study included 34 administrative policies, 37 written procedure guidelines, 31 sets of criteria, 21 student evaluation forms, and 16 peer evaluation forms. Performance appraisals were found to be done annually for most schools. All reported requiring a written evaluation. The study reported consensus on teaching, research, and service as the role domains for nurse faculty. Additionally, faculty development, faculty practice, grant writing, leadership, commitment, and advising were reported by some schools. The most often cited dimensions identified for the teaching domain included: (a) teaching didactic classes, (b) teaching clinical classes, and (c) advising. Additional dimensions were writing, curriculum work, direction of theses and dissertations, independent study, and teaching continuing education programs. Service dimension included school of nursing, university, profession, and community activities. Little consensus was reported on the subdimensions for the service dimensions. Eight dimensions were reported for the research and scholarship domain. They included publications, oral presentations, grants, research projects, awards, consulting, teaching

research, and journal editors. The literature review included dimensions of performance appraisal systems and nurse faculty job domains and dimensions. The process for content analysis was described with examples; reliability of judgments by a second expert coding a sample of the forms yielded 85% agreement. This study adds to the body of knowledge about nurse faculty roles in relation to various aspects of performance domains. The study found substantive agreement on the domains of nurse faculty roles for purposes of performance evaluation. Domains were scholarship, teaching, research, and service. Differences were found within the domains. For example, teaching, research, and dissertation guidance was found to occur for some schools in the teaching domain and for others in the research domain. Consultation for innovations in practice, research development, and practice components was reported as teaching, research, or service according to the specific consulting activity. This study suggested that institutional mission and values may be responsible for different faculty expectations about their role behaviors.

Baird et al. (1985) surveyed 282 baccalaureate nursing schools to identify nurse faculty "scholarly" activities to be used for evaluation. Baird and colleagues used the Delphi method to generate items for their instrument using the Delphi method. The instrument was then pretested with 10 individuals at two different baccalaureate nursing schools for interrater reliability. No information was reported as to the degree of reliability or validity

achieved. While findings demonstrated that emphasis was based on the type of school, scholarly activities were important in evaluation for promotion and tenure in over 50% of surveyed schools. The most important scholarly activities were: (a) participating in doctoral study, (b) obtaining funding for a grant, (c) speaking at a national conference, (d) publishing research in a refereed journal, (e) being primary author of a book, (f) speaking to a regional or local group, (g) presenting continuing education, (h) writing a grant proposal, (i) receiving a national professional award, and (j) publishing a theoretical article. These findings suggest that dimensions of nurse faculty scholarship are not limited to research.

Further findings supported that faculty employed in large universities and health science centers ranked publication as the most important scholarly activity for nurse faculty. In contrast, subjects from smaller institutions with primarily undergraduate programs ranked speeches given and awards received as top indicators of scholarly activity. This study is important because it identifies a number of faculty behaviors that are considered to be scholarly. Additionally, this study is important because it found that the importance of specific scholarly activities varied according to whether the institution was public or private, the size of the institution, and degree offered. The major limitation of this study was that it was not guided by a theoretical

framework which limited the usefulness of the findings. The reliability and validity of the instrument were not described adequately and can contribute to measurement error and limits generalizability of study findings.

In a study to assess quality of doctoral education from 1979 to 1984, Holzemer (1987) addressed scholarly activity. Holzemer looked at program means rather than individual faculty means as the unit of analysis. The Graduate Program Self-Assessment Questionnaire used in this study was designed to examine quality-related program characteristics. Seven faculty scholarship and productive measures included in this study were: research activities, professional activities, career publications, publications for the last 3 years, number of refereed articles published during a career, number of refereed articles published during the last 3 years, and total presentations for the last 2 years. This was the first longitudinal study found that included a focus on nurse faculty scholarly activities. The sample included 18 of 22 doctoral programs (190 faculty) operating in 1979 and 25 of 29 doctoral programs (326 faculty) surveyed 5 years later. Findings from this study indicated a significant increase in research and scholarly activities by nurse faculty. However, a significant decrease was observed in teaching and advising students by faculty. This finding raises the question of whether performance in one area of scholarship is at the expense of performance in another. Research activities were defined as attaining research awards, being

a referee for professional journals, holding offices in national organizations, and receiving grant support for scholarly activity. This study documents that nurse faculty have an increased commitment to scholarly activities, as evidenced by the number of publications, presentations, and reported time spent on scholarly activities.

Holzemer and Chambers (1986) examined the relationship between faculty perceptions of the academic environment and faculty productivity in a study of 326 faculty in 25 doctoral nursing programs. Using the Graduate Program Self-Assessment Questionnaire, faculty, students, and alumni were surveyed. Findings of this study support a relationship between faculty perceptions of the environment and faculty productivity. When faculty in doctoral programs perceived that inadequate resources existed, there was less faculty involvement in research and fewer faculty publications. This study adds to the previous work of Batey (1978) and Pranulis and Gortner (1985) and is important because of its analysis of the effects of faculty perceptions of academic environment relative to faculty productivity.

Nurse Faculty Research Behaviors

Nieswiadomy (1984) examined the relationship between selected demographic characteristics of nurse educators, institutional support factors, and the nurse educator's research productivity in a sample of 394 nurse educators who were members of the American Nurses' Association.

Research productivity was defined as the number of research studies completed as a part of degree requirements, the number of research studies conducted but not part of degree requirements, and the number of published and on-going research studies. Nurse faculty with doctorates were found most productive in the research domain, a finding supported by Pranulis and Gortner (1985). Nieswiadomy found no significant relationship between tenure status and research productivity. Faculty with more than 20-years experience had less on-going research but reported high productivity in the past. More faculty with nursing doctorates (86%) reported on-going research than did faculty with non-nursing doctorates (58%). Those involved in research were located more often in schools that offered doctoral or master's degrees. Twenty-five percent of the respondents reported involvement in research. Current research involvement was reported by 12% of the educators in associate degree programs in comparison to 43% of those in schools offering master's degrees.

Nieswiadomy (1984) reported that 62% of the faculty indicated "lack of time" as a major deterrent for non-involvement in research. Fawcett (1979) and Kalish (1975) suggest that time is not a legitimate constraint. They state that the claim, "lack of time," seems directly related to the value given research in comparison with teaching and service. This study is important because of its sample size and selection. It is representative of nurse faculty in diploma, associate-degree, baccalaureate,

master's, and doctoral programs. This study was limited to the research activities of faculty. It lacked a conceptual framework to guide the study. Validity and reliability of the instrument were not reported which could indicate measurement error.

Anderson (1986), in a study to examine the influence of demanding workloads on scholarly research by baccalaureate nurse faculty, surveyed full- and part-time faculty in three programs in the Rocky Mountain region. The response rate was 58%. A majority of those responding to the survey held master's degrees. Findings indicated that while many faculty (61%) reported research involvement, there was very little publication activity. While faculty reported that 68% of their average work week was involved with teaching activities, time spent in other activities included 11.0% in research, 10.6% in service, and 10.0% in development activities. Research was the most rewarded behavior at their school. A comparison between an actual and ideal work week for this nurse faculty sample showed differences in teaching and research activities. Faculty identified ideal work week with reduced time spent in teaching by 8% and increased research time by 10%. Faculty indicated clinical teaching time conflicted most with research activities. This study is valuable because it suggests a negative relationship between teaching and research activities of baccalaureate nurse faculty. A weakness of this study centers around the lack of information on the development, validity, and reliability

of the instrument, all of which may contribute to measurement error.

Wakefield-Fisher (1987) developed an instrument to measure faculty scholarly productivity in her study of the relationship between leadership styles of deans and faculty scholarly productivity. Scholarship items included activities related to research productivity, publication activities, number of research-related grants, membership on research committees in professional organizations, research-based national presentations, participation on editorial boards, and dissertations chaired. Factor analysis using an oblique rotation resulted in a three-factor solution. Information on analytic procedures was incomplete. Identified factors were prepublication, publication, and editorial activities. Reliabilities for prepublication and publication subscales were above .70, while the editorial activities subscale was .52. A major strength of this study was the development of an instrument to measure faculty scholarship productivity. A weakness of this study was related to the the lack of clarity of the type of factor matrix for the instrument items, indicating measurement error, and the fact that in this study an instrument was developed and tested on the same population it used to examine faculty scholarship behaviors, indicating a sampling bias.

Megel et al. (1988) examined factors associated with scholarly productivity of nursing researchers. This study was based on a model that incorporated major factors

affecting research performance. These authors defined scholarly research productivity as the number of published research articles, nonresearch journal articles, books/monographs, chapters in books, conference papers, conference poster sessions, and external research grants. The sample for this study consisted of 148 leading nurse researchers in NLN accredited schools or colleges of nursing granting master's and/or higher degrees located in Research Institutions I and II or Health Science Centers. The instrument measuring research productivity contained 32 items in addition to demographic items and items that measured factors addressed in the model. Productivity items requested simple counts of research products. The instrument was field tested by five productive nurse faculty researchers. A wave analysis was done to assess response bias by comparing responses on key questions on early returns with those from late returns. No significant difference was found. No information was reported relative to validity and reliability. The instrument was revised based on comments of the reviewers before being used in this study.

The high research producers were found to be more motivated by peer researchers outside their institution as well as by research team members. This finding differs from that of Ostmoe (1986) who reported greater intrinsic motivation. Megel et al. (1988) also found that effects of teaching experience, age, and academic rank were not significantly related to publication productivity,

differing from previous findings. These authors examined the last 3 years of publication productivity and found no significant difference for the effect of senior status. A general pattern of increased productivity associated with career stage development was found; however, one group reported no publications after achieving tenure even though they had published earlier in their careers. Megel et al.'s findings did not agree with the impact of time spent on conducting and writing research found by Ostmoe (1986). Megel contended that high producers of research spend less time conducting research than low producers; however, they do spend more time on writing and reporting the research. The strength of this study is the conceptual framework that supports the study. This study focuses on productive researchers and their characteristics. A limitation is the lack of validity and reliability data on the instrument which raises measurement error issues.

Nurse Faculty Writing Behaviors

In a study of 261 nurse faculty in Public Research I Universities, Ostmoe (1986) measured the relationship between selected professional, educational, and career variables and the quantity and quality of publication productivity. This study, different from those previously described, examined the issue of quality in relation to scholarly activities and utilized a cross-sectional approach. Quality was defined as the self-reported cumulative number of single-, co-, and multiple-authored books, edited books, monographs, book chapters, and

professional journal articles accepted for publication in McElmurry, Newcomb, Barnfather and Lynch's (1981) list of self-reported American referred nursing journals which used blind review and have a nurse involved in final manuscript selections.

