



A comparative analysis of factors affecting productivity levels in professors of education in U.S. land-grant universities
by Linda Jo Schoenstedt

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
© Copyright by Linda Jo Schoenstedt (1991)

Abstract:

To determine the effect of part-time/full-time study, mentoring and various attribute variables upon productivity levels, 304 men and women possessing doctorates and working as faculty in education at U.S. land-grant universities were surveyed. These faculty received their doctorate degrees in 1974/75 or 1979/80 and were compared against each other for differences. There were no significant differences ($p < .05$) in productivity levels between men and women. However, men were significantly more productive than women when only the 1979/80 group was considered. Full-time students were significantly more productive than those attending part-time and there were no significant differences for those indicating the presence or the absence of a mentor. The relationship between productivity and age (the older one was, the less productive) and productivity and full-time study was also significant. Salary for women was also positively correlated with productivity (i.e., the higher a woman's salary, the more productive she was). Demographic data was collected on 2236 total faculty giving evidence that men were paid more, received tenure more often, achieved higher rank, were more apt to attend their doctoral program full-time, and had a higher availability of males to mentor them.

**A COMPARATIVE ANALYSIS OF FACTORS AFFECTING
PRODUCTIVITY LEVELS IN PROFESSORS OF EDUCATION
IN U.S. LAND-GRANT UNIVERSITIES**

by

Linda Jo Schoenstedt

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

June 1991

© COPYRIGHT

by

Linda Jo Schoenstedt

1991

All Rights Reserved

D378
Sch 629

APPROVAL

of a thesis submitted by

Linda Jo Schoenstedt

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibilographic style, and consistency, and is ready for submission to the College of Graduate Studies.

Date June 11, 1991

Eiri Strohmer
Chairperson, Graduate Committee

Approved for the Major Department

Date June 11, 1991

Donald Robson
Head, Major Department

Approved for the College of Graduate Studies

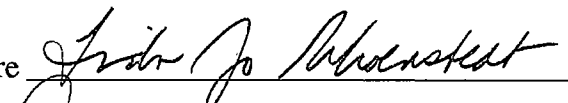
Date June 12, 1991

Henry L. Parsons
Graduate Dean

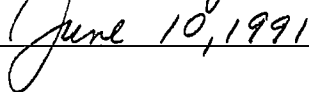
STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a doctoral degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library. I further agree that copying of this thesis is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for extensive copying or reproduction of this thesis should be referred to University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106, to whom I have granted "the exclusive right to reproduce and distribute copies of the dissertation in and from microfilm and the right to reproduce and distribute by abstract in any format."

Signature



Date



ABSTRACT

To determine the effect of part-time/full-time study, mentoring and various attribute variables upon productivity levels, 304 men and women possessing doctorates and working as faculty in education at U.S. land-grant universities were surveyed. These faculty received their doctorate degrees in 1974/75 or 1979/80 and were compared against each other for differences. There were no significant differences ($p < .05$) in productivity levels between men and women. However, men were significantly more productive than women when only the 1979/80 group was considered. Full-time students were significantly more productive than those attending part-time and there were no significant differences for those indicating the presence or the absence of a mentor. The relationship between productivity and age (the older one was, the less productive) and productivity and full-time study was also significant. Salary for women was also positively correlated with productivity (i.e., the higher a woman's salary, the more productive she was). Demographic data was collected on 2236 total faculty giving evidence that men were paid more, received tenure more often, achieved higher rank, were more apt to attend their doctoral program full-time, and had a higher availability of males to mentor them.

TABLE OF CONTENTS

TABLE OF CONTENTS.	v
LIST OF TABLES.	vii
CHAPTER.	PAGE
1. INTRODUCTION.	1
Introduction.	1
Statement of the Problem.	2
Need for the Study.	3
General Procedures.	6
Delimitations.	8
Limitations.	8
Definition of Terms.	9
General Questions to be Answered.	9
Review of Literature.	11
Related Research on Citation Analysis.	11
Social Science Citation Index.	12
Related Research on Doctorates in Higher Education.	15
Related Research on Mentoring.	23
Related Research on Full-time or Part-time Study.	27
2. METHODOLOGY.	28
Statistical Hypotheses.	29
Question to be Answered.	30
Population.	30
Method of Data Collection.	30
Statistics.	33
3. RESULTS.	35
Results of Hypotheses 1,2,4.	37
Results of Hypothesis 3.	39
Question to be Answered.	42
Descriptive Statistics on Total Population.	44
4. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.	57
Recommendations.	61

TABLE OF CONTENTS

BIBLIOGRAPHY.	64
APPENDICES.	71
A. Institutions Surveyed.	73
B. Letter to Survey Validators.	75
C. Letter to Land-Grant Faculty in Education	77
D. Questionnaire.	79

LIST OF TABLES

Table	Page
1. Analysis of Variance with Full-Time vs Part-time Dissertation for the 1974/1975 and 1979/1980 groups.	36
2. Nature of Dissertation Study.	37
3. Table of Means.	37
4. Analysis of Variance with Full-time vs Part-time Coursework for the 1974/1975 and 1979/1980 groups.	38
5. Nature of Coursework Study.	39
6. Corresponding Questions and Variables from the Questionnaire. .	40
7. Regression Variables for males and females in the 1974/1975 and 1979/1980 groups.	40
8. Regression variables for males.	41
9. Regression variables for females.	42
10. Parameter Estimates for Full-Model Regression - Males.	43
11. Parameter Estimates for Full-Model Regression - Females.	43
12. Marital Status When Doctorate Degree was Initiated.	44
13. Current Marital Status.	45
14. Did You Have Children When You Began Your Doctoral Degree?.	45
15. Do You Currently Have Children?.	46
16. Current Academic Rank.	46
17. Gender by Tenure.	47
18. Gender by Race.	48
19. Gender by Salary (In thousands).	49
20. Part-Time or Full-Time During Coursework?.	50

LIST OF TABLES CONTINUED

Table		Page
21.	Part-Time or Full-Time During Dissertation?.....	51
22.	Gender by Age.	52
23.	Did You Have a Mentor During the Doctoral Program?.....	53
24.	What Was the Gender of Your Mentor?.....	53
25.	Was Your Mentor Also Your Dissertation Advisor?.....	53
26.	Number of Years to Complete Doctorate.	54

CHAPTER 1

INTRODUCTION

Research over the past decades has shed light on why women who have earned the doctorate are often perceived to be less professionally productive than men in higher education. This disparity occurs largely as a result of differences in attitudes and activities prescribed by our society for men and women. Traditionally, women in our culture have been described as being less aggressive and less competitive in terms of cultural pressures and social expectations (Bardwick, 1971). Consequently, research has dealt with women and the stereotypic gender roles normally assigned to them, as well as the expanding roles they are pursuing, as professors and administrators in higher education settings. Academic women who possess terminal degrees are still subjected to unique and anxiety-producing situations arising from a conflict between their gender roles and their professional and leadership roles. This conflict may influence scholarly research productivity.

Findings contrary to the traditional gender roles, however, were found in a study conducted by Simon, Clark, and Galway (1967) when they compared the professional contributions and selected characteristics of women and men who held the doctorate. The productivity of these professionals was defined by the number of articles, books, research grants, and consulting work as well as their employment situation, professional recognition, and professional identification. The study also reviewed marital status, characteristics of type and place of employment, professional rank, tenure, and salaries as compared with men in the same

substantive areas, over the same period of time and their collective influence on productivity.

A demonstrated lack of parity between men and women points to the fact that women do not have the same advantages as men in academe despite research studies which state that women are at least as productive as men (Vetter & Babco, 1981; Hyer, 1985; Pearson, Shavlik, & Touchton, 1988). Which variables contribute to success in scholarly productivity (e.g., mentoring, part-time or full-time study for the doctorate, personal and professional demographics) are empirical questions for research investigation in the 1990s.

Statement of the Problem

The problem of the study was to compare productivity levels of men and women doctorates employed in full-time faculty positions at 50 United States land-grant institutions (Appendix A). Productivity was measured by analysis of the Social Science Citation Index. The population was further characterized by their subject-matter area, namely, education as a field of study and by the nature of their doctoral study which includes the presence or absence of a mentor, gender of mentor, relationship of mentor, and whether their doctoral study was part-time or full-time.

This investigation also considered such variables as gender, marital status, age of respondent, ethnicity, salary, professorial or academic rank, tenure status, and length of employment in the profession as these variables relate to mentoring and part-time vs. full-time doctoral study and their subsequent influence on productivity. This study was conducted during the 1989-90 academic year.

Need for the Study

This study contributes to the understanding of why some men and women in the American professoriate are more productive than others and why some women achieve high levels of productivity even though the majority of research seems to point to women as victims of gender discrimination in the area of salary, academic rank, availability of mentors, tenure status, and opportunity for full-time study. The implications for the nature of doctoral study with regard to faculty in higher education could become important in view of the senior professor's effect on productivity as an advisor or mentor and under what circumstances individuals are likely to succeed. The opportunity for full-time versus part-time study has also resulted in differences between producers and non-producers of research and publications. Determining differences in the productivity levels of men and women based on the nature of their doctoral study as well as investigating additional variables as they relate to productivity are important questions to be answered. More importantly, this research may provide information that can affect administrative policies and practices which will discriminate less against women in the United States professoriate and provide programs and policies to enable the advancement of women. The study of these differences in male and female doctorates and the resultant productivity was the primary focus of this study.

Of additional interest and concern are the various attribute variables of a demographic nature that will provide information pertaining to the nature of doctoral study and those subsequent factors which promote or undermine productivity. Other concerns include the review of under-representation of women who possess full professor status on university faculties. The salary differential between men and women that is increasing in the public educational sector, even though it is

decreasing in the private sector of business and industry has also been of interest. Therefore, women are not being hired (Pearson, Shavlik, and Touchton, 1988), promoted (Cole, 1979, Hyer, 1985) or paid salaries that are equitable to salaries paid to the men in colleges and universities (Finkelstein, 1984).

Finally, reviewing some of the issues raised by the Simon, Clark, and Galway study (1967) may provide a better view of the current professoriate and their productivity. By beginning to identify factors that encourage or discourage productivity, a variety of strategies may be developed which will increase the number and percentage of women faculty in colleges and universities, assist university administrators to develop an agenda for recruitment and hiring of qualified women faculty, encourage and assist women faculty to participate in specific activities (e.g., research, publishing, and grant writing) designed to achieve tenure and/or promotion to upper academic ranks and investigate inequities in salaries between men and women faculty so that corrective action may be taken. The implementation of these programs and policies would advocate an equitable and supportive campus climate for women.

These are important queries in view of the general perception that many administrators have of women faculty who conduct research. These women find their research taken less seriously than their male counterparts, particularly if their research is concerned with women or women's issues. In addition, some women researchers find their work devalued since most conduct socio-behavioral research and not the empirical testing representative of the hard sciences which are disciplines that are traditionally dominated by men (Biklen et al., 1983).

Women's roles in education and research have historically been viewed as "the other" (de Beauvoir, 1952), and it is crucial to the development of humankind

that both men and women are viewed as equitable partners in the contribution of research to our society. There is a genuine need to continue efforts toward the equitable promotion of men and women in academe at the professorial rank and identify reasons why some women and men produce scholarly work more effectively than others, particularly when research productivity is highly correlated with promotion and tenure. It is equally important to help abolish stereotypical gender roles that still exist with particular regard to the perception that women are inferior to men. "The professional woman, intellectually endowed and socially conscionable, becomes an anomaly, an ambiguity, or, at worst, a threat by virtue of a stereotype which reinforces pejorative occupational discrimination by sex" (Peters, 1974, p. 6). Frary et al. (1985), researched sex-equity issues between men and women faculty and found that a real disparity exists in their perceptions especially when the following attitudinal statements were posed. Those statements that reflect the largest disparity between men and women are listed below:

- 3). Scholarly investigations of issues of particular concern to women tend to be undervalued or not taken seriously in the academic 'marketplace' (pg. 14).
- 4). An excessive number of recently published educational studies show insensitivity or lack of fairness with respect to the concerns of women (pg. 14).
- 8). Women college faculty members tend to receive worse or less lenient treatment than men in promotion and job assignment decisions (pg. 14).
- 12). Women tend to hold positions of lesser prestige and power in the professions mainly (*italicized*) because of sex bias ranging from that which is subtle and unconscious to that which is flagrant and conspiratorial (pg. 14).

This study could be important for its contribution to the general body of knowledge of professors in education and the various effects that certain demographic variables have on them. In addition, other factors will be considered as to their effect on the productivity of these researchers. Those factors that have both positive and negative results can then be evaluated in order to enhance opportunities for research.

General Procedures

Productivity was measured by using citation analysis which is a method that assesses productivity by determining the frequency an author's work is cited by his or her peers in related journals. Research investigations indicate that papers cited in the journal literature are related to the quality and scholarly significance of the authors (Smart & Elton, 1981; Kroc, 1983).

In addition, the nature of doctoral study will be examined to help determine if women or men who were full-time doctoral students are more productive than those who were part-time; and further, if those who had same or opposite-gender mentors as doctoral students are more productive than those who did not have mentors. That productivity may be a result of the interaction between gender (i.e., gender of student and mentor), and the nature of doctoral work is a major question to be answered.

Data was obtained through a questionnaire which requests information from the respondent about the nature of the doctoral study (i.e., the presence or absence of a mentor, the mentor as major professor, gender of the mentor, and whether the respondent participated in part-time or full-time doctoral study). The questionnaire also requested personal and professional demographic information about gender, ethnicity, marital status, children, age of respondent, current academic rank, tenure

status, salary range, dates of beginning and obtaining the degrees, and number of years in the academic profession. The questionnaire was directed to all professors teaching in education at 50 major land-grant universities.

The land-grant colleges are U.S. institutions of higher education established under the provisions of the Morrill Act of 1862. It is clearly one of the most significant legislative acts in the history of American higher education. While the federal government was already making specific grants of land to the states in order to promote higher education, the Morrill Act or Land-Grant College Act as it is sometimes referred to, had a more continuous impact than any other legislation because of its scope and magnitude. The bill granted to each state 30,000 acres of land for each senator and representative in congress, based on the census of 1860. The land was sold to provide an endowment for at least one college in each state whose principal aim was to provide training in agriculture and the mechanic arts. This specialized training was not to exclude other scientific or classical studies but rather foster liberal and practical education of the industrial classes including military training.

Until this time in history, education in the United States was primarily modelled upon England's system of higher education which concentrated almost entirely on preparing their wealthy young men for careers as lawyers, teachers, ministers, and civil officers. Introduced in congress the first time in 1857, the Morrill Act submitted by Justin Smith Morrill, was finally passed in 1862 by large margins in the House and Senate and signed into law by President Abraham Lincoln. Passage of the bill was due in large part to the growth of effective democracy, the influence of the middle class, industry, commerce, and an increasing awareness of the importance of science and technology.

The Second Morrill Act authorized continuing federal opportunities for the support of land-grant institutions. In addition, individual states began to support their respective land-grant colleges giving rise to broadened programs and curriculums. These institutions that were primarily agricultural and mechanical in focus became comprehensive educational state universities.

The land-grant colleges began to incorporate schools of education during the 1890s. In the twentieth century, they have assumed many of the same functions originally provided by the separately organized teacher training colleges.

These land-grant colleges and universities are often considered as the United State's single greatest contribution to education. To assess the land-grant institutions quantitatively, it should be noted that there are 72 land-grant universities in the 50 states and three territories (Andersen, 1976).

Delimitations

Subjects for this study were delimited to men and women doctorates who possess either a Ph.D. or Ed.D. and have the assistant, associate, or full professor academic rank. It is further delimited to full-time faculty members in the academic broadfield of education employed by 50 major U.S. land-grant institutions (Appendix A and Definition of Terms).

Limitations

Limitations include the fact that the sample will be comprised of voluntary respondents who possess a terminal degree and are employed full-time by universities that have been identified as U.S. land-grant institutions.

Definition of Terms

Citation Analysis. An empirically based technique for evaluating scholarly ability by measuring the frequency with which an author's work is cited by his or her peers across the literature and related journals.

Mentor. Any person who the doctoral candidate perceived as indispensable and instrumental throughout the doctoral student's term of study and with whom a special rapport or working relationship was developed (Cameron & Blackburn, 1981; Levinson, 1978).

Land-grant Institutions. Of the 72 designated land-grant institutions in the United States, the most comprehensive university for each of the 50 states is the defined institution for this study. Further, the institutions are defined by Carnegie (1987) as Research I and II and Doctorate- Granting Universities I and II.

Productivity. As assessed by Social Science Citation Index and reflected as the number of times an author has had his or her work cited by peers.

General Questions To Be Answered

This study included questions with regard to the effect of the nature of doctoral study and various demographics on the productivity levels of professors in education. Specifically, the questions to be researched are as follows:

1. Are there any differences in productivity levels between men and women as measured by the Social Science Citation Index?
2. Are there any differences in productivity levels between those who attended graduate school for their doctoral degree studies during the dissertation phase on a full-time basis and those who attended on a part- time basis?

3. Are there any differences in productivity levels between those who attended graduate school for their doctoral degree studies during the coursework phase on a full-time basis and those who attended on a part-time basis?

4. Are there any differences in productivity levels between those who did not identify the presence of a mentor, those who had a same-gender mentor, and those who had a mentor of the opposite gender?

5. Are the variables that contribute significantly to the prediction of productivity for women different than those variables that contribute significantly to the prediction of productivity for men? These variables include age, gender, marital status, academic rank, children, tenure, ethnicity, salary, part-time versus full-time study, presence or absence of mentors and gender of mentor.

Review of Related Literature

Related Research on Citation Analysis

Historically, there has been an ongoing interest in rating the quality of higher education institutions, faculty, and academic programs. Colleges and universities generally support and promote scholarship that results in productive and cited faculty. In addition, current budgetary and retrenchment concerns have nurtured this area of research into an evaluative tool. Citation analysis has been used to evaluate the effectiveness or quality of different areas of education with particular regard for research and subsequent publication of works. It is generally acknowledged that the journal literature is an important part of a total synthesis of knowledge in various disciplines. More importantly, it is one of the primary vehicles for the dissemination and transmission of information.