Ostmoe (1986) found that research preparation, job socialization, and research and publication interests accounted for nearly half of the variance in faculty publication productivity. Ostmoe found a relationship between clinical instruction and publication productivity; the more time faculty spent in clinical teaching, the less their publication productivity. Another finding was negative correlations between highest degree earned, time spent in research, level of student taught, and publication productivity. This study found that the more time nurse faculty spent in clinical instruction, the less was their publication productivity. A negative correlation was also found between time spent in clinical instruction, level of student taught, and highest degree earned. This study documented the individual characteristics and faculty productivity in nursing education in research universities. A weakness of this study is its lack of a conceptual framework to guide the study which limits the usefulness of the findings.

Megel (1987) studied the writing dimension and productivity of nursing scholars. The sample consisted of 343 doctorally prepared nurses. The mailed questionnaire yielded a response rate of 68.6%. Productivity was the

number of self-reported research and nonresearch articles published or submitted for publication. The instrument included 52 items from previously developed instruments to measure writing dimensions, 1 demographic item, and 6 publication productivity items. The instrument was pilot tested. Some items were changed to increase their clarity. There was no reported reliability or validity of the instrument. Megel reported that 64.2% of the respondents held PhD degrees; 51% specialized in education. The sample was predominately female (96.5%). The mean publication rate for this sample was reported at 2.34 for research articles over the preceding 3-year period and 2.25 for nonresearch articles. One-third of the subjects had published no research articles in the past 3 years and the same proportion had not published nonresearch publications in the same time period. Megel reported a low (.31) correlation between publication of research and nonresearch articles. Subjects who published research articles were less likely to publish nonresearch articles. This study is important because it examined the writing productivity of doctorally prepared nurse faculty. It was a conceptually based study and focused on research and nonresearch writing of nurse faculty. Validity and reliability of the instrument were not reported, which could result in measurement error.

Nurse Faculty Service Behaviors

Barger, Nugent, and Bridges (1992) examined organizational factors which influence the role

expectations of nurse faculty about practice. The sample for this exploratory survey study was deans of 356 baccalaureate NLN-accredited nursing program deans. The response rate was 78%. The conceptual framework for this study was based on Katz and Kahn's (1978) theoretical model of factors involved in assuming organizational roles. Practice was defined as: (a) providing service or care to clients, (b) occurring at times other than during clinical teaching time, (c) having a goal of the continued advancement of nursing care of patients/clients, and (d) leading to growth and enhancement of clinical skills of the individual.

The survey for this study was developed by the researchers. No information was reported on the instrument's validity or reliability. Analysis of data included the use of chi square to compare the relationship between schools with practicing faculty and schools with nonpracticing faculty; analysis of variance was used to test the significance of factors related to schools with practicing faculty. Over one-half of the schools reported having practicing faculty (65%, $\underline{n}$ = 224) and 20 schools (8.8%) indicated that faculty practice was a requirement. Twenty-three schools reported having written faculty practice plans. Characteristics of schools with practicing faculty included the presence of having formalized practice arrangements, a masters program, a doctoral program, and having practice as promotion and tenure requirements. However, only requiring practice and including practice in

promotion and tenure requirements were significant organizational factors as related to the percent of the school's total full-time equivalent (FTE) practicing faculty. This study is important because it examines the service (practice) productivity of faculty. The study was conceptually based and examined the extent of faculty practice from NLN-accredited baccalaureate nursing programs. The extensive literature review for this study was a major strength. A major weakness of this study was the lack of reported instrument validity or reliabilty, which could result in measurement error.

In a descriptive cross-sectional survey, Lambert and Lambert (1993) examined the relationships among psychological hardiness, faculty practice involvement, and role stress perceptions of nurse educators. The sample included all full-time nurse educators identified by deans of 34 randomly selected schools of nursing. A mailed survey yielded a 67% (871) response rate. Nurse faculty practice was defined as "any nursing activity that is conducted (with or without revenue generation) by a nurse educator in addition to being a teacher, a researcher, and a community service provider while in the employment of a school of nursing" (Lambert & Lambert, p. 172). Demographic data indicated that 98% of the nurse educators perceived teaching as the predominate faculty role and felt the schools expected them to spend more time in the teaching role (46%) and less in research (21%), service (10%), and practice (3%). Fourteen percent of the faculty

were doctorally prepared and 57% were not tenured. Lambert and Lambert reported that 52% of the study participants were involved in faculty practice. Those involved in practice had lower ranks, were lecturers, and were involved with clinical teaching. Those not involved in practice more often held administrative roles. This conceptually based study is important because it examined the practice dimension of the nurse faculty role in addition to the teaching, research, and service role. The sample of full-time nurse faculty was identified by the deans from randomly selected schools of nursing. No reliability was reported for the instruments on the study sample.

Summary

This review of literature demonstrates there has been limited research on the multidimensional role of faculty scholarship in higher education. Role behaviors identified in this literature review for faculty included research, teaching, service, institutional governance and operation, scholarship, and professional growth. The nursing studies cited similar faculty role behaviors and focused on multiple scholarly role behaviors, research behaviors, writing behaviors, and service behaviors.

Teaching was most often included in studies as a demographic item in terms of hours/time spent in the different functions of teaching. More studies focused on nurse faculty scholarly research behaviors than on other aspects of faculty role activities. Two studies examined the writing/publication behaviors of nurse faculty. Common

themes in the definitions of research centered around the products of research. Commonalities were number of publications or presentations, number of grants, and memberships on research committees and editorial boards.

Studies examining service activities were limited to faculty practice. These studies were conceptually based and were exploratory or descriptive. Definitions of faculty practice ranged from specific to very general.

The study design of research in this review was essentially survey descriptive. There was one longitudinal and two cross-sectional studies. Less than one-half of the research studies reviewed were conceptually based. Data analysis techniques primarily depended upon descriptive statistics. Delphi method and factor analysis were used for instrument development in two of the studies.

The samples in the reviewed studies were representative of faculty from all program types of nursing programs in higher education settings, although most focused on faculty in doctoral nursing programs (70%). Sample size for the studies was generally large, and surveys were sent to the total population of targeted program types. One study focused on faculty (n = 67) in a single program. Sample size in other studies ranged from 148 to 871.

There is some agreement as to what constitutes research, scholarship, teaching, and service activities for faculty in higher education as well as in nursing education. However, no common instrument was found that

measured faculty scholarship behaviors. Most of the instruments used to measure scholarship behaviors in the reviewed studies lacked information on validity and reliability. Consideration for instrument validity (content and construct) and reliability (internal consistency) are crucial to nursing research. Unless measurement tools reliably reflect the conceptual framework tested, conclusions drawn from the study may be invalid and may not advance the nursing profession (LoBiondo-Wood & Haber, 1990).

Few studies used conceptual or theoretical frameworks. If nursing research is to make a contribution to the development of nursing knowledge, researchers should place the study within a theoretical or conceptual framework so that new findings can be placed in the broader area of already existing knowledge (LoBiondo-Wood & Haber, 1990; Wilson, 1993).

There were no reported studies to assess and categorize nurse faculty role behaviors to determine whether they could be characterized by Boyer's (1990) four dimensions of scholarship: research, integration, service, and teaching. This study is designed to fill that gap in the literature. Chapter III discusses the methodology and data analysis used in this study.

CHAPTER III

Methodology

The purpose of this study was to explore whether Boyer's (1990) conceptualization of scholarship as involving four dimensions--research, integration, service, and teaching--could be used to categorize nurse faculty role behaviors. A descriptive survey design was used in this study. Data on perceptions of nurse faculty employed in institutions of higher education about their role behaviors were examined. Demographic data on nurse faculty participants and the school/department of nursing were collected. The research design and research methods used to accomplish this purpose are described in this chapter.

Research Question

The following research question and two subquestions were generated:

1. Can nurse faculty role behaviors be categorized as research (discovery), integration, service (application), and teaching?

   A. Can validity for nurse faculty role behaviors be demonstrated as a four-dimension construct?

   B. Are the four item sets which characterize nurse faculty role behaviors reliable (interally consistent)?

Sample

The sample for this study was a purposive sample of nurse faculty from associate degree, baccalaureate, and higher degree programs attending the National League for Nursing (NLN) convention June 6-10, 1993 in Boston. A purposive sample is a nonprobability sampling method. Subjects are selected on the basis of personal judgements about their representativeness (Polit & Hungler, 1991). This population was selected because of the reported high attendance at this convention by nurse educators from the program types previously identified. Previous convention attendance ranged from 2,000 to 3,000 with 75% of those being nurse educators (NLN, personal communication, 1993). A factor analytic procedure was selected to test the applicability of Boyer's (1990) model for nurse faculty role behaviors. According to Nunnally (1978), 5 to 10 subjects are required per item for factor analysis. Thus, for the 20-item Faculty Scholarship Instrument (FSI), 200 subjects were needed.

Setting

The setting for this study was the 21st Biennial Convention of the NLN held in Boston, June 6-10, 1993. The convention attracts nurse administrators and educators from all types of nursing programs, including practical, associate, baccalaureate, and higher degree, as well as nurse practitioners from a variety of settings. Preconvention seminars were held on Saturday and Sunday. A poster session featuring current research, demonstration

projects, and other professional activities was held on the afternoon prior to the opening of the convention. The convention theme was "Health and the Public Trust." Programs during the convention featured a futuristic look at nursing scholarship and literature, higher education, and health care delivery.

Methods and Materials

The instrument developed for this survey descriptive study is described in this section. The process of instrument development and initial validity and reliability assessments are discussed.

Faculty Scholarship Instrument

The 54-item self-scored questionnaire used in this study consisted of two parts: 20 items describing nurse faculty role behaviors, 33 demographic items related to nurse faculty and institutional characteristics, and 1 item for participants to list additional faculty role behaviors. The 20-item Faculty Scholarship Instrument (FSI) was developed by the investigator to assess the extent to which faculty engage in each role behavior referred to in Boyer's (1990) four areas of scholarship. A norm-referenced approach was used in developing the FSI. Role behaviors were identified through a review of the professional nursing literature. These behaviors were categorized according to Boyer's four areas of scholarship and served as the basis for the FSI. The 20-item FSI used a 5-point Likert scale to rate the degree of participation, with 1 being "seldom" and 5 representing "usually". Scores on

each item of the FSI ranged from 1 to 5, depending on the extent of participation for the item. A high score indicates a high degree of participation for the item and a low score indicates low participation. The total possible score ranges from 20 to 100. Individual scores are considered in light of scores of other individuals. As shown in Table 1, six items measured research role activities, five items measured integration role activities, four items measured service role activities, and five items measured teaching role activities. Subscale scores can also be calculated by summing the ratings of each subscale. For the purposes of this study the 20 scholarship items were listed in random order and all references to scholarship were removed to reduce the chance for respondent bias.

Items were included to obtain specific demographic information about each full-time nurse educator in this study, as well as about characteristics of the institution and the school of nursing where each respondent was employed. Demographic variables of nurse faculty included age, gender, academic rank, experience, employment status, and tenure status. Institutional factors addressed type of institution, institutional importance of faculty scholarship behaviors, institutional emphasis on faculty roles, and program type. The instrument and cover letter are included in Appendix A.

Table 1

Faculty Scholarship Instrument (FSI)

Concept	Theoretical Definition	Operational Definition
Research	activities directly related to the process of research and that contribute to and disseminate knowledge (Boyer, 1990)	Items 3, 5, 9, 10, 15, and 18 Respondents are asked to report the extent of their participation in research activities during the calendar year.
Integration	activities focusing on the meaning of findings that are interpretive in nature and make connections across disciplines (Boyer, 1990)	Items 1, 4, 7, 12, and 19 Respondents are asked to report the extent of their participation in integration activities during the calendar year.
Service	professional, practice, and community service activities that are related to professional knowledge and skill of the faculty member (Boyer, 1990)	Items, 6, 8, 13, and 16 Respondents are asked to report the extent of participation in application activities during the calendar year.
Teaching	activities related to classroom and clinical instruction of students that incorporate preparation and evaluation (Boyer, 1990)	Items, 2, 11, 14, 17, and 20 Respondents are asked to report the extent of participation in teaching activities during the calendar year.

Content Validity

Content validity is concerned with how well instrument items represent the content domain addressed by the instrument (Waltz, Strickland, & Lenz, 1991). The FSI was evaluated by a panel of experts who received information about the anticipated study, instrument objectives, concepts, definitions, and organization of the items (Appendix B). Content experts were requested to rate the relevance of each FSI item on a scale of 1 to 4, with 1 being not relevant and 4 being highly relevant. The panel of four content experts were selected based on individual expertise related to faculty scholarship role behaviors, Boyer's model of scholarship, and survey instrument construction. All four content experts had expertise related to faculty scholarship behaviors, two had expertise with Boyer's Model, and two had expertise in instrument construction (Appendix C). Interrater agreement was calculated for the FSI item ratings of the four reviewers. The level of agreement was 0.88. The Content Validity Index (CVI) was 0.92 for the total FSI. The CVI for each of the areas was: research, 1.00; integration, 0.85; service, 1.00; and teaching, 0.88. Based on the expert review, two FSI items were edited for clarity, two items deleted, and one item was added.

Reliability Testing of the Instrument

Reliability of an instrument is considered to be the extent to which the same results are obtained with repeated measurements for a particular population (LoBiondo-Wood &

Haber, 1990; Waltz et al., 1991). Internal consistency (homogeneity), one indication of reliability, refers to the degree to which instrument items measure the same concept. The coefficient alpha (Cronbach's alpha) is perhaps the most recommended index for internal consistency (Polit & Hungler, 1991). The revised questionnaire was field tested with a group of 10 nurse faculty from an associate degree nursing program for internal consistency. The alpha coefficient for the FSI was 0.68, acceptable for this study.

Protection of Human Subjects

The researcher obtained consent from the Institutional Review Board (IRB) of the University of Alabama at Birmingham to conduct the study (Appendix D). Permission was requested and obtained from the NLN to collect data at the convention. Nurse faculty participation in this study was voluntary. Participants were informed about the study in a poster on the research table. Consent from each participant was assumed upon receipt of the completed surveys by the investigator and was so stated in a letter of explanation received by each participant.

Anonymity is defined as the protection of the participants in a study such that "even the researcher cannot link them with the information provided" (Polit & Hungler, 1991, p. 35). Individual participants have the right to expect protection of their privacy. If anonymity cannot be assured, confidentiality must be guaranteed. Assurance of anonymity was stated in a letter to the

participants. Participants were informed that all data collected would be coded for data analysis and reported anonymously.

Data Collection Procedure

A number of strategies were built into the study to maximize the response rate. Strategies included: (a) a location for data collection convenient to attendees and a place where they were likely to congregate, (b) a colorful table display created to attract the attention of nurse educators, (c) a large container of candy to attract the interest of attendees, (d) daily drawings for prizes for those completing the survey, and (e) printing the questionnaire on brightly colored paper.

Potential nurse faculty participants selected for this study were notified by poster at a table adjacent to the registration area for the NLN convention. Data collection was conducted from 8:00 a.m. to 5:00 p.m. on Sunday and Monday and from 8:00 a.m. to 12:00 noon on Tuesday and Wednesday. The researcher was available to answer questions and clarify information. Participants were asked to complete the survey. Upon completion of the survey, participants could register for daily drawings. Participants were given a survey which included a cover/permission letter and encouraged to complete the survey and return it to the box on the research table. Chairs were available for participants to sit while completing the survey. Some participants took the survey and returned it at a later time during the convention.

Procedures for Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) computer program SPSS Users Guide (Norusis, 1990). Descriptive statistics were used to profile the participants and institutional characteristics. Research subquestion A addressed the construct validity of nursing role behaviors. For this study, factor analysis was the method of testing construct validity of nurse faculty role behaviors as a four-dimension construct. Comparison between contrasting groups were made using the t-test to further evaluate construct validity of the FSI.

Testing the FSI for Construct Validity

Construct validity is concerned with the degree to which an instrument measures a theoretical construct or trait (LoBiondo-Wood & Haber, 1990). In this study, the concern was in assessing the degree to which the FSI reflects the four dimensions of scholarship. Construct validity of an instrument is important when the concern is to determine what the instrument is really measuring and to infer the degree to which the individual possesses some trait or quality presumed to be reflected by performance on the measure (Waltz et al., 1991). The purpose of the FSI was to determine the degree to which nurse faculty engage in faculty role activities and if those activities are reflective of the dimensions of scholarship described by Boyer (1990). Hence, construct validity was paramount. One method for assessing construct validity is by factor analysis. Factor analysis examines the degree to which

individual items cluster together around one or more dimensions. Each cluster (factor) represents a rather unitary attribute. Items designed to measure the same dimensions should load on the same factor; those designed to measure different dimensions should load on different factors. Factor analysis, as a means of identifying and grouping items, can enable a researcher to study the constitutive meanings of constructs and, thus, their construct validity. Factor analysis is a useful tool for the examination of instrument validity and has been identified as the most powerful method of construct validation (Ferketich & Muller, 1990; Kerlinger, 1973). Validity is defined as common-factor variance, and the main concern with factor analysis is common-factor variance (Ferketich & Muller). Basically, factor analysis is a method for reducing a large number of items to a smaller number called factors by discovering which ones "go together" and if they measure the same thing and how much they do measure (Kerlinger). This method of analysis determines the number and nature of underlying variables among larger numbers of measures based on factor variances (Kerlinger). A test or instrument may have one or more factors. There are several factor analytic methods.

Exploratory analysis was chosen for this study because the purpose was to explore and categorize nurse faculty role behaviors. Exploratory analysis is guided by hunches or questions about the number and kinds of factors which might be derived from a collection of variables and is used

to discover factors rather than test conceptual schema (Nunnally, 1978).

Principal component analysis, a classic model, was used to determine the nature and number of factors that could best describe the concepts measured by the items representing the nurse faculty role behaviors. Principal component is recommended as the best approach to condensing variables prior to rotation because this procedure explains more variance than other methods (Nunnally, 1978). In keeping with the classic model design, principal component analysis does not examine the underlying structure of factors. A primary assumption of principal component analysis is that all error is random and, therefore, all variance is unique to the individual item and not shared with other items or factors or of the underlying structure. The result of this is the assumption that the mean of the error sums is 0, and each item correlates perfectly with itself (Ferketich & Muller, 1990).

Component factors are "real" factors (in contrast to hypothetical factors that are estimated from the actual data). They can be directly derived from the data in a particular study. Principal components represent a linear combination of the variables that they represent. The variance of the measure provides an indication of the amount of information conveyed by each component (Nunnally, 1978).

Interpretable factors. Determining the number of factors to use in a model can be done by several procedures

and are discussed in this section. Extracted factors should be highly significant and their significance can be determined by Bartlett's significance test (Gorsuch, 1983). As a general rule, factoring should continue until there is no further meaningful variance left (Polit & Hungler, 1991). One way to determine the number of factors is on the basis of the eigenvalues. Eigenvalues are the sum of the squared weights on each item for each factor. Factors are considered nontrivial if the eigenvalue is equal to or greater than 1.00 (Ferketich & Muller, 1990; Gorsuch, 1974; Nunnally, 1978; Polit & Hungler). Factors not meeting this requirement are considered insignificant. Another consideration is the strength of a factor, which is evidenced by the communalities and the number of salient variables per factor (Cliff & Pennell, 1967). Trivial factors are those without a unique set of defining variables loading above a specified level (Gorsuch, 1983). Trivial factors are subtracted from the number of factors extracted, and the new number is examined. A final consideration is interpretability of the factor solution. The solution must be in agreement with the conceptual basis for the instrument. For the factor analysis in this study, only those factors with eigenvalues of 1.00 or greater and which were considered to be interpretable were considered significant.

Factor loadings. The factor matrix is one of the final outcomes of factor analysis. The matrix is representative of coefficients that express the relations

between the items and the underlying factors. Factor loadings (correlation coefficients) range from +1.0 to -1.0 and express the correlations between the item and the factor (Nunnally, 1978). The squared factor loading gives an indication of the amount of variance explained by or shared with each factor (Munro, Visintainer, & Page, 1986). For example, if the factor loading for item 1 was .7193 on Factor 1, the squared loading would be $(.7193)^2 = .5174$ and would indicate that item 1 shares 52% of the variance accounted for in Factor 1. The sum of the squared loadings of the factor represents the proportion of total variance accounted for by the factor. The task is to decide which loadings indicate that a variable explains enough variance within the factor to be meaningful. Variable correlations are examined to determine some nature of the factor. A salient loading is one which is sufficiently high to assume that a relationship exists between a variable and the factor and can aid in interpreting the factor (Gorsuch, 1974). Cut-off values ranging from .30 to .55 are used for factor loadings. Nunnally (1978) cautioned against interpreting loadings smaller than .40; however, loadings of .30 or higher are considered interpretable as long as the sample is adequate for exploratory factor analysis. For the purposes of this study, item loadings of at least .40 were considered necessary for inclusion.

Type of rotations. Once the number of factors has been established, the relevancy of the items to the factor is determined. Nunnally (1978) reported that factors are

rotated in order to simplify the interpretation of the factor structure. The amount of common variance explained is not changed during rotations. The rotation allocates the variance in such a way that the factors are easier to identify and interpret. Decisions on rotations require deciding whether the factors should be orthogonal (uncorrelated) or oblique (correlated). Since Boyer (1990) suggested that the four dimensions of scholarship are "separate yet overlapping" (p. 16), both orthogonal and oblique rotations were tested.