Citation analysis is a bibliographic process that lends itself particularly well to the evaluation of productivity (Garfield, 1979, pp. 471-478). More specifically, citation rate or citation analysis is the frequency with which an author's work is cited by his or her peers in related journals. The principal criterion of this methodology uses reference citations and reference frequency to assess both the significance of the work and the scholarly productivity of an individual, academic program, or institution. Smart and Elton (1981) state that the frequency with which scientific works and papers are cited in the journal literature has been shown to be related to the quality and scholarly significance of scientists as well as the academic stature of the scientific journal. Many other researchers have been striving to establish significant correlations between citation frequency data and the quality of scientific contributions. This search is proving more productive than the previous method of simply counting

numbers of publications. For example, Myers (1970) found a strong relationship between the number of cross-referenced citations of individual scientists and their stature in the scientific community with the number of awards they received in their field as well as peer recognition. Studying the research activities of university physicists, Cole and Cole (1973, pp. 35-36) found citation rates to be "highly correlated with virtually every refined measure of quality," and further determined that "there can be little doubt that large differences in the number of citations received by scientists do adequately reflect differences in the quality of work."

Contemporary institutions have consistently recognized research and publication as crucial in maintaining a competitive edge in the recruiting of faculty, students, and funding. In the past, however, citation index analysis has been used primarily in the scientific realm and has only recently been utilized for the social sciences and, more specifically, educational research. Other research has examined the relationship between citation data and various measures of productivity, including publication accounts, conference presentations, funding, and institutional characteristics (Kroc, 1983). As a method of inquiry, citation analysis may provide an empirical basis for evaluating scholarly ability. The potential impact for professionals in the field of education through use of the citations and its relationship with productivity has only begun to be explored.

Social Science Citation Index

In 1966, research that utilized citation rates was made possible by the development of the Social Science Citation Index (SSCI). The SSCI gives information on the number of times an article, book, or monograph is cited in any given year, and also provides the sources of the citations. The title of the publication

and the name of the author are then indexed. The SSCI is very comprehensive and indexes over 2,500 journal articles each year (Kroc, 1984). It is feasible to determine an individual's scholarly productivity in terms of publications by counting the number of occasions his or her work is cited across the literature by other authors. Citations can be further divided into disciplines. For example, the SSCI provides extensive coverage of educational journals, including 160 different publications that have been deemed important contributors to the field of education.

It is important to understand that there are some inherent problems and difficulties with the use of citation analysis. Self-citation, where individuals repeatedly cite their own research, can inflate citation counts (Garfield, 1979). Another controversial question asks how best to measure citations since some articles may not be worthy enough to mention. Lindsey (1978) believes that citation analysis is overly biased toward the natural and hard sciences and the specific data they generate as opposed to the ambiguity and fuzziness sometimes associated with the social sciences such as temporary fads frequently seen in education. As a result of this bias, some researchers believe that the utilization of citation analysis to assess a university's overall faculty productivity can result in difficulties with regard to comparisons among faculty. Hence, a historical overview of higher education and a conceptual understanding of the social trends and institutional life at a college or university may not lend itself very well to empirical or methodological data analysis such as citation analysis (DeYoung, 1985). Citation Index analysis may also include a bias against research and scholarship not found in officially published journals or books as well as subdisciplines in education such as educational philosophy, and art education (1985).

Other researchers point out additional concerns. About one-fifth of all scholars produce about four-fifths of all articles and the number of citations tend to be significantly correlated with age. Journal productivity peaks at about age 45 and then declines gradually while the number of citations continues to rise to a maximum and continuing level at approximately age 55 (Gordon & Nucci et al., 1984). Walberg et al. (1983) discuss the concern that 20% of the scholars are responsible for approximately 80% of all citations. Consequently, a small grouping of older scholars attracts a very large percentage of citations to their writings. Merton (1968, pp. 56-63) termed this phenomenon the "Matthew effect" after the Biblical passage of the rich getting richer and the poor getting poorer. However, the ability to get works cited seems to be linked to the initial advantages available to a young and emerging scholar. Advantages would include: university facilities, association with active and eminent researchers, early publication opportunities, and job placement. Without the above advantages, new scholars in their early stages of their careers may have difficulty getting their work cited.

Finklestein's (1982) research examined the specialized interaction between graduate students and faculty, and between faculty and faculty, and reported that the impact of collegueship on faculty productivity was underestimated. Further, Finklestein (1982) reported evidence that early research productivity was the best predictor of later productivity in terms of publishable research. Similarly, Menard (1971) found that unless publications were written with noted senior faculty scholars, geologists were rarely cited in their first five publications. In addition, Finklestein stated that it could conceivably take a single, independent young scholar five publishable papers before one paper would be cited. Unfortunately, many junior faculty and young scholars may end their research careers with such negative

feedback. However, Gordon and Nucci (1984, p. 20) state that, "Productivity in leading journals of educational research predicts citations in scholarly reviews of educational research, social science journals, and textbooks for those who are, or intend to be, educational practitioners." Counting citations may also favor institutions that have emphasized presenting or publishing research. This bias is reflected in Clark and Guba's (1976) finding that doctoral degree granting institutions are largely responsible for research productivity in teacher education. Finally, Gordon et al. (1978) expresses the concern that publications in un-refereed journals will diminish an individual's opportunities for citations.

Even with the foregoing caveats, further investigation for the use of citation index analysis in education is warranted. Kroc (1984, p. 22) states, "Citation analysis is a simple and appealing method for judging scholarly work, but it is not immune to error criticism . . . Nonetheless, citation analysis may well be the best means available for assessing scholarly productivity."

Related Research on Doctorates in Higher Education

If educators were viewed as a whole, they would seem to be a homogeneous group since research, teaching, and service are viewed as traditional ways to contribute to students and institutions. These men and women appear to have very much in common in terms of their associations with administrators, academic peers, and students.

With specific regard to the role of these faculty in land-grant universities, it is important to note their special emphasis on certain aspects of higher education. Land-grant faculty are typically responsible for carrying out the educational and research programs of these institutions (Shapiro, 1986). Responsibilities include the

preparation of highly trained personnel to take their place in an unusually wide spectrum of societal needs, providing a knowledge base for students that underlie these needs, preserving and passing on that which is recognized as being of enduring value in our culture, researching new ideas in science and technology, and understanding better the world in which we live. Shapiro (1986) discusses the dual role of faculty concerning the service component where faculty serve as both society's servant and society's critic. Therefore, the responsibilities of land-grant faculty are fairly substantive.

Further, according to Gieger (1984), land-grant faculty both male and female, must have a deep commitment to academic values, be respected and distinguished in the eyes of their peers, and sustain a high volume of quality academic research.

An indepth examination of the academic world, however, reveals subtle as well as overt differences between these same men and women. Ever since the first woman professor, Maria Sanford, received the Doctor of Humane Letters from Carleton College in 1917, women have been destined to play a major role in every phase of higher education and education in general (Bernard, 1964). Continued research on the current professoriate and subsequent profiles can help accumulate meaningful information on how and why certain men and women faculty are more productive or less productive than others. Baldwin and Blackburn (1983) believe that these studies are necessary to maintain an enthusiastic and productive academic work force. Results of such studies may help minimize biases and maximize production.

It is useful also to include an overview of the doctorates in education in the past few decades. In terms of numbers of doctorates awarded, the granting of doctoral degrees on the whole has declined almost every year since 1973, while the number of terminal degrees awarded to women has increased every year from 4,596

in 1971, to 9,862 in 1981. This represents an increase of over 100% (National Research Council, 1982). In some fields there was actually a doubling of degrees awarded in particular fields; for example, there were increases from 12% to 24% in life sciences and social sciences, and from 4.5% to 10.6% in physical sciences (Vetter & Babco, 1981). In 1986, women earned a total of 35.4% of the doctorate degrees awarded in the United States (Chronicle of Higher Education, 1988). The largest area of growth by discipline for women has been in the area of education, where women may soon surpass the number of men.

The increasing numbers of women in higher education can be largely attributed to changing gender roles, particularly beginning in the 1970s. Bernard (1981) indicates that the number of women aged 16 to 34 enrolled in college increased 217% from 1960 to 1974. In 1970, the college enrollment rate for women aged 20 to 24 was double what it had been in 1960. As important, the number of women who prepared for careers that are considered nontraditional (business, dentistry, medicine, engineering, law, and scientific research) was substantially greater in 1974 than 1970. Lyson (1981, pp. 66-72) analyzed data by gender on bachelor's degrees awarded at U.S. colleges and universities in 1966 and 1976. His findings indicate that women who obtained degrees in "traditional male" fields such as engineering, architecture, and law increased by 324% and only 68% for men. Women who earned degrees in "sex neutral" fields such as biology and social science and in "traditional female" fields such as health and library science increased by 105% and 151%, respectively. The number of males in these corresponding fields increased 73% and 88%. In addition, the overall increases for numbers of women and men were 91% and 69%, respectively. By 1982, women were earning 51% of master's degrees, 32% of doctoral degrees, and 28% of professional degrees (Klein

& Bogart, 1985). However, even with some of the positive strides that have been made, a much different overall picture emerges in terms of the woman doctorate with regard to opportunities, and perceptions that pertain to her value in the profession.