Orthogonal rotation. Orthogonal rotations are used to determine the mutual exclusiveness of factors. In orthogonal rotation, each factor is assumed to be independent of each other. Orthogonal rotations maintain the independence of factors; the angles between axes are kept at 90 degrees (Kerlinger, 1973). Items must fit in such a way as to be at a 90-degree angle to all other items. It also must be determined whether the item loaded on one factor exclusively. This can be established by determining the difference in the spread between the primary factor and the next loading. The factor matrix produced with orthogonal rotation represents both regression weights (called pattern matrix) and correlation coefficients (called a structure matrix). For this rotation, the regression weights are equal to the correlation coefficients because the solution is orthogonal (Munro et al., 1986). Varimax rotation was used in this study to determine the mutual exclusiveness of factors.

Oblique rotation. An oblique rotation is used to determine interrelatedness of factors. Oblique rotations permit a departure from a 90-degree angle for the rotated axes. The assumption for this departure is that factors are correlated. A second major assumption for using an oblique rotation is that if the factors are related, the rotation procedure will not impose an arbitrary requirement for noncorrelation. The oblique rotation produces both pattern and structure matrices. The structure matrix demonstrates the correlation between the item and the factor; the portion of the total variance explained by the communalities may differ from that of the unrotated variance (Gorsuch, 1974). The pattern matrix is based on weights, not correlation coefficients. Harris (1985) and Nunnally (1978) recommend applying several procedures in order to determine which rotations should be interpreted. For the purposes of this study, an oblique rotation was also explored.

Iterations. Analytic procedures are applied by itervative methods. The iterations continue as long as changes affect the factor loadings. They are stopped when the rotation leaves the first two decimal places unaffected (Kaiser, 1958), or when some predetermined number of iteration cycles have been completed. The number of iterations provides a degree of evidence of the quality of the solution (Gorsuch, 1974). Factors with simple structures converge quickly. The number of iterations

should be considered in evaluating the quality of the solution.

Factor scores. Factor scores are measures of individual scores for composite factor items. Several methods can be used to determine a factor score. One way is to weight the variable according to their factor loading on each factor as indicated on the rotated factor matrix (Factor score = sum of the individual's score on the variable times the factor loading value) (Gorsuch, 1974; Munro et al., 1986; Nunnally, 1978)

Testing the FSI for Reliability

Research subquestion B was tested through intercorrelations among all items and calculating alpha coefficients for each set of items. Coefficient alpha is the single most useful index of reliability (Nunnally, 1978; Polit & Hungler, 1991). Coefficient alpha is interpreted in the same manner as other reliability coefficients. The range of values is between 0.0 and +1.00. A higher value reflects a higher degree of internal consistency. Coefficient alpha is an estimate of the extent to which different dimensions of an instrument are equivalent in terms of measuring the critical attribute. An alpha of at least .70 is considered adequate to support reliability of an instrument, with .80 being a more optimal expectation (Nunnally). For instruments which have more than one dimension, Knapp (1991) recommends calculation of coefficient alpha for each separate dimension. For this study, an alpha of at least .70 was considered acceptable.

Total scale reliability and item total correlation are useful in assessing the functioning of items on an instrument. An increase of more than .10 in the total scale reliability when the item is deleted or a correlation of less than .20 between an item and the total score was determined to be acceptable (Ferketich, 1991). Inter-item correlations should range between .30 and .70. Inter-item correlations above .70 may reflect redundancy among items, while a correlation below .30 may indicate a lack of substantive relation among items measuring the construct (Ferketich).

Limitations

The following limitations were identified for the purposes of this study.

1. Survey methodology generates responses from individuals who are interested in a survey topic. Therefore, results from this study may not be generalized to the total population of nurse faculty.

2. Only nurse faculty who attended the NLN convention June 6-10, 1993, in Boston were surveyed. The sampling frame of attendants of the convention may not have been representative of all nurse faculty. Therefore, findings may not be generalized to all nurse faculty.

3. Participants reported their perceptions of the expected and their actual role behaviors in their nursing education organization. It was beyond the scope of this study to correlate those perceptions with actual faculty

behaviors, and results may not represent the total scope of nurse faculty role activities.

CHAPTER IV

Findings

The purpose of this study was to explore whether Boyer's (1990) conceptualization of scholarship as composed of four dimensions--research, integration, service, and teaching--could be used to categorize nurse faculty role behaviors. A description of the sample and the statistical analysis of the data related to the research questions are presented in this chapter. Descriptive statistics were used to profile the participants. Factor analysis and Cronbach's alpha coefficient were used to address the research questions for this study. Comparison between contrasting groups were made using *t*-tests to further evaluate construct validity of the FSI.

Description of Sample

The purposive sample included 450 nurse faculty who attended the NLN convention in Boston, June 6th through 10th, 1993, and who voluntarily completed the survey. A total of 398 completed surveys (88%) were used for the analysis in this study. Fifty-two surveys (12%) from diploma and practical nursing program faculty were not included in the analysis.

Institutional Characteristics

The institutional characteristics of participants are found in Table 2. Faculty who participated in this study were employed in collegiate schools of nursing. Over one-half of the faculty (206 or 59%) were from baccalaureate or higher degree nursing programs, 144 (41%) were from associate degree programs or schools which had combination programs, including associate degree. Of those from baccalaureate or higher degree nursing programs, 89 (22%) were employed in BSN programs. More than half of the participants (251 or 63%) were from public institutions.

Table 2

Participants' Descriptions of Institution

Variable	n	%
Program Type (n = 350)		
Bachelors & Higher Degree	206	59
Associate Degree	144	41
Institutional Type (n = 398)		
Public	251	63
Private	147	37

Participants rated the perceived importance of the research, teaching, and service mission emphasis of their respective institutions (Table 3). When compared to research and service, teaching was rated as having heavy institutional emphasis by 345 (87%) of the participants. Over one-half (53%) reported little research emphasis at their institutions.

Table 3

Participants' Perception of Institutional Mission Emphasis

	Emphasis					
	Heavy		Moderate		Little	
Variable	n	%	n	%	n	%
Research (n = 385)	66	17	114	30	205	53
Teaching (n = 398)	345	87	49	12	4	1
Service (n = 390)	116	30	228	58	46	12

The participants were asked to identify the mission emphasis they perceived to be the primary institutional emphasis. The greatest majority (83%) rated teaching as being the most important (Table 4).

Table 4

Participants' Perception of the Primary Emphasis of Their Institution

Emphasis	n	%
Research	57	15
Teaching	326	83
Service	10	2

n = 393

Characteristics of Participants

Demographic characteristics of participants are shown in Table 5. Participants were predominately female (96%) and ranged in age from 26 to 77 years, the median and mode were 49 years. Participant's experience in nursing ranged from 1 to 57 years. Teaching experience of the participants ranged from 1 to 48 years, while teaching experience at the present institution ranged from 1 to 38 years.

Table 5

Characteristics of Participants

Variable	Mean	SD
Age (n = 384)	49.10	7.82
Years In Nursing (n = 394)	26.29	8.50
Years Teaching Nursing (n = 346)	17.28	8.37
Years at Present Institution (n = 393)	10.99	7.88

Almost one-half (46%) of the participants held doctoral degrees. The largest number (51%) of participants was not tenured (Table 6). Over one-half (55%) of the participants held academic rank at the associate or professor level.

Scholarship Activities

Participants rated the importance of scholarship activities at their respective institutions. Ratings for

Table 6

Characteristics of Participants' Academic Roles

Variable	n	%
Highest Degree Held (n =397)		
BSN	7	2
MSN	185	47
EdD	54	14
DSN,DNSc	18	4
PhD	71	18
PhD, Nursing	41	10
Other	21	5
Tenured (n = 392)		
No	201	51
Yes	191	49
Academic Rank (n = 395)		
Instructor/Lecturer	38	10
Assistant Professor	113	28
Associate Professor	133	34
Professor	82	21
Other	29	7

each scholarship dimension for the importance scale and participation scale were totaled and the results were compared (Table 7). While the ratings of both perceived importance and participation in scholarship activities were similar, for importance, the median for participation in each dimension of scholarship was lower than the median for perceived institutional importance. The greatest difference was noted in the research dimension. Service was the only dimension where faculty's perceptions of the institutional importance and their reported participation was the same.

Table 7

Comparison of Median Scores for Faculty Perceptions of the Importance of Scholarship Activities at Their Institutions and the Extent of Their Participation

Dimension	Importance	Participation
Teaching	22.00	19.00
Research	21.00	16.00
Integration	17.00	16.00
Service	15.00	15.00

Other Activities

Because this was an instrument development study, participants were asked to identify any additional faculty role activities not addressed in the FSI. These verbatim data were listed on cards and sorted according to Boyer's (1990) four dimensions of scholarship, citizenship, and faculty development. Of the 205 activities identified by participants, 12% could be classified as one of the four categories of scholarship (Table 8). As shown in Table 9, the greatest majority (88%) of the activities identified by participants were citizenship behaviors. Only one single item was classified as development.

Factor Analysis

Factor analysis was performed on the 20-item faculty scholarship instrument. Principle component (PC) analysis with orthogonal (varimax) and oblique (oblimin) rotations was performed to see if the different extractions and

Table 8

Other Scholarship Activities Identified by Participants

Activities	Number of Activities
Research activities	
Networking	1
Integration activities	
Program development	1
Develop CAI's	1
Advance use of technology in the classroom	1
Item writer	1
Service activities	
Practice	1
Community service	1
Outreach	1
Serve on hospital committees	3
Develop/Management of Nursing Center	2
Teaching	
Tutoring	4
Grant writing/management for non-research projects	4
Provide Continuing Education	2
Curriculum work	2
Total	25

rotation methods provided different information about the structure of the instrument, the relative strength of the relationship between items and the underlying concept and the stability of the item's loadings. Items with loadings of less than .40 were considered insignificant (uninterpretable). Items were considered to load on two factors if the absolute difference between loadings was less than .20 (Youngblut, 1993). Significant factors were those with a minimum of three variables loading at the

Table 9

Other Activities Identified by Participants

Activities	Number of Activities
Citizenship Activities	
University/school committees	67
Advising	54
Administration/coordination	26
Mentoring new faculty	11
Recruiting	10
Sponsoring Student Activities	5
Accreditation Visitor/ Board of Review Member for NLN	4
Reviewing Library resources	2
Total	179
Development Activities	
Participation in Continuing Education	1

minimal required level. Factors with less than three items loading at or above .40 were considered uninterpretable and subtracted from the total number of factors extracted. Those remaining were examined.

Principal Components Matrix

The unrotated PC factor matrix supported five factors representing 61% of the cumulative variance (Table 10). Seven items loaded on more than one factor in the unrotated PC factor matrix. When items do not load on a single factor in the unrotated matrix, rotations are applied to factors. Varimax rotation maximizes factor loadings of each item on one factor and clarifies the relationship of items to a single factor (Ferketich & Muller, 1990). An

orthogonal rotation (varimax) was performed to maximize the independence among item sets.