According to the Carnegie Commission on Higher Education (1973), women comprised 46% of undergraduates and 37% of graduate students, but only 27% of the faculty in the early 1970s (women constituted about 28% of all faculty in 1929-30). As of 1988, women students comprised over 50% of college and university students and yet women faculty comprised only 27-30% of the total faculty (Pearson, Shavlik, Touchton, 1988). Some institutions show inflated female faculty and student ratios. For example, Hyer's study reports that there is a high correlation between the proportion of women on the faculty and the proportion of women in the student body (Pearson et al., 1985, p. 240). These findings, however, were confined to those institutions that have extensive programs in home economics, education, library science, and health professions. These disciplines are typically represented by women and thus indicate higher percentages of women faculty. Gordon and Kerr (1978) explain that when there are substantial numbers of women students in classes, women faculty are probably more likely to be recommended for appointment. In institutions where the majority of degrees are awarded in the scientific and technical fields, the percentage of female students and faculty drops significantly. Hyer (1985, p. 243) states, "... fewer women in the student body, a scientific and technical curriculum emphasis, and a strong research orientation and high prestige continue to be associated with low percentages of women on the faculty."

While the aforementioned figures make it reasonable to assume that the pool of women with academic credentials and experience to become faculty and

administrators at the college and university level has grown, and despite large gains by women in terms of their numbers, the higher the degree, the greater the disparity between men and women in rates of employment in education (Vetter & Babco, 1981). This phenomenon is often referred to as "the higher, the fewer" (Rossi & Calderwood, 1969; Peters, 1974).

In the 1970s, affirmative action programs were developed in order to comply with Executive Order 11246. These programs were to establish plans, goals, and timetables to increase the representation of women at higher education institutions. Such programs have played a role in the advancement of women in higher education by somewhat enlarging the pool of candidates for promotion and tenure. Cole (1979), however, found evidence of discrimination in promotion patterns while finding equity in academic hiring which indicates that while women were beginning to be hired on a more equitable basis, they did not advance in rank. Other studies have also found less than satisfactory progress. Since 1972, the effectiveness of federal policy in increasing women faculty has resulted in minimal overall percentage increase of 14.7% in 1971-72 to 18.8% in 1980-81. This represents a 4% gain over ten years (Hyer, 1985).

The foregoing studies clearly indicate that although women are becoming an integral part of the workforce and are succeeding in many "traditionally male" careers, there remains an extremely large gap between the numbers of men and women who are currently employed as faculty and administrators in higher education. This gap is much larger at elite institutions and at higher ranks (Menges & Exum, 1983).

The modal rank for men in 1977-78 was full professor while for women, that rank was assistant professor (Sampson, 1978). The conclusions are that there are fewer women in higher education and they are less likely to receive tenure. The small

number of senior women faculty on college campuses suggests that male senior faculty members make the decisions on who shall receive tenure. These decisions are made with little or no female participation. Even more telling are the differences by rank. Since 1972, the percentage of women professors at the 168 institutions classified as doctorate-granting institutions by the 1976 Carnegie Council increased to 13% for assistant professors, 5.2% for associate professors, and a slight +.6% for full professors (Hyer, 1985). This research further showed that within those 168 institutions, only 41% of the women had tenure, while 70% of the men were awarded tenure. In 1980-81, women accounted for one in two instructors, one in three assistant professors, one in five associate professors, and one in ten full professors (Vetter and Babco, 1981). Vetter and Babco (1981) also reported data that indicates that 74% of the faculty were male and 70% of those faculty were tenured. In contrast, 26% of the faculty who were female had 50% of their numbers tenured. In 1987 on a national level, only 8% of the full professors, 21% of the associate professors, 33% of the assistant professors, and 59% of the instructors were women (Dambrot, Borus, Clinefelter, 1988).

A more recent study documenting the representation of women and men in faculty ranks was done by Ottinger. She found a disproportionate number of men in the upper faculty ranks and over-representation of women in the lower ranks. During the 1989-90 academic year, only 20% of women faculty held full professor rank compared to 54% of males. Further, 37% of women faculty were concentrated at the assistant professor level compared to 21% of male faculty (Ottinger, 1990). In discussing tenured faculty positions in 1989-90, Ottinger found that women were much less likely to hold tenure than men. Specifically, 70% of the men held tenure while only 46% of the women held tenured faculty positions. Interestingly, while

conducting a similar study in 1988-89, Ottinger found that 49% of female faculty held tenure as compared to 71% of the men. Therefore, the gaps in tenure positions held by male and female faculty are remaining fairly constant.

In the matter of salary, several studies over the past decade have resulted in conclusive evidence that women are paid less than men, even after controlling for rank, institutional type, and discipline (Bayer & Astin, 1975; Tuckman, 1976). Disparities are highest at universities that grant the doctoral degree. In 1980-81, males in general earned nearly 25% more than their female colleagues. At other comprehensive colleges and universities, males earned 20% more than females, 12.7% more at colleges granting the baccalaureate degree only, and 4.6% more than females at community colleges (Finkelstein, 1984, pp. 298-299).

Although research has traditionally been viewed as the cornerstone for the awarding of promotion and tenure, women may often be pressured to participate more in the service and teaching functions of the university in order to indicate affirmation of the institutions commitment to women, and/or provide female representation on various committees and community service projects (Garcia, 1979). Astin and Bayer (1973) surveyed faculty teaching responsibilities and found that more than two-thirds of the female faculty were likely to teach undergraduates but fewer than one-half of the males were teaching undergraduates exclusively. Centra (1974); Freeman (1977); Baldrige et al. (1978), found that women faculty spend more time teaching than male faculty. More specifically, women faculty spend more time teaching undergraduate students (Bayer & Astin, 1972; Baldrige et al., 1978) and less time teaching graduate students (Bayer & Astin, 1972; Freeman, 1977; Baldrige et al., 1978). Baldrige et al. (1978) also found that women faculty spend approximately half as much time in research than academic men. That women

produce less research than men may be caused by the fact that women are concentrated in lower ranks and in institutions that do not emphasize research. In related research, Fulton (1975) and Astin and Hirsch (1978), in their analysis of the 1969 Carnegie and 1972 American Council on Education Faculty Surveys, found that the publication disparity between academic men and women declined as they rose in academic rank. Men and women faculty approached near parity at the full professor rank with regard to publication productivity. Female faculty members, at lower academic ranks, were consequently teaching larger numbers of students with the corresponding heavier workload that comes with teaching greater numbers of students.

In addition, a survey by Astin and Bayer (1973) also found that 24% of female but only 17% of male faculty reported a teaching load of thirteen or more hours per week. Because women are concentrated at lower ranks at institutions that do not emphasize research, and teach heavier course loads, there is a tendency for academic women to endorse teaching effectiveness, rather than publications as the primary basis for promotion (Bayer, 1973; Tidball, 1976; Lipsett & Ladd, 1979). Furthermore, academic men are much more likely to indicate a primary interest in research than academic women (89% more likely). Bernard's (1964) research claims that this teaching orientation by faculty women is also a result of socialization processes. Thus, women are drawn to the socioemotional aspects of working with students whereas men prefer the more competitive tasks of research. Our society twenty-five years later, however, does not necessarily fit that explanation.

As early as 1967, Simon, Clark, and Galway assessed the full-time woman Ph.D. in terms of her marital status, the academic division in which she was employed, and her level of productivity. Productivity was defined by numbers of

articles, books, and research grants as sole author, and consulting work between the years 1958 and 1963. In addition, characteristics such as place and type of employment, tenure, salaries, and academic rank were compared with men in the same academic areas and the same levels of attainment. This research indicated that married women were the most productive, married and unmarried men second, and unmarried women third. Based on this study, it would seem that there was virtually no difference between women and men when productivity was the evaluative measure at that time.

While women have made significant progress in terms of the number enrolled as students in all disciplines, these numbers are not consistent proportionally to the numbers of women faculty promoted to the academic ranks of assistant, associate, and full professor. According to the aforementioned research, promotion, tenure, salary, and teaching loads also differ markedly between men and women faculty. The early major research undertaken by Simon, Clark, and Galway, which found that married women with children were the most productive of all groups studied, belies the research studies cited in this section regarding productivity. It is therefore necessary to begin to develop a better data base on the characteristics of the professoriate with regard to their role and position in the college and university. Institutions may then understand and utilize all of their valuable human resources better.

Related Research on Mentoring

It is important for men and women to have access to support networks and supportive professional organizations, as well as research facilities and affiliation with prestigious institutions in order to become influential in their fields. With regard

to the need for supportive individuals or groups, Menges and Exum (1983) found that the productivity of Ph.D.'s in relation to the gender of their dissertation advisor was greater for those who had advisors of the same gender. The difficulty arises with the increased numbers of female graduate students, and the disproportionately fewer numbers of senior female faculty. As a result, women are not experiencing this same-gender interaction or support with female advisors and/or mentors.

Although many advisors transcend the role of advisor and become what are known as mentors, Merriam (1983) says that there has been some difficulty and confusion as to who or what constitutes a "mentor." To illustrate the problem, Stein (1981) identified twenty-seven distinct phrases that define mentor. In addition, most of the mentoring research has been done in the areas of business and industry (Busch, 1985) and some of those generalizations may or may not apply to the area of education. Lester (1981) writes that mentoring is a basic form of education for human development since it provides a holistic, yet individualized approach to experiential learning. Therefore, an adult who works with a mentor develops a better sense of purpose, intellectual competence, and autonomy. Schmidt and Wolfe (1980) state that both protege and mentor benefit along with the profession they serve since there is continual sharing of relevant skills and values. Phillips and Jones (1982) indicate that the relationship can be both formal and informal and interchange to serve the needs of both individuals in various situations. Other research in the corporate sector shows that compared to those without mentors, mentees are happier in their jobs, are promoted more quickly, increase their earnings faster (Roche, 1979, DeCoster & Brown, 1982), and are more productive in their careers (Long, 1978). O'Neil developed a definition that incorporated both the mentor and the mentee and stated that it was: "The complex process where personal, role, and situational factors

interact between an older (more experienced) professional person and a younger (less experienced) professional person that includes the *parameters* of mutuality, comprehensiveness, and congruence" (1981). [Emphasis in original.] O'Neil further defines mutuality as the sharing of reciprocal feelings and values, comprehensiveness as a broad coverage of interpersonal and role characteristics, and congruence as the degree to which the mentor and mentee agree on the purpose and usefulness of their relationship. Mentees also expect mentors to fight for them and help them obtain inside information to enhance their advancement opportunities and chances for success (Busch, 1985).

More often than not, however, it is Levinson's definition of mentoring that is cited in the field of education: "Teacher, sponsor, exemplar, counselor, provider of moral support, and facilitator of the mentee's dream" (Busch, 1985).

In 1958, Carl Rogers identified mentoring as a means for institutions to retain satisfied students and facilitate the growth of these students. The concept that students should be dealt with in all of their adult roles that include learning theory and the application of their instruction to real life situations is also a concern of DeCoster and Brown (1982). These same authors view mentoring as critically important to the developing professional with particular regard to what they call "reality shock" or the conflict that arises when there is a difference between the protege's definition of the job and the actual definition of the job. Lodge-Peters (1989) also discusses this conflict with regard to doctoral students in higher education programs and points out that it is often the mentor who enables the student to go beyond viewing the graduate study as a "union card, on-the-job-training" situation, and instead as a commitment to a profession that includes potential and prospects.

Other recent studies also discuss the specialized relationship between mentoring faculty and graduate students. Cameron (1978) found that faculty mentors significantly enhanced their mentees future employment opportunities at quality institutions and particularly research institutions. Bova and Phillips (1984) discerned specific skills that graduate students learned from their mentors that included risk-taking behavior, communication skills, political skills, and skills specifically related to the student's chosen career. They further stated that mentoring was "critically important to the developing professional."

The mentor, however, must be as flexible as the mentee is diverse and must try to be all those roles a student believes he or she needs. All graduate students expect equitable treatment from faculty members and help with their pursuit of a terminal degree. However, mentoring faculty also tend to be selective in the students they choose to mentor. Extraordinary treatment for individuals within the cohort is saved for the students who have "proved themselves" to the senior professor (Peters, 1989), and the senior professor thus becomes a sponsor or mentor.

Goldstein, (1979) and Menges and Exum (1983), in their respective research studies concluded that Ph.D. students with same-gender mentors published significantly more than those students with opposite-gender mentors. Goldstein's conclusions also have interesting implications for women graduate students who pursue terminal degrees when there are so few female senior professors available for the mentoring process. This is particularly salient, since Lynch (1980) and Aguilar-Gaxiola (1984) found that graduate students usually identify their dissertation advisor as their mentor.

Throughout the literature, mentoring has been shown to be a positive and even critical factor in the success of graduate students. However, academic women at

research universities were significantly less likely to report having a faculty mentor or sponsor in graduate school (Freeman, 1977). It is important to note again, that definitions of mentoring are different from study to study and consequently influence an individual's perception as to whether they could identify a mentor in their graduate study or career (Merriam et al., 1987). Even so, mentoring (same-gender or cross-gender) is an issue that warrants further study in terms of its effect on successful faculty productivity.

Related Research on Full-time or Part-time Study

Women are more likely than men to enroll in colleges and universities on a part-time basis (Clemente, 1973). Part-time study is typically defined by institutions as taking less than nine or sometimes less than twelve graduate credits per semester or quarter. Most institutions recognize a course load of nine or more graduate credits as full-time. Part-time frequently reflects family obligations, financial concerns, and other disadvantages while pursuing a degree. Importantly, there is a positive relationship between the length of time it takes to receive a doctorate degree and productivity and students able to attend graduate school full-time finish sooner (Clemente). Also detrimental to the part-time graduate student is the view that part-time students are not as committed to their studies as those who are able to pursue full-time study (Clemente). As a result, it is very difficult for these students to form bonds of collegiality with other students as well as their mentors or advisors and professors. Therefore, this may affect productivity levels.

CHAPTER 2

METHODOLOGY

The research literature has been concerned with identifying those variables that contribute to productivity in higher education such as, mentoring (Rogers, 1958; Levinson, 1978; Stein, 1981; Cameron & Blackburn, 1981; Merriam, 1983), gender of mentor (Goldstein, 1979; Menges & Exum, 1983), and part-time versus full-time study (Clemente, 1973).

Determining the factors which may encourage or undermine productivity contributes to the research literature about men and women in academe. The goal of this research was to compare productivity levels of men and women, to investigate the influence of specific demographic data of a personal and professional nature on the productivity levels of selected men and women in academe, and to examine the effect of mentoring and part-time/full-time graduate study on productivity. Higher education administrators have also been very concerned with productivity as it relates to promotion and tenure, salary, and rank (Simon, et al., 1967; Baldwin & Blackburn, 1983; Hyer, 1985). This study may illuminate factors contributing to or detracting from productivity.

Using the Social Science Citation Index (SSCI) as the measure of productivity, this study determined the effect of mentoring and part-time/full-time graduate study on productivity (Garfield, 1979; Kroc, 1984). The study also investigated the influence of demographic variables of a personal and professional nature on the productivity levels of these academic men and women. This study was

conducted in land-grant doctoral-granting institutions throughout the United States (Carnegie, 1987). (Appendix A). In those states where there was more than one land-grant institution, the more comprehensive institution was used. This study was limited to land-grant institutions in order to standardize the population sample and as importantly because land-grant universities are recognized for their research contributions.

This study was limited to the field of Education because the number of women more closely equals the number of men working in education as compared to other academic fields. Education has also been the largest area of growth by field for women (National Center for Education Statistics, 1981; Dambrot, Borus, Clinefelter, 1988).

Statistical Hypotheses

Hypotheses tested are listed below and are stated in null form. Hypotheses 1-3 included only those individuals who received their doctorates in the years 1974, 1975, and 1979, 1980.

1. There is no significant difference in mean productivity levels between men and women where productivity is operationally defined by SSCI.
2. There is no significant difference in mean productivity levels between those who attended graduate school for their doctoral degree during the dissertation phase on a full-time basis and those who attended on a part-time basis.
3. There is no significant difference in mean productivity levels between those who attended graduate school for their doctoral degree during the coursework phase on a full-time basis and those who attended on a part-time basis.

4. There is no significant difference in mean productivity levels among those who did not identify the presence of a mentor, those who had a same-gender mentor, and those who had a mentor of the opposite gender.

Question To Be Answered

Are the variables that contribute significantly to the prediction of productivity for women different than those variables that contribute significantly to the prediction of productivity for men. The variables included were age, gender, marital status, academic rank, children, tenure, ethnicity, salary, part-time versus full-time study, presence or absence of mentors and gender of mentor.

Population

The population was comprised of male and female faculty in the field of education who possessed either the Ph.D. or Ed.D. and who were employed full-time at 50 U.S. land-grant institutions. These faculty appeared on faculty lists prepared by CMG Information Services and included all faculty in the category of education requested.

Method of Data Collection

A questionnaire and a cover letter describing the purpose of the study and requesting faculty members to participate was sent to the faculty in the Education Departments of the 50 land-grant institutions in the United States chosen for the study (Appendix C and Appendix D). The letter and questionnaire were mailed in March,

1990 and follow-up questionnaires to non-respondents were mailed two weeks after the initial mailing.

Faculty and institutions were coded in order to collect the appropriate data from the SSCI. By numbering each faculty member, follow-up questionnaires were sent to those numbered faculty who did not respond initially.

In addition, it was necessary to track the names of the respondents in order to record the number of citations respective to each faculty person. This was also facilitated by the numbering system. In the interest of accuracy, faculty names were obtained from CMG Information Services, Inc., Winchester, Massachusetts. These faculty lists are continuously updated on a monthly basis by CMG through the use of semester class schedules, course catalogs, questionnaire mailings, telephone surveys, and campus visits by sales representatives.

A second set of mailing labels was utilized to send follow-up questionnaires to non-respondents. The instrument used was a modified version of a questionnaire used by Simon, Clark, and Galway (1967) which elicits information on personal and demographic data of Ph.D.'s. In addition, demographic questions on ethnicity, length of time working in the profession, year doctoral degree was started and granted as well as questions pertaining to the presence or absence of a mentor, gender of mentor, and full-time/part-time doctoral study (Appendix D) were asked.

Upon receipt of the questionnaires, information on all respondents was encoded on data sheets for the purpose of computer analysis. Encoding on the data sheets was completed by hand and checked twice for error as each page was finished. A smaller sample of the total population to be studied were those individuals whose doctorates were awarded in the years 1974, 1975, 1979, and 1980. These selected groups were tested for differences between the genders and independent variables in

the combined years of 1974 and 1975, and again in the combined years of 1979 and 1980. In addition, comparisons were made between the two groups of years which is a five year interval. These particular years were chosen as a result of the extraordinary time demands this study would have required in order to complete the research on citation analysis on all respondents. In addition, an attempt was made to choose those years that had fairly equal sample sizes as well as give the selected faculty an opportunity to build their citation counts. For the entire population of 2236 faculty surveyed, comparisons were made between men and women based on percentile data for each question.