Table 10

Factors for the 20-Item Faculty Scholarship Instrument

Factor	Eigenvalue	% Variance	Cummulative %
1	5.4165	27	27
2	2.7447	14	41
3	1.5973	8	49
4	1.2212	6	55
5	1.1257	6	61

Results of Varimax Rotation

The varimax rotation converged in eight iterations. All items loaded on single factors (Table 11) except one. Factor 3 and factor 5 had only two items with loadings of .40 or greater. Consequently, these two factors were judged uninterpretable, and a three factor solution was examined.

Results of Three-Factor Varimax Rotation

The three-factor varimax converged in five iterations and accounted for 49% of the variance (Table 12). Factor 1, consisting of nine items, primarily research and publication items, was labeled the Discovery and Dissemination of Knowledge Scholarship Factor. Factor 2 had five items with loadings of .40 or above and primarily represented the teaching items and a service item on clinical practice. Factor 2 was labeled the Teaching

Table 11

Principal Component Analysis With Varimax Rotation Matrix

	Factor Loading				
Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
R9	.8735				
R10	.8684				
R15	.8463				
R3	.8183				
I4	.7325				
R5	.7153				
R18	.6471				
I19	.4982				
S16	.4570				
S6		.7984			
T2		.7340			
T14		.6887			
T11			.8131		
T17			.7773		
I12				.7744	
I1				.5791	
I7		.4439		.5179	
S13					.8157
S8					.7935

R = research item, I = integration item, S = service item, T = teaching item

Scholarship Factor. Factor 3 had five items with loadings of .40 or above. However, these items included two integration items (1 and 12), two service items (8 and 13) and one teaching item (20). This factor was not considered conceptually clear because the items were not predominately from one category. Item 7 did not load at the required level on any factor.

Table 12

Varimax Rotation With Three-Factor Rotation Matrix

	Factor Loading		
Item	Factor 1	Factor 2	Factor 3
R9	.8703		
R10	.8654		
R15	.8367		
R3	.8220		
R5	.7282		
I4	.7267		
R18	.6430		
I19	.4889		
S16	.4725		
S6		.8149	
T14		.8023	
T17		.7772	
T2		.6457	
T11		.5153	
I12			.6138
T20			.6045
I1			.5531
S13			.5632
S8			.5455

R = research item, I = integration item, S = service item, T = teaching item

An oblique rotation (Oblimin) was tested to determine the interrelatedness of factors. The oblimin rotation converged in nine iterations and demonstrated a similar grouping of items as the varimax rotation. The factor correlation matrix illustrated as Table 13 demonstrates small correlations (< .30) between the two interpretable factors. The interrelatedness of factors was not supported.

Table 13

Factor Correlation Matrix for the Oblimin Rotation

Factor	Factor 1	Factor 2
Factor 1		
Factor 2	.1012	

As described above, the PC varimax rotation solution had more clarity and simplicity than other factor rotations. In this solution, the two interpretable factors explained 41% of the variance, had at least four representative items with loadings of .40 or greater for each factor and were labeled Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship.

Reliability

Cronbach's alpha coefficients of internal consistency were determined for the nurse faculty scholarship instrument and the four sets of items designed to measure the role dimensions of scholarship (Table 14). The alpha coefficients for three of the four sets of items (integration, service, and teaching) were less than .70. This may be due to the length of the item sets. According to Ferketich (1991), alpha is a function of test length, particularly when instruments have less than 10 items. An increase in the number of items can increase the alpha value. The alpha for the overall instrument was adequate to support FSI reliability. Only the set of research items were internally consistent. Gay (1985) reported that a

Table 14

Internal Consistency of the Faculty Scholarship Instrument

Scholarship Dimensions	Alpha Coefficient
Research (no. of items = 6)	.90
Integration (no. of items = 5)	.52
Service (no. of items = 4)	.47
Teaching (no. of items = 5)	.50
Total Instrument	.80

n = 360 - 378

coefficient of .90 is acceptable for any instrument. This author reports a more common range of .60 to .80. A small number of items can contribute to a low alpha coefficient.

Cronbach alpha coefficient for internal consistency were determined for the items loading on the two factors Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship (Table 15). The alpha coefficients for these two item sets supported internal consistency.

Table 15

Internal Consistency of the Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship Dimensions

Scholarship Dimension	Alpha Coefficient
Discovery and Dissemination of Knowledge (# of items = 9)	.89
Teaching (# of items = 5)	.71

n = 355 - 374

Further Testing of the FSI's Construct Validity

As discussed in Chapter III, construct validity was an important consideration in this study. In addition to factor analysis, a contrasted group approach was used to further evaluate construct validity of the FSI. This approach involves identification of two groups who are thought to have high and low scores in the characteristic being measured. The mean scores of the two groups are compared and should be significantly different to support construct validity (Waltz et al., 1991). It was hypothesized that nurse faculty with doctoral degrees would differ in role behaviors from nurse faculty with master's degrees because of the research training and emphasis that occurs with advanced degrees. It was also hypothesized that nurse faculty role behaviors would differ based on academic rank, which defines to some extent role emphasis and role seniority, both of which are thought to affect role behaviors. It was further hypothesized that role behavior differences would occur based on the type of program in which nurse faculty taught because of program emphasis. Factor scores were calculated for the two factors, Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship. Comparisons were made using a one-tailed *t*-test to statistically test differences between contrasting groups.

Table 16 shows the Discovery and Dissemiantion of Knowledge Scholarship comparisons. Faculty with higher degrees, higher ranks, and who were employed in

Table 16

T-Test for Discovery and Dissemination of Knowledge Scholarship Factor Scores

Group	No.	Mean	t value	DF
Degree				
Doctoral	164	21.68		
MSN	168	14.31	1.41*	329
Rank				
Associate/ Professor	191	18.99		
Instructor/ Assistant	139	16.38	3.41*	288
Program Types				
BSN/Higher Degree	186	20.19		
Associate Degree	130	14.02	8.61*	277

*p < .0005

baccalaureate and higher degree programs score significantly higher on the Discovery and Dissemination of Knowledge Scholarship Factor. Table 17 shows a comparison of teaching factor scores of faculty by highest degree earned, by academic rank, and by program type. Results show that there is a significant difference in the factor scores. Faculty with doctoral degrees had significantly lower Teaching Factor scores than faculty with master's degrees. Faculty with lower academic ranks have significantly higher Teaching Scholarship Factor scores than those with higher ranks, while faculty from associate degree programs have higher Teaching Scholarship Factor

Table 17

T-Test for Teaching Scholarship Factor Scores

Group	No.	Mean	t value	DF
Degree				
Doctoral	176	10.51		
MSN	178	13.50	-10.70*	339
Rank				
Associate/ Professor	206	11.59		
Instructor/ Assistant	148	12.88	-4.13*	337
Program Types				
BSN/Higher Degree	196	11.31		
Associate Degree	135	12.98	-5.03*	296

*$p < .0001$

scores than did the counterparts in baccalaureate and higher degree programs. The mean scores of the three groups discussed above were significantly different on factor scores for Discovery and Dissemination of Knowledge Scholarship Factor and Teaching Scholarship Factor, providing additional support for construct validity of the FSI.

Summary

The findings of this study were obtained through analysis of data from surveys voluntarily completed by 398 nurse faculty who attended the 1993 NLN convention in Boston and who were employed by collegiate schools of nursing. Descriptive statistics were used to analyze data

with respect to institutional characteristics, personal characteristics of nurse faculty, faculty perceptions of institutional importance of scholarship activities, and faculty participation in scholarship activities.

Construct validity and reliability for the FSI were assessed. The reliability of the FSI was tested using Cronbach's alpha. The alpha coefficients for the FSI and each of the four subsets were determined. The alpha coefficient for the total instrument was .80; .90 for the subset of research items. Support for internal consistency for the other three subsets (application, integration, and teaching) were not adequate. Principal component analysis with varimax rotation resulted in two factors labeled Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship and accounted for 41% of the variance. These two subsets of items were found to be internally consistent. Comparisons of contrasted groups using factor scores supported these findings. Chapter V addresses conclusions, implications, and recommendations drawn from the findings of this study.

CHAPTER V

Conclusions, Discussion, Implications, and Recommendations

This chapter consists of conclusions, discussion of the findings, and implications. Recommendations for further study related to scholarship and nurse faculty role behaviors conclude this chapter.

Conclusions

The results of this study facilitate answering the research question and two subquestions. Conclusions drawn from the results of this study are discussed in relation to the research questions.

Subquestion A was concerned with whether validity for nurse faculty role behaviors could be demonstrated as a four-dimension construct. Validity of the nurse faculty role behaviors was tested by principal component analysis of the FSI. Results of the principal component analysis did not support validity of nurse faculty role behaviors as a four-dimension construct. For this sample of nurse faculty, role behaviors were characterized as a two-dimension construct, Discovery and Dissemination of Scholarship and Teaching Scholarship.

Subquestion B addressed the internal consistency of the FSI. Only one of the four item sets (research) which characterize nurse faculty role behaviors was internally

consistent. There was adequate support for the internal consistency of the 20-item FSI. Internal consistency for the item sets representing the two-dimension construct, Discovery and Dissemination of Scholarship and Teaching Scholarship, was supported.

The primary research question for this study: "Can nurse faculty role behaviors be categorized as research (discovery), integration, service (application), and teaching?" was not supported. The findings of this study did not support Boyer's (1990) conceptualization of scholarship as a four-dimensional construct to categorize nurse faculty role behaviors consisting of research, integration, service, and teaching. For this sample of nurse faculty, role behaviors could be characterized as a two-dimension construct, Discovery and Dissemination of Scholarship and Teaching Scholarship. Role behaviors of other disciplines might show different patterns than those found with this sample of nurse faculty.

Discussion

This section discusses the findings in terms of the adequacy of Boyer's (1990) model. The strength and weaknesses of the methods used in this study are also discussed.

Adequacy of Boyer's Model

Boyer's (1990) conceptual formulation of faculty scholarship provided the organizing framework for this study. Boyer depicted scholarship as four distinctive, yet related dimensions. Variables described in the framework

that were supported in this study of nurse faculty role behaviors could be classified according to the research and teaching dimension.

The conclusions regarding nurse faculty role behaviors characterized as two independent factor constructs (Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship) were based on a conservative interpretation of principal component analysis. When applied to nurse faculty behaviors, study findings did not demonstrate Boyer's (1990) conceptualization of scholarship as a four-dimensional construct consisting of research, integration, service, and teaching. The discrepancy between Boyer's conceptualization of scholarship and the two-factor solution raises questions about faculty roles and the FSI, and Boyer's conceptualization of scholarship.

The purpose of this study was to explore whether nurse faculty behaviors could be categorized according to Boyer's four-dimensional model. Participants were asked the extent of their participation in those behaviors. The results suggest two possible conclusions. Perhaps nurse faculty are not involved in all four role components or there may be limitations in the FSI which influenced the results.