To determine face validity for the new questions regarding mentoring and part-time/full-time graduate study on the instrument, the questionnaire was distributed to ten recognized experts in the field of education. Their instructions were to evaluate the clarity of the questions for ease in understanding and answering as well as the appropriateness and suggestions for improvement (Appendix B). Modifications of these questions were based on their suggestions.

Face validity is a method of determining validity by using recognized experts in the subject-matter area to appraise the content of what the instrument measures. If, in the expert's judgment, the questionnaire measures what the author intends to measure (i.e., personal and professional demographics and nature of doctoral work), then the instrument is considered valid (Garrett, 1967). The individuals solicited for input recommended an additional category on the question, "Were you a part-time or full-time student as defined by your institution?" As a result, an option for "a combination of both" was added and subsequently analyzed with the predominantly part-time answer group. They also recommended two open-ended questions

regarding those who indicated the presence of mentors as well as those who indicated the absence of a mentor.

A computer programmer was hired to input the data two separate times to help control error upon entry. The SSCI citation counts were done by computer except those names that had duplicate listings and identical initials as in common names like two Smiths or Jones with a same first initial. These individuals had their citations calculated manually.

Statistics

The first three hypotheses that involve a comparison of productivity between men and women, mentoring, and part-time or full-time study were tested by a four-way analysis of variance (ANOVA). If any of the interactions were significant, a multiple comparison procedure was implemented to find specific differences among groups of data. For example, if the gender and mentor interaction was significant, differences between levels of productivity for men with a same-gender mentor and women with a same-gender mentor were tested. The .05 level of significance was used to test the hypotheses. Ferguson (1981) states, "It is common convention to adopt levels of significance of either .05 or .01."

An additional question was tested via a regression analysis for the purpose of determining any relationships among the demographic variables and productivity. Specifically, were the variables that contributed significantly to the prediction of productivity for women different than those variables that contributed significantly to the prediction of productivity for men?

In addition, the entire surveyed population, including all years of graduation, was evaluated for trends revealed by the data. This profile was a separate addendum

to this study and results are reported following the results of the four original questions. These findings will be displayed through the use of tables by gender.

CHAPTER 3

RESULTS

There were 4762 identified individuals affiliated with land-grant institutions in the field of education. This group was mailed a questionnaire in the spring of 1990. A follow-up questionnaire was mailed two weeks later to those who did not respond initially. In the final analysis, this study considered responses from 2236 education faculty members or 47% of the total population surveyed. In addition to providing responses to demographic questions, these respondents indicated whether or not they had a mentor during the pursuit of their doctoral degree, the gender of their mentor, whether they did their doctoral coursework full-time or part-time, and whether they worked on their dissertations full-time or part-time. The intent of this study was to see if these variables were related to a faculty member's productivity. Because obtaining productivity scores from SSCI is an extremely time consuming and costly process, these scores were obtained only from those respondents who were granted their degrees in 1974, 1975, 1979, and 1980. The productivity citations therefore, totalled 304 individuals. It is these 304 faculty persons who were tested against the hypotheses. In addition, a profile of the responses for the entire 2236 respondents is also presented.

The first three hypotheses were tested by performing a four-way Analysis of Variance (ANOVA). The dependent variable in this ANOVA was the productivity measure. The errors were not normally distributed for the productivity citations which is an underlying assumption regarding ANOVA. By taking the log transformation of the productivity citations, the errors were normally distributed. The independent variables used in this analysis were: gender, the completion of the

dissertation as a part-time or full-time student, the presence or absence of a mentor, gender of mentor, and the year the doctorate was earned, that is, in the years 1974 and 1975, and in 1979 and 1980.

All two-way and three-way interactions are reported in the ANOVA summary tables. The four-way interaction could not be calculated as a result of an empty cell (i.e., there were no males in the 1974/1975 group who were part-time and had opposite-gender mentors). A summary of the results is given in Table 1 for the 304 selected respondents who graduated in 1974 and 1975 and 1979 and 1980. They also reflect full-time and part-time dissertation work. The statistics were computed using version six on the SAS system. The following are the results of the hypotheses testing:

Table 1. Analysis of Variance with Full-Time vs Part-time Dissertation for the 1974/1975 and 1979/1980 groups

Source of variability	Type 3 SS	DF	F-Value	P-Value
Gender	0.659959	1	0.20	0.6519
Full-time dissertation work	41.211932	1	12.73	0.0004
Mentor category (i.e., no mentor, same-gender mentor, opposite-gender mentor)	10.527774	2	1.63	0.1985
Group (i.e., 1974 & 1975, 1979 & 1980)	2.786529	1	0.86	0.3543
Gender and full-time dissertation work	0.000553	1	0.00	0.9896
Gender and Mentor categories	1.504218	2	0.23	0.7928
Gender and group	8.071379	1	2.49	0.1154
Full-time dissertation and mentor categories	2.921913	2	0.45	0.6372
Full-time dissertation and group	0.929578	1	0.29	0.5924
Mentor categories and group	2.832577	2	0.44	0.6460
Gender and full-time dissertation and mentor categories	0.205678	2	0.03	0.9687
Gender and full-time dissertation and group	0.000448	1	0.00	0.9906
Gender and mentor categories and group	0.635596	2	0.10	0.9065
Full-time dissertation and mentor categories and group	13.566931	2	2.10	0.1249

This ANOVA (Table 1) indicates that the only significant finding was for the main effect full-time versus part-time ($p\text{-value} = .0004$). The Nature of Dissertation Study (Table 2) indicates the number of individuals who worked on their dissertations full-time and part-time. The Table of Means, (Table 3) shown below, indicates those who worked on their dissertations full-time were significantly more productive than those who worked part-time on their thesis.

Table 2. Nature of Dissertation Study

Dissertation Work	N	Log Mean	SD
Full-time	176	2.79075032	1.76057220
Part-time	127	1.78737519	1.85076905

Table 3. Table of Means

Gender	Group	N	Log Mean	SD
Females	74/75	50	2.19449369	2.07373497
Females	79/80	59	2.06069895	1.82840171
Males	74/75	99	2.24609852	1.87254474
Males	79/80	95	2.78420031	1.71056231

Results of Hypotheses 1, 2, and 4

1. There was no significant difference in mean productivity levels between men and women where productivity is operationally defined by SSCI. The results failed to reject this hypothesis.
2. There was a significant difference in mean productivity levels between those who attended graduate school for their doctoral degree during the dissertation phase on a

full-time basis and those who attended on a part-time basis. This hypothesis was rejected.

4. There was no significant difference in mean productivity levels among those who did not identify the presence of a mentor and those who had a same gender mentor and those who had a mentor of the opposite gender. The results failed to reject this hypothesis.

Table 4. Analysis of Variance with Full-time vs Part-time Coursework for the 1974/1975 and 1979/1980 groups.

Source of variability	Type 3 SS	DF	F-Value	P-Value
Gender	1.076554	1	0.33	0.5663
Full-time coursework	31.083706	1	9.52	0.0022
Mentor category (i.e., no mentor, same-gender mentor, opposite-gender mentor)	9.708708	2	1.49	0.2279
Group (i.e., 1974 & 1975, 1979 & 1980)	0.329037	1	0.10	0.7511
Gender and full-time dissertation work	1.441816	1	0.44	0.5069
Gender and mentor categories	4.027426	2	0.62	0.5404
Gender and group	3.060947	1	0.94	0.3337
Full-time coursework and mentor categories	3.358122	2	0.51	0.5985
Full-time coursework and group	0.351358	1	0.11	0.7431
Mentor categories and group	1.851399	2	0.28	0.7533
Gender and full-time coursework and mentor categories	1.628836	2	0.25	0.7794
Gender and full-time coursework and group	3.345513	1	1.02	0.3123
Gender and mentor categories and group	0.136353	2	0.02	0.9793
Full-time coursework and mentor categories and group	11.877822	2	1.82	0.1641

A second question on part-time versus full-time study was also asked via the questionnaire regarding coursework. These results are shown in Table 4 for the 304 selected respondents reflecting full-time/part-time coursework.

Table 5. Nature of Coursework Study

Coursework	N	Log Mean	SD
Full-time	221	2.66201642	1.83634135
Part-time	83	1.61443666	1.72255011

In this ANOVA, full-time versus part-time study during doctoral coursework was significant (p value = .0022). The Table of Means (Table 5) shows that the 221 faculty members who did their coursework full-time were significantly more productive than the 83 who went to school part-time.

Results of Hypothesis 3

3. The results of Hypothesis 3 show a significant difference in mean productivity levels between those who attended graduate school for their doctoral degree during the coursework phase on a full-time basis and those who attended on a part-time basis. This hypothesis was rejected.

An additional question tested the relationship between productivity and the demographic variables (Table 7). This question asked if the variables that contributed significantly to the prediction of productivity for women were different than those variables that contributed significantly to the prediction of productivity in men. In order to answer the question, step-wise regressions were performed. In all of the regressions, productivity transformed into log numbers was the dependent variable.

If a demographic variable was not significantly related to productivity at the .05 level of significance, it was not kept in the final model. Table 6 shows the independent variables from the questionnaire.

Table 6. Corresponding Questions and Variables from the Questionnaire

1. GENDER. 1 = Male, 2 = Female
2. MARSTAT1. Marital status when doctoral degree was initiated.
1 = Single, 2 = Married
3. MARSTAT2. Current marital status.
1 = Single, 2 = Married
5. CHILDRN1. Children when you initiated your doctoral degree?
1 = Yes, 2 = No
6. CHILDRN2. Have children currently?
1 = Yes, 2 = No
7. RANK. 1 = Assistant Professor, 2 = Associate Professor,
3 = Full Professor
8. TENURE. 1 = Tenured, 2 = On tenure track, 3 = Other
9. RAC. 1 = Caucasian, 2 = Other race
10. SALRY. 1 = "<\$20,000". . . . 10 = ">\$60,000"
12. GROUP. 1 = Degree in 74/75, 2 = Degree in 79/80
13. FULTIM1A. How did you complete your coursework?
1 = Full-time, 2 = Combination, 3 = Part-time
14. FULTIM2A. How did you complete your dissertation?
1 = Full-time, 2 = Combination, 3 = Part-time
15. AGE. 1 = ">25". . . . 10 = "> 65"
16. EDYRS. Number of years in education since earning doctorate
1 = "0-5". . . . 10 = "> 45"
17. MENTOR. Did you have a mentor during your doctoral program?
1 = Yes, 2 = No
- 18a. MENDUM1. 1 = no mentor, 0 = opposite gender/same gender
- 18b. MENDUM2. 1 = opposite gender, 0 = no mentor/same gender

Table 7. Regression Variables for males and females in the 1974/1975 and 1979/1980 groups.

Variable	Parameter Estimate	F- Value	P-Value
Rank	0.41911	6.53	.0111
Full-time dissertation	-0.66744	10.36	.0014
Age	-0.47967	30.34	.0001

In the first step-wise regression, N=287 but 304 faculty were identified in the sample. However, some questions were left unanswered and as a result, that faculty

member's questions were left out of the regression analysis. The final model had rank, full-time versus part-time study during the dissertation, and age retained as independent variables. R-square for this model was .1636. This means that less than 17% of the variability of productivity was explained by this set of three variables. A summary of the regression table that includes all variables with a p-value of .05 or below is provided in Table 7.

Information in Table 7 indicated that rank is positively related to productivity, that is, the higher the rank, the more productive the faculty member. In addition, those who worked on their dissertations full-time were more productive than those who worked on their dissertations part-time. Further, age was negatively related to productivity, that is, the younger the faculty member, the higher his/her productivity.

Table 8. Regression variables for males.

Variable	Parameter Estimate	F-Value	P-Value
Full-time Dissertation	-0.64867	6.97	.0090
Age	-0.52405	23.68	.0001

In addition, for the fourth question, separate regressions were run for the two genders. This step-wise regression included 186 males and had an R-square of .1659. Roughly 17% of the variability in the men's productivity score was accounted for by the two variables full-time dissertation and age. A summary of variables with a p-value of .05 in this model is given in Table 8.

For the men in this study, age was negatively related to productivity, (i.e., the older a man was, the lower his productivity). Working on the dissertation full-time versus part-time was also negatively related to productivity, that is, those who worked on their dissertation full-time were more productive than those who worked on it part-time.

The step-wise regression for the 101 females in the study gave an R-square of .1735. Once again, a great deal of the variability was not being explained by this model.

Table 9. Regression variables for females.

Variable	Parameter Estimate	F- Value	P-Value
Salary	0.26627	7.09	.0091
Full-time Dissertation	-0.85833	5.22	.0246
Age	-0.30743	4.32	.0404

The model chosen by this step-wise procedure kept three independent variables: salary, full-time during the dissertation, and age. A summary of the statistics for this model is found in Table 9.

For women, salary was positively related to productivity, (i.e., higher salaries were significantly related to higher productivity). Working on the dissertation full-time versus part-time was negatively related to productivity, (i.e., those women who worked full-time on their dissertations were more productive than the women who worked on their dissertations part-time). Age was negatively related to productivity for women, (i.e., the older a women was, the less productive she was).

In each of these step-wise regressive procedures, if a demographic variable was not kept in the final model, it failed to be significant at the .05 level of significance.

Question to be Answered

Thus, the answer to the question, "Are the variables that contribute significantly to the prediction of productivity for women different than those variables that contribute significantly to the prediction of productivity for men?", is no except in the matter of salary where higher salaries for women were significantly related to higher productivity than salaries for men. The variables were: age, gender, marital

status, academic rank, children, tenure, ethnicity, salary, part-time versus full-time study, presence or absence of mentor and gender of mentors.

Table 10. Parameter Estimates for Full-Model Regression - Males

Variable	Parameter Estimate	DF	T for HO	Prob > T
Intercep	4.720740	1	2.029	0.0440
Marital Status	-0.203804	1	-0.589	0.5566
Marital Status	0.083612	1	0.194	0.8468
Children 1	0.083778	1	0.258	0.7968
Children 2	0.093897	1	0.215	0.8303
Rank	0.208844	1	0.686	0.4934
Tenure	-0.126858	1	-0.478	0.6335
Race	0.084559	1	0.215	0.8302
Salary	-0.037648	1	-0.487	0.6268
Group	0.244087	1	0.664	0.5077
Full-time Coursework	-0.201510	1	-1.209	0.2282
Full-time Dissertation	-0.241649	1	-1.750	0.0820
Age	-0.437474	1	-3.036	0.0028
Education-yrs	0.117421	1	0.583	0.5607
MenDum 1	-0.403224	1	-1.409	0.1608
MenDum 2	-0.073349	1	-0.134	0.8936

Table 11. Parameter Estimates for Full-Model Regression - Females

Variable	Parameter Estimate	DF	T for HO	Prob > T
Intercep	5.370526	1	1.495	0.1386
Marital Status	0.171520	1	0.341	0.7341
Marital Status	0.033542	1	0.075	0.9405
Children 1	-0.492663	1	-0.867	0.3882
Children 2	0.271748	1	0.472	0.6381
Rank	0.613654	1	1.602	0.1129
Tenure	0.485315	1	1.308	0.1946
Race	-0.213159	1	-0.359	0.7205
Salary	0.216157	1	1.697	0.0934
Group	-0.652939	1	-1.032	0.3048
Full-time Coursework	-0.065774	1	-0.236	0.8139
Full-time Dissertation	-0.315003	1	-1.309	0.1940
Age	-0.488990	1	-2.153	0.0342
Education-yrs	-0.276147	1	-0.835	0.4062
MenDum 1	-0.852087	1	-1.701	0.0926
MenDum 2	-0.627213	1	-1.318	0.1910

Testing this question using a full model regression analysis with separate models for males and females yielded the following results. Table 10 shows the

regression using only the males while Table 11 shows the results of the women's regression analysis.

For both genders, age was the only significant variable where age was negatively correlated to productivity. That is, the younger the faculty member, the more productive they were. P-value for males was 0.0028 (N=186) and p-value for females was 0.0342 (N=101).

Descriptive Statistics on Total Population (N=2236)

The descriptive statistics on the entire population of 1544 males and 692 females are presented in the following tables.

Table 12. Marital Status When Doctorate Degree was Initiated

Frequency			
Percent			
Row Percent			
Column Percent	Single	Married	Total
Male	365	1179	1544
	16.33	52.75	69.08
	23.64	76.36	
	51.34	77.36	
Female	346	345	691
	15.48	15.44	30.92
	50.07	49.93	
	48.66	22.64	
Total	711	1524	2235
	31.81	68.19	100.00

Frequency Missing = 1

When the doctoral degree was initiated, 24% of the males and 50% of the females were single (Table 12). With 76% of the males married, one possible explanation may be that financial considerations were shared by the spouse enabling the husbands to concentrate on their degree programs.

Table 13. Current Marital Status

Frequency			
Percent			
Row Percent			
Column Percent	Single	Married	Total
Male	193	1351	1544
	8.63	60.42	69.05
	12.50	87.50	
	40.55	76.76	
Female	283	409	692
	12.66	18.29	30.95
	40.90	59.10	
	59.45	23.24	
Total	476	1760	2236
	21.29	78.71	100.00

The current marital status of these same professors show 88% of the men and 59% of the women married indicating that either during the course of the degree program or after the degree was awarded, men and women married in increasing numbers. These subsequent marriages may or may not have affected productivity due to the raising of children or other domestic matters. (Table 13).

Table 14. Did You Have Children When You Began Your Doctoral Degree?

Frequency			
Percent			
Row Percent			
Column Percent	Yes	No	Total
Male	775	769	1544
	34.68	34.41	69.08
	50.19	49.81	
	77.42	62.32	
Female	226	465	691
	10.11	20.81	30.92
	32.71	67.29	
	22.58	37.68	
Total	1101	1234	2235
	44.79	55.21	100.00

Frequency Missing = 1

Table 15. Do You Currently Have Children?

Frequency Percent Row Percent Column Percent	Yes	No	Total
Male	1362 60.91 88.21 77.17	182 8.14 11.79 38.64	1544 69.05
Female	403 18.02 58.24 22.83	289 12.92 41.76 61.36	692 30.95
Total	1765 78.94	471 21.06	2236 100.00

Fifty percent of males had children when the degree was started, while only 33% of the females had children which may be expected since a lesser percentage of women were married (Table 14). At the time this questionnaire was answered, 88% of the men and 58% of the women had children. This suggests a possible reluctance on the part of some women to have children and an educational career at the same time (Table 15). Men do not appear to have the same reservations regarding children which may be a result of women still bearing the majority of responsibilities in the home and for family. This may also account for the fewer numbers of married women with children.