The first factor in a principal component analysis accounts for the greatest percent of the variance and usually accounts for the greatest number of items (Nunnally, 1978). For this survey sample of nurse faculty, Discovery and Dissemination of Knowledge Scholarship role behavior was the most important scholarly dimension.

Items clustering on Factor 1, Discovery and Dissemination of Knowledge Scholarship, included activities such as preparing for research, conducting research, assisting others with research, writing research papers, presenting research findings, and writing research grants. Factor 1 also incorporated two items identified as integration behaviors, writing nonresearch articles and books or book chapters; and a service behavior, consultation. The behaviors loading on Factor 1, research, writing, and consulting, were strongly related for the study sample. This finding suggests that faculty who do research also write (both research and nonresearch papers) and consult. This finding differs from that of Megel (1987), who reported a low correlation between publication of research and nonresearch articles. Megel found that faculty who published research articles were less likely to publish nonresearch articles. However, Baird et al. (1985) and Wakefield-Fisher (1987) did not differentiate between research and nonresearch publications.

Consultation is a faculty activity in the area of nursing. In this study, consulting was found to occur more often in conjunction with research and publication behaviors.

The nine items on the Discovery and Dissemination of Knowledge Scholarship Factor are related to the research dimension described by Boyer (1990). This finding supports nurse faculty scholarship behaviors identified by Baird et

al. (1985), Dienemann and Shaffer (1992), Holzemer (1987), Megel et al. (1988), and Wakefield-Fisher (1987).

Factor 2, Teaching Scholarship, included four teaching items and the service item--clinical practice. Teaching items included such items as classroom teaching, clinical teaching, skills laboratory teaching, and preparation for teaching. Solomons et al. (1980) included these activities as a part of the teaching role, as well as other behaviors such as advising students, evaluation, course coordinating, and managing student learning activities. Boyer (1991) differentiated the teaching dimension of scholarship from service. In this study, clinical practice was found to occur in conjunction with teaching. This finding differs from that of Baird et al. (1985) who did not identify clinical practice as a scholarly activity, and that of Solomons et al. who identified clinical practice as a professional growth activity. However, this finding supports Lambert and Lambert's (1993) finding that more nurse faculty were involved in clinical practice than not involved. Because nursing is a practice discipline, perhaps clinical practice represents an application of knowledge (service) activity that is directly related to the teaching role. The five items loaded on Factor 2 are generally thought to represent teaching scholarship described by Boyer (1990).

The items representative of integration and service behaviors were not supported as role dimensions for nurse faculty in this study, nor are they well identified in the

literature. Behaviors defined as integrative loaded on one of the three factors and did not stand alone. One reason could be related to the lack of sufficient items representative of these two dimensions (a content domain issue). The homogeneity of an item subset can be increased by increasing the number of items while keeping the interitem correlation constant (Ferketich, 1991). It is possible that, with additional items representative of integration and service, these two subsets would be supported as scholarship domains. Another possible explanation is that the items may misrepresent the underlying concept. In future FSI revisions, items may need to be clarified to more specifically describe integrative and service role behaviors

The relatively low intercorrelation coefficients between Factors 1 and 2 support that they are measuring different activities of role behaviors. This finding does not support Boyer's (1990) contention of separate, yet overlapping, dimensions of scholarship. This finding, along with the lack of support for two of the scholarship dimensions, suggests a cloudiness in the conceptualization of scholarship with four separate, yet overlapping, dimensions.

Role behaviors for nurse faculty have been identified as research, instruction, service, institutional governance, scholarship and professional growth (Blackburn, Bieber et al., 1991; Blackburn, Lawrence et al., 1991; Bowen & Schuster, 1986; Dienemann & Shaffer, 1992; Solomons

et al., 1980). However, a number of studies have documented that nurse faculty cite lack of time, interest, and skills as reasons for not participating in all role behaviors (Anderson, 1986; Nieswiadomy, 1984; Ostmoe, 1986). Wakefield-Fisher (1987) suggested that, as doctoral education in nursing has increased, productivity in research roles for nurse faculty has taken on paramount importance. It is possible that, because of increased institutional emphasis on teaching and research role expectations, nurse faculty with existing time constraints now minimize the service and integrative role behaviors.

The validity of the research and teaching items as representative of nurse faculty role behavior was further supported by the contrasted group approach (Waltz et al., 1991). These two findings supported the contention of Blackburn, Bieber et al. (1991), that faculty in community colleges teach more than do faculty in research universities; the observations of Solomons et al. (1980), that senior faculty conduct more research; and the findings of Nieswiadomy (1984), that faculty who were more involved in research had doctoral degrees and were located in schools that offered doctoral or master's degrees.

The ability of these two sets of FSI items to differentiate nurse faculty on the basis of institutional type, academic rank, and degree earned provides support for the construct validity of the FSI. However, the finding that six FSI items did not load onto an interpretable factor suggests that further revision and refinement of the

FSI is crucial if it is to be used to represent the spectrum of nurse faculty role behaviors.

Participants reported additional role behaviors as student advising and counseling, tutoring, providing continuing education programs, and grant writing to support teaching projects as additional behaviors not identified in the FSI. These items should be considered in the revision of the FSI to broaden the teaching subset of items.

Citizenship role comprised a number of role behaviors for nurse faculty in this study (Table 9). These reported behaviors included committee work, advising, administration/coordination, mentoring new faculty, student recruiting, student sponsorship, accreditation visitor/ board of review member, and reviewing library materials. Academic citizenship behaviors are reported in the literature (Boyer, 1990) and should be included in future assessments of nurse faculty role behaviors.

Strength and Weakness of Research Methods

A descriptive survey design was used in this study to examine the research question exploring whether nurse faculty behaviors can be categorized according to Boyer's (1990) model. The research question was supported by the literature review. The survey questionnaire method was useful in this study. It assured a standardized format for participants and allowed complete anonymity. This design permitted sampling a large number of nurse faculty from geographically different areas, different types of programs, and with diverse experience.

While a purposive sample was identified for this study, the results demonstrated that the sample of 398 nurse faculty were representative of associate degree, baccalaureate, master's, and doctoral nursing programs with slightly higher representation of faculty from baccalaureate and higher degree. The sample was predominantly female and consisted of primarily senior nurse faculty; over one-half were associate or full professors; the majority (76%) had at least 10 years of experience in nursing education. The sample did not control for size of school which may have influenced the responses due to the potential for greater resources and flexibility within a larger facility. The nature of this sample may have influenced study findings in that they were senior faculty for whom research and teaching were their primary career emphasis. For example, Lambert and Lambert (1993) found that faculty who were involved in clinical practice were more likely to hold a lower rank (instructor) and were more likely to be involved with clinical teaching. The nature of the sampling frame may have precluded individuals with a strong emphasis on service and integration. Attendance at the NLN convention was significantly less than previous years. It may not have been representative of all nurse faculty.

Another explanation for responses may be social bias. Participants may have decided to say the "right" thing or what they thought was expected about their faculty role behaviors.

Survey instruments were distributed at a national nursing education conference with incentives offered for participation. This procedure allowed for a timely data collection process that was cost effective. The site was convenient and conducive to participation by those attending the convention. The instrument tested in this study demonstrated reliability for the population studied. The number of missing responses for the first three items, located on the first page below the letter requesting participation and consent, suggests the need for a revision in format of the instrument. The population sampled included an estimated high number of nursing education administrators; by allowing them to decide whether they were "faculty" may have been a limitation with respect to this study. The instrument development process could have been strengthened by field testing a larger less homogeneous sample. A variety of data analysis procedures appropriate to support instrument validity and reliability were used.

Implications

As reflected in the construct validation process, the FSI has the ability to differentiate faculty behaviors according to degree earned, academic ranks, and program types. While all subcomponents of the FSI were not internally consistent, the addition of more items representative of integration and service behaviors of nurse faculty could enhance reliability and content validity. If further refinement and testing of the FSI

supports construct validity and reliability, it could be useful for measuring scholarly behaviors of individual nurse faculty.

For example, the FSI could be an important tool for nurse administrators to identify differences in perceptions of importance and actual behavior of faculty. This information could be used to clarify nurse faculty roles and to build a consistent support system to support the desired role for faculty. Academic administrators should carefully scrutinize the workload and work schedules of their faculty and actively assist individual faculty members to schedule time for those activities which are important to the mission of the institution.

The results of this instrumentation development study have implications for future research regarding nurse faculty role behaviors. Correlational studies using the FSI to determine the relationship of faculty role behaviors with institutional/programs missions and other faculty and program traits could provide useful information about how these factors influence faculty roles. The FSI may be relevant for nurse administrators because it surveys the perceived importance and actual behaviors of faculty. The FSI could be used in longitudinal studies of faculty role behaviors to examine behavior patterns and changes over time. This knowledge would be important for nursing education administrators since few studies have focused on the total role behaviors of nurse faculty.

Another way in which the FSI might be useful is as a guide for defining faculty roles. According to the institutional and nursing program/school mission, faculty roles could be defined. For example, the FSI could be useful in determining similarities and differences in role behaviors of different populations of nurse faculty, such as nurse practitioner faculty and clinical nurse specialist faculty.

The FSI could be used as a pretest and posttest measure to assess the impact of continuing education programs on faculty role behaviors. The FSI could also be used in faculty workload studies.

Recommendations

If validity and reliability are supported, the FSI should be used to compare nurse faculty populations from institutions with different missions to determine whether the FSI differentiates faculty who are more research-oriented from those who function predominantly as teachers.

Triangulation studies, which incorporate service and qualitative methods to explore relationships and possible reasons for differences in nurse faculty role behaviors, are recommended. Information regarding how nurse faculty perceptions of role behaviors compare with the institution position descriptions and reward structure, and how that influences faculty, would be useful for nurse administrators in facilitating successful nurse faculty role behaviors.

If the FSI demonstrates reliability and validity over time, it could be used to determine whether continuing education programs subsequently influence nurse faculty role behaviors. This information could be beneficial to nurse administrators and faculty in facilitating faculty role development and productivity.

This study explored whether nurse faculty behaviors could be categorized according to four dimensions of scholarship. This study represents a first attempt to explore whether nurse faculty behaviors could be categorized according to Boyer's four-dimensional model. Support was found for two dimensions, Discovery and Dissemination of Knowledge Scholarship and Teaching Scholarship. These findings will need to be substantiated by subsequent research.

The FSI should be refined and tested with different populations in order to provide further support for construct validity and internal consistency. New items need to be written for integrative, teaching, service, and citizenship behaviors. The number of items for each subset needs to be increased. The revised FSI should be tested with different populations of nurse faculty. Instrument stability over time should be addressed.

Increased faculty teaching loads, changes in institutional missions, and increased consumer demands for defined educational program outcomes all justify further research on developing reliable and valid instruments for assessing nurse faculty role behaviors. To ensure that

nurse faculty reach their full potential as academicians in institutions of higher education, there is a pressing need for instruments which are valid and reliable and measures of their role behaviors. In this study, the FSI has demonstrated potential as a measure of those nurse faculty role behaviors.

REFERENCES

Anderson, M. A. (1986). BSN faculty workload: Its impact on research. Nursing Outlook, 34(4), 199.

Andreoli, K. (1979). Faculty productivity. Journal of Nursing Administration, 15, 47-53.

Andreoli, K., & Musser, L. (1986). Faculty productivity. In H. Werley, J. Fitzpatrick, & R. Taunton (Eds.), Annual review of nursing research (Vol. 4, pp. 177-194). New York: Springer.

Baird, S., Biegel, A., Bopp, A., Dolphin, N. W., Ernst, N., Hagedorn, M., Malkiewicz, J., Payton, R. J., & Sawatzky, G. (1985). Defining scholarly activity in nursing education. Journal of Nursing Education, 24(4), 143-147.

Barger, S., Nugent, K., & Bridges, W. (1992). Nursing faculty practice: An organizational perspective. Journal of Professional Nursing, 8(5), 263-270.

Batey, M. V. (1978). Research development in university schools of nursing (DHEW Publication NO. HRA 78-67). Hyattsville, MD: U.S. Department of Education and Welfare.

Bentley, R. J., & Blackburn, R. T. (1990). Relationship of faculty publication performance with age, career age, and rank. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Portland, OR.

Bergman, E. (1991). As enrollments rebound, schools face a growing faculty shortage. American Journal of Nursing, 91(4), 112-113.

Blackburn, R., Bieber, J., Lawrence, J., & Trautvetter, L. (1991). Faculty at work: Focus on research, scholarship and service. Research in Higher Education, 32(4) 385-413.

Blackburn, R., Lawrence, J., Bieber, J., & Trautvetter, L. (1991). Faculty at work: Focus on teaching. Research in Higher Education, 32(4) 363-383.

Bowen, H. R., & Schuster, J. H. (1986). American professors: A national resource imperiled. New York: Oxford University Press.

Boyer, C. M., & Lewis, D. R. (1985). And on the seventh day: Faculty consulting and supplemental income (AAHE-ERIC Higher Education Report No. 4). Washington, DC: Association for the Study of Higher Education.

Boyer, E. (1990). Scholarship reconsidered: Priorities of the professoriate. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.

Boyer, E. (1991). The scholarship of teaching: From "Scholarship Reconsidered: Priorities of the Professoriate." College Teaching, 39(1), 11-13.

Cliff, N., & Pennell, R. (1967). The influence of communality, factor strength, and loading size on the sampling characteristics of factor loadings. Psychometrika, 32(3), 309-326.

Cohen, P. A. (1981). Student ratings of instruction and student achievement: A meta analysis of multisection validity studies. Review of Educational Research, 51(3), 281-309.

Coudret, N. A., (1981). Determining faculty workload. Nurse Educator, 6, 38-41.

Creswell, J. W. (1985). Faculty research performance: Lessons from the sciences and the social sciences (AAHE-ERIC Higher Education Report No. 4). Washington, DC: Association for the Study of Higher Education.

Dienemann, J., & Shaffer, C. (1992). Faculty performance appraisal systems: Procedures and criteria. Journal of Professional Nursing, 8(3), 148-154.

Eastman, J. (1989). The different organizational requirements of scholarship and service. Review of Higher Education, 12(3), 279-292.

Fawcett, J. (1979). Integrating research into the faculty workload. Nursing Outlook, 27, 259-262.

Feldman, F. A. (1987). Research productivity and scholarly accomplishment of college teachers as related to their instructional effectiveness: A review and exploration. Research in Higher Education, 26(3), 227-298.

Ferketich, S. (1991). Focus on psychometrics: Aspects of item analysis. Research in Nursing & Health, 14, 165-178.

Ferketich, S., & Muller, M. (1990). Factor analysis revisited. Nursing Research, 39(1), 59-62.

Gay, L. R. (1985). Educational evaluation and measurement (2nd ed.). Columbus, OH: Charles E. Merrill.

Gorsuch, R. L. (1974). Factor Analysis. Philadelphia: W. B. Saunders Company.

Gorsuch, R. L. (1983). Factor analysis (2nd ed.). Hillsdale NJ: Lawrence Erlbaum Associates.

Harris, R. J. (1985). A primer of multivariant statistics. Orlando, FL: Academic Press.

Herr, K. A. (1989). Faculty practice as a requirement for promotion and tenure: Receptivity, risk, and threats perceived. Journal of Nursing Education, 28(8), 347-353.

Holzemer, W. (1987). Doctoral education in nursing: An assessment of quality, 1979-1984. Nursing Research, 36(2), 111-116.

Holzemer, W. & Chambers, D. (1986). Healthy nursing doctoral programs: Relationship between perceptions of the academic environment and productivity of faculty and alumni. Research in Nursing and Health, 9, 299-307

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. Psychometrika, 23, 187-200.

Kalish, B. (1975). Creativity and nursing research. Nursing Outlook, 23, 314-319.

Katz, D., & Kahn, R. (1978). The social psychology of organizations. New York: Wiley.

Kerlinger, F. (1964). Foundations of behavior research. New York: Rinehart and Winston.

Kerlinger, F. N. (1973). Foundations of behavioral research. New York: Holt, Rinehart & Winston.

Kerlinger, F. N. (1979). Behavioral research. New York: Holt, Rinehart & Winston.

Knapp, T. R. (1991). Focus on psychometrics coefficient alpha: Conceptualizations and anomalies. Research in Nursing & Health, 14, 457-460.

Lambert, C., & Lambert, V. (1993). Relationships among faculty practice involvement, perception of role stress, and psychological hardiness of nurse educators. Journal of Nursing Education, 32(4), 171-179.

LoBiondo-Wood, G., & Haber, J. (1990). Nursing research methods, critical appraisal, and utilization (2nd ed.). St. Louis: C. V. Mosby.

Mauksch, I. (1980). Faculty practice: A professional imperative. Nurse Educator, 5, 21-34

McElmurry, B. J., Newcomb, B. J., Barnfather, J., & Lynch, M. S. (1981). The manuscript review process in nursing publications. In J. C. McCloskey & H. Grace (Eds.), Current issues in nursing (pp. 129-143). Boston: Blackwell Scientific Publications.

Megel, M. (1987). Nursing scholars, writing dimensions, and productivity. Research in Higher Education, 27(3), 226-243.

Megel, M., Langston, N., & Creswell, J. (1988). Scholarly productivity: A survey of nursing faculty researchers. Journal of Professional Nursing, 4(1), 45-54.

Mooney, C. (1990). Higher education conferees applaud Carnegie plan to broaden the definition of faculty scholarship. Chronicle of Higher Education, 36(30), A1,16.

Muller, M., & Ferketich, S. (1993). Factor analysis of the maternal fetal attachment scale. Nursing Research, 42(3), 144-147.

Munro, B., Visintainer, M., & Page, E. (1986). Statistical methods for health care research. Philadelphia: J. B. Lippincott.

Nieswiadomy, R. M. (1984). Nurse educators' involvement in research. Journal of Nursing Education, 25(5), 207-210.

Norusis, M. (1990). SPSS base system user's guide. Chicago: SPSS, Inc.

Nunnally, J. C. (1978). Psychometric theory. New York: McGraw-Hill.

Ostmoe, P. M. (1985). Issues related to promotion and tenure. In J. C. McCloskey & H. Grace (Eds.), Current issues in nursing (2nd ed., pp. 626-635). Boston: BLackwell Scientific.

Ostmoe, P. M. (1986). Correlates of university nurse faculty publication productivity. Journal of Nursing Education, 25(5), 207-210.

Parsons, M. A., & Felton, G. (1987). Practice: A sanctioned faculty role. Journal of Nursing Education, 26, 123-125.

Polit, D., & Hungler, B. (1991). Nursing research: Principles and methods (4th ed.). Philadelphia: J. B. Lippincott.

Potter, P. M. (1959). Faculty work load in the clinical fields in nursing degree programs. Nursing Research, 8, 160-168.

Pranulis, M. R., & Gortner, S. R. (1985). Researchmanship characteristics of productive research environments in nursing. Western Journal of Nursing Research, 7(1), 127-131.

Redman, B., Cassells, J., & Jackson, S. (1985). Generic baccalaureate nursing programs: Survey of enrollment, administrative structure/funding, faculty teaching/ practice roles, and selected curriculum trends. Journal of Professional Nursing, 1(6), 369-380.

Rice, R. E. (1991). Rethinking what it means to be a scholar. In E. Boyer & R. E. Rice (Eds.), The new American scholar: A forthcoming Carnegie report (pp. 2-33) (ED 333938). Princeton, NJ: Carnegie Foundation.

Royle, J., & Crooks, D. (1986). Clinical practice: A dilemma for nurse educators, Nursing Papers, 18, 27-39.

Seiler, W. J., & Dunning D. (1983). Communication consulting from academe to the real world. Paper presented at the annual meeting of the Central State Speech Association, April, Lincoln, NB. (ED 234-442 3-21)

Seldin, P. (1990). How administrators can improve teaching. San Francisco: Jossey-Bass Inc.

Solomons, H., Jordison, N., & Powell, S. (1980). How faculty members spend their time. Nursing Outlook, 28, 160-165.

Wakefield-Fisher, M., & Frank, B. (1989). Administrative leadership and faculty scholarship: Research on nursing faculty and deans. In W. Holzeman (Ed.), Review of research in nursing education (Vol. II, pp. 57-84). New York: National League for Nursing.

Wakefield-Fisher, M. (1987). The relationship between professionalization of nursing faculty, leadership styles of deans, and faculty scholarly productivity. Journal of Professional Nursing, 3(3), 155-164.

Waltz, C., Strickland, O., & Lenz, E. (1991). Measurement in nursing research (2nd ed.). Philadelphia: F. A. Davis.

Watkins, B. (1990). To enhance prestige of teaching, faculty members urged to make pedagogy focus of scholarly debate. Chronicle of Higher Education, 37(9), pp. A11,12.

Weaver, F. (1989). Scholarship and teaching. Educational Record, 70(1) 54-58.

Williams, R. (1989). Work behaviors of nursing faculty. Nursing Outlook, 37(1), 31-36.

Wilson, H. S. (1993). Research in nursing (3rd ed.). Reading, MA: Addison-Wesley.

Youngblut, J. M. (1993). Comparison of factor analysis options using the home/employment orientation scale. Nursing Research, 42(2), 122-124.

APPENDIX A

Instrument

NURSING FACULTY ACTIVITIES SURVEY

Dear Colleague,

I am a doctoral candidate in the Graduate School of the School of Nursing, The University of Alabama at Birmingham. This letter is to invite you to participate in a study designed to develop and refine an instrument for collecting data on nursing faculty activities. Your assistance is needed in supplying data for this instrument development study by completing the enclosed survey. Through this investigation, I hope to develop a reliable and valid measure of nursing faculty work activities.

Your support and cooperation are appreciated and the return of the survey signifies your consent to participate in this study. The data obtained will be kept in strictest confidence and will be reported without reference to you or your institution.

Thank you in advance for your assistance in this study. Please complete and return the survey to the designated collection box.

Sincerely,

Deanna J. Naddy, RN, MSN

* * * *

Please check the appropriate category for the type of nursing program in which you teach. (Check all that apply)

___ Doctoral ___ Masters ___ Baccalaureate
___ Diploma ___Associate Degree

How many years have you taught nursing? _____ years

Your current faculty employment status: ___ full time ___ part time

PART I FACULTY ACTIVITIES

These 20 items describe activities which some nursing faculty report they engage in as part of their faculty role. Please mark each item according to **how important** this activity is at your institution and the **extent to which** you participate in the activity during the calendar year.

IMPORTANCE SCALE
1=unimportant
2=slightly
3=somewhat
4=important
5=very important

PARTICIPATION SCALE
1=seldom
2=occasionally
3=sometimes
4=often
5=usually

	Importance at your instiution	**Extent of your participation**
1. developing curriculum innovations	1 2 3 4 5	1 2 3 4 5
2. teaching skills laboratory	1 2 3 4 5	1 2 3 4 5
3. preparing for research activities	1 2 3 4 5	1 2 3 4 5
4. writing theory or non research papers	1 2 3 4 5	1 2 3 4 5
5. assisting others in the conduct of research	1 2 3 4 5	1 2 3 4 5
6. clinical practice	1 2 3 4 5	1 2 3 4 5
7. developing an interdisciplinary course	1 2 3 4 5	1 2 3 4 5
8. community service activities related to your professional expertise	1 2 3 4 5	1 2 3 4 5
9. conducting research as primary investigator	1 2 3 4 5	1 2 3 4 5
10. writing research papers for possible publication	1 2 3 4 5	1 2 3 4 5
11. classroom teaching	1 2 3 4 5	1 2 3 4 5
12. designing a new nursing course	1 2 3 4 5	1 2 3 4 5
13. professional organization activities: officer, committee member, or active participant	1 2 3 4 5	1 2 3 4 5
14. clinical teaching	1 2 3 4 5	1 2 3 4 5
15. presenting research findings at professional meetings	1 2 3 4 5	1 2 3 4 5
16. consulting	1 2 3 4 5	1 2 3 4 5
17. preparing for teaching	1 2 3 4 5	1 2 3 4 5
18. writing research grants	1 2 3 4 5	1 2 3 4 5
19. writing/editing book chapters/books	1 2 3 4 5	1 2 3 4 5
20. seminar teaching	1 2 3 4 5	1 2 3 4 5

Please list **any additional** faculty activities not addressed in the previous items:

_____
_____
_____
_____

PART II FACULTY INFORMATION

Directions: Please check (✓) or write in the answer which best answers the question for you.

21. Gender: ___ M ___ F

22. RN ___ Yes ___ No

23. Age at last birthday: _____ years

24. Highest degree held:

___	Ph.D, nursing	___	DN
___	Ph.D, other	___	MSN
___	DSN	___	BSN
___	Other (Specify)_____		

25. Your current academic rank:

___ Instructor/Lecturer
___ Assistant Professor
___ Associate Professor
___ Professor
___ Other (Specify)_____

26. How many years have you taught at your present school? _____ years

27. Number of years in nursing? _____ years

28. Are you currently tenured: ___ yes ___ no

29. Institutional status: ___ public ___ private

30. Please check **each area** indicating the emphasis for your institution:

Research	___	Heavy Research Emphasis
	___	Moderate Research Emphasis
	___	Little Research Emphasis
Teaching	___	Heavy Emphasis on Teaching
	___	Moderate Emphasis on Teaching
	___	Little Emphasis on Teaching
Service	___	Heavy Emphasis on Service
	___	Moderate Emphasis on Service
	___	Little Emphasis on Service

31. Which **area** has the greatest emphasis in your institution? ___ Research ___ Teaching ___ Service

Thank you for your participation.
Please return this form to the box at the Research Table.

APPENDIX B

Information Sent to Content Experts

FACULTY SCHOLARSHIP PRODUCTIVITY

Instrument Objectives, Concepts, Definitions and Organization of items of the Faculty Scholarship Measure

Instrument Objectives: Identify nursing faculty scholarship productivity in the four dimensions of scholarship: discovery integration, application and teaching

Concept	Theoretical Definition	Instrument Items
Discovery	Activities that directly relate to the process of research that contribute knowledge, includes the dissemination of that knowledge	item 1-6, 24 Respondents are asked to report the percent of their academic year time spent in research activities and to identify specific activities of involvement. Higher percent equated with greater productivity
Integration	Activities that focus on the meaning of findings, that are of more interpretive nature and/or that make connections across disciplines	item 7-11, 25 Respondents are asked to report the percent of their academic year time spent in integration activities and to identify specific activities of involvement. Higher percent equated with greater productivity
Application	Professional, practice and community service activities that are related to areas of professional knowledge and skill of the faculty member	item 12-15, 26 Respondents are asked to report the percent of their academic year time spent in application activities and to identify specific activities of involvement. Higher percent equated with greater productivity
Teaching	Activities related to classroom and clinical instruction of students including preparation, evaluation and advising	item 16-23, 27 Respondents are asked to report the percent of their academic year time spent in teaching activities and to identify specific activities of involvement. Higher percent equated with greater productivity

Reviewer Directions: The instrument items shown in Column A have been developed to measure the concept defined below. Please read each item and score it in Column B for its relevance in representing the concept.

Concept Definition for **Discovery:** activities that directly relate to process of research that contribute knowledge and includes dissemination of that information.

Relevance Scale	
1 = not relevant	3 = quite relevant
2 = somewhat relevant	4 = highly relevant

COLUMN A	COLUMN B			
Item	Relevance Scale			
1. Using an average of your academic yearly activities, what percent of time in your faculty role is devoted to the Scholarship of Discovery (research)?	1	2	3	4
Please rate items according to the extent of your participation in this category				
2. conducting research as a primary investigator?	1	2	3	4
3. assisting with conducting research?	1	2	3	4
4. preparation time for research activities -(library work, consulting with research colleagues)?	1	2	3	4
5. writing research papers for publication?	1	2	3	4
6. writing research reviews?	1	2	3	4
7. writing research grants?	1	2	3	4
8. other _____				

Reviewer Directions: The instrument items shown in Column A have been developed to measure the concept defined below. Please read each item and score it in Column B for its relevance in representing the concept.

Concept Definition for **Integration:** activities that focus on the meaning of findings, that are of a more interpretive nature, and that make connections across disciplines.

Relevance Scale	
1 = not relevant	3 = quite relevant
2 = somewhat relevant	4 = highly relevant

COLUMN A	COLUMN B			
Item	Relevance Scale			
1. Using an average of your academic yearly activities, what percent of time in your faculty role is devoted to the Scholarship of Integration?	1	2	3	4
Please rate items according to the extent of your participation in this category				
2. writing\editing text books	1	2	3	4
3. writing theory or non research papers	1	2	3	4
4. designing a new course	1	2	3	4
5. developing cross discipline seminar/course	1	2	3	4
6. developing curriculum innovation	1	2	3	4
7. developing computer /video or interactive program	1	2	3	4.

8. other _____

_____

_____

Reviewer Directions: The instrument items shown in Column A have been developed to measure the concept defined below. Please read each item and score it in Column B for its relevance in representing the concept.

Concept Definition for **Application:** professional, practice and community service activities that are related to areas of professional knowledge and skill of the faculty member.

Relevance Scale	
1 = not relevant	3 = quite relevant
2 = somewhat relevant	4 = highly relevant

COLUMN A	COLUMN B			
Item	Relevance Scale			
1. Using an average of your academic yearly activities, what percent of time in your faculty role is devoted to the Scholarship of Application (service)?	1	2	3	4
Please rate items according to the extent of your participation in this category				
2. community service activities (must be related to your professional expertise)	1	2	3	4
3. professional organization activities - officer, committee member, must be active participation	1	2	3	4
4. clinical practice	1	2	3	4
5. consulting	1	2	3	4
6. other _____				

Reviewer Directions: The instrument items shown in Column A have been developed to measure the concept defined below. Please read each item and score it in Column B for its relevance in representing the concept.

Concept Definition for Teaching: activities related to the classroom, and clinical instruction of students including preparation, evaluation and advising.

Relevance Scale	
1 = not relevant	3 = quite relevant
2 = somewhat relevant	4 = highly relevant

COLUMN A	COLUMN B Relevance Scale			
1. Using an average of your academic yearly activities, what percent of time in your faculty role is devoted to the Scholarship of Teaching?	1	2	3	4
Please rate items according to the extent of your participation in this category				
2. classroom teaching	1	2	3	4
3. clinical teaching	1	2	3	4
4. campus/skills laboratory teaching	1	2	3	4
5. teaching seminars	1	2	3	4
6. preparation & evaluation for classroom teaching	1	2	3	4
7. preparation & evaluation for clinical teaching	1	2	3	4
8. preparation & evaluation for campus/skills laboratory teaching	1	2	3	4
9. student advising/counseling	1	2	3	4

10. other _____

Thank you for your participation. Please return this form in the enclosed envelope

APPENDIX C

Content Experts

Content Experts

Linda L. Davis, PhD, RN, ANP
Professor and Associate Dean
School of Nursing
University of Alabama at Birmingham

Mary A Megel, PhD, RN
College of Nursing
University of Nebraska

Ann Clark, Ph.D., RN
Director
Center for Nursing Research
School of Nursing
The University of Alabama at Birmingham

Dr. Ernest L. Boyer, President
The Carnegie Foundation
for the Advancement of Teaching

APPENDIX D

Institutional Review Board Approval Form

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
Office of the Institutional Review Board for Human Use

FORM 4: IDENTIFICATION AND CERTIFICATION OF RESEARCH PROJECTS INVOLVING 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: DEANNA J. NADDY

PROJECT TITLE: TESTING A FOUR-FACTOR MODEL OF NURSE FACULTY SCHOLARSHIP BEHAVIORS

_____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 _____ 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 THAT 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.

__X__ 4. EXEMPTION IS APPROVED BASED ON NUMBER(S) ____2____.

DATE: 5-17-93

Russell Cunningham

RUSSELL CUNNINGHAM, M.D.
INTERIM CHAIRMAN OF THE
INSTITUTIONAL REVIEW BOARD

The University of Alabama at Birmingham
212 Mortimer Jordan Hall • 1825 University Boulevard
Birmingham, Alabama 35294-2010 • (205) 934-3789 • FAX (205) 975-5977