Table 16. Current Academic Rank

Frequency Percent Row Percent Column Percent	Assistant Professor	Associate Professor	Full Professor	Total
Male	181 8.26 11.86 39.87	459 20.95 30.08 66.14	886 40.44 58.06 84.95	1526 69.65
Female	273 12.46 41.05 60.13	235 10.73 35.34 33.86	157 7.17 23.61 15.05	665 30.35
Total	454 20.72	694 31.68	1043 47.60	2191 100.00

Frequency Missing = 45

Fairly consistent with the literature was the distribution of doctorate degree holders by academic rank (Sampson, 1978; Hyer, 1985; Dambrot et al., 1988; Ottinger, 1990) (Table 16). When just considering male faculty, they comprised 12% of the assistant professors, 30% of associates and 58% of full professors. Women faculty, on the other hand, had 41% of their numbers in the assistant rank, 35% in the associate rank, and 24% in the full professor rank. Women in this population are over-represented in the assistant rank with men occupying a disproportionate number at the full professor rank. Women do not occupy academic rank in the same numbers as men. However, it is unclear if men and women were hired at the same time giving equal opportunities for promotion or if women were hired into their positions at the same rank as men.

Table 17. Gender by Tenure

Frequency Percent Row Percent Column Percent	Tenured	On Tenure Track	Other	Total
Male	1297 58.29 84.28 77.02	167 7.51 10.85 45.01	75 3.37 4.87 44.12	1539 69.17
Female	387 17.49 56.41 22.98	204 9.17 29.74 54.99	95 4.27 13.85 55.88	686 30.83
Total	1684 75.69	371 16.67	170 7.64	2225 100.00

Frequency Missing = 11

When considering tenure, 84% of the men were tenured, with 11% on tenure-track and 5% on another type of contract (Table 17). For the women, 56% were tenured, while 30% were on tenure-track and 14% on another type of contract. Both men and women in all disciplines had higher percentages of tenure than reported by Ottinger (1990) who found only 70% of the men and 46% of the women holding tenure.

In this area, land-grant institutions appear to be awarding tenure more frequently to higher numbers of faculty in education than the national norm.

Table 18. Gender by Race

Frequency			
Percent			
Row Percent			
Column Percent	Caucasian	Other	Total
Male	1401	139	1540
	62.80	6.23	69.03
	90.97	9.03	
	69.01	69.15	
Female	629	62	691
	28.19	2.78	30.97
	91.03	8.97	
	30.99	30.85	
Total	2030	201	2231
	90.99	9.01	100.00

Frequency Missing = 5

Over 90% of both males and females in this study were Caucasian. Minorities at this time are not being represented as higher education faculty with doctorates in land-grant institutions in the same numbers as they appear in the general population (Table 18). Specifically, 91% of men and women were white and 9% were non-white.

With regard to salary, the most frequent occurring salary range for men was the \$60,000 and over, where 22% reported earning that amount (Table 19). Women, on the other hand, had their largest percentage or 31% in the \$30-35,000 range. The next highest reported salaries by both men and women were in the \$40-45,000 range with 18% and 20%, respectively. Men and women earning less than \$20,000 but not more than \$40,000 represented 21% and 53%, respectively. In the \$45,000 to \$60,000 and over range, 60% of the men and 27% of the women made that salary giving further evidence that this population is no different from other studies comparing salary. Men continue to be paid more at universities (Bayer & Astin,

Frequency Percent Row Percent Column Percent	<20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	>60	Total
Male	4 0.18 0.26 23.53	7 0.32 0.46 20.59	25 1.13 1.64 39.68	184 8.31 12.04 46.35	107 4.83 7.00 58.47	281 12.69 18.39 67.39	223 10.07 14.59 80.80	208 9.39 13.61 80.00	151 6.82 9.88 83.43	338 15.26 22.12 87.34	338 68.98
Female	13 0.59 1.89 76.47	27 1.22 3.93 79.41	38 1.72 5.53 60.32	213 9.62 31.00 53.65	76 3.43 11.06 41.53	136 6.14 19.80 32.61	53 2.39 7.71 19.20	52 2.35 7.57 20.00	30 1.35 4.37 16.57	49 2.21 7.13 12.66	687 31.02
Total	17 0.77	34 1.53	63 2.84	397 17.92	183 8.26	417 18.83	276 12.46	260 11.74	181 8.17	387 17.47	2215 100.00

Frequency Missing = 21

Table 19. Gender by Salary (In thousands)

1975; Tackman, 1976, Finklestein, 1984). At the lower end of the salary scale, women were clustered in higher numbers until the \$40-45,000 range where men and women were almost equal in percentages.

Disparity in salary may be a reflection of a faculty member's time and service in the profession as well as academic rank because full professors are typically paid more than assistant professors. A finding in this study was that the higher the salary, the more productive the female faculty member. This suggests that salary may affect productivity particularly for women.

Table 20. Part-Time or Full-Time During Coursework?

Frequency				
Percent				
Row Percent				
Column Percent	Full-Time	Both	Part-Time	Total
Male	1104	276	162	1542
	49.42	12.35	7.25	69.02
	71.60	17.90	10.51	
	70.41	64.64	67.78	
Female	464	151	77	692
	20.77	6.76	3.45	30.98
	67.05	21.82	11.13	
	29.59	35.36	32.22	
Total	1568	427	239	2234
	70.19	19.11	10.70	100.00

Frequency Missing = 2

Table 21. Part-Time or Full-Time During Dissertation?

Frequency				
Percent				
Row Percent				
Column Percent	Full-Time	Both	Part-Time	Total
Male	896	193	452	1541
	40.18	8.65	20.27	69.10
	58.14	12.52	29.33	
	71.22	67.96	65.70	
Female	362	91	236	689
	16.23	4.08	10.58	30.90
	52.54	13.21	34.25	
	28.78	32.04	34.30	
Total	1258	284	688	2230
	56.41	12.74	30.85	100.00

Frequency Missing = 6

In the matter of part-time versus full-time doctoral study during the coursework, 28% of the men and 33% of the women were part-time (Table 20). During the dissertation phase, the numbers rose to 42% for men and 48% for women who completed the dissertation part-time (Table 21).

At the time the questionnaire was answered by the faculty, it is interesting to note that the ages of the men increased until 60 years of age (293) before dropping almost by half (159) at 61. The age group for women increased to a maximum of 45 (179) and then decreased more slowly. This suggests that women are either having families later, taking other positions or tiring of teaching and research and then dropping out of the profession earlier.

Frequency										
Percent										
Row Percent										
Column Percent	25-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	>65	Total
Male	7	63	163	252	255	290	293	159	61	1543
	0.31	2.82	7.29	11.28	11.41	12.98	13.11	7.11	2.73	69.04
	0.45	4.08	10.56	16.33	16.53	18.79	18.99	10.30	3.95	3.95
	31.82	50.00	54.33	58.47	69.86	74.94	84.44	83.25	92.42	
Female	15	63	137	179	110	97	54	32	5	692
	0.67	2.82	6.13	8.01	4.92	4.34	2.42	1.43	0.22	30.96
	2.17	9.10	19.80	25.87	15.90	14.02	7.80	4.62	0.72	
	68.18	50.00	45.67	41.53	30.14	25.06	15.56	16.75	7.58	
Total	22	126	300	431	365	387	347	191	66	2235
	0.98	5.64	13.42	19.28	16.33	17.32	15.53	8.55	2.95	100.00

Frequency Missing = 1

Table 22. Gender by Age

Table 23. Did You Have A Mentor During the Doctoral Program?

Frequency			
Percent			
Row Percent			
Column Percent	Yes	No	Total
Male	1180	363	1543
	52.80	16.24	69.04
	76.47	23.53	
	70.20	65.52	
Female	501	191	692
	22.42	8.55	30.96
	72.40	27.60	
	29.80	34.48	
Total	1681	554	2235
	75.21	24.79	100.00

Table 24. What Was the Gender of Your Mentor?

Frequency				
Percent				
Row Percent				
Column Percent	Male	Female	Both	Total
Male	1096	70	13	1179
	65.12	4.16	0.77	70.05
	92.96	5.94	1.10	
	78.34	28.23	36.11	
Female	303	178	23	504
	18.00	10.58	1.37	29.95
	60.12	35.32	4.56	
	21.66	71.77	63.89	
Total	1399	248	36	1683
	83.13	14.74	2.14	100.00

Frequency Missing = 553

Table 25. Was Your Mentor Also Your Dissertation Advisor?

Frequency			
Percent			
Row Percent			
Column Percent	Yes	No	Total
Male	961	214	1175
	57.30	12.76	70.07
	81.79	18.21	
	70.71	67.30	
Female	398	104	502
	23.73	6.20	29.93
	79.28	20.72	
	29.29	32.70	
Total	1359	318	1677
	81.04	18.96	100.00

Frequency Missing = 559

Frequency Percent Row Percent Column Percent	1	2	3	4	5	6	7	8	9	Total
Male	12 0.54 0.78 50.00	284 12.77 18.48 77.38	444 19.96 28.89 70.14	357 16.05 23.23 70.14	213 9.58 13.86 64.74	96 4.32 6.25 61.15	59 2.65 3.84 64.84	32 1.44 2.08 64.00	16 0.72 1.04 76.19	1537 69.11
Female	12 0.54 1.75 50.00	83 3.73 12.08 22.62	189 8.50 27.51 29.86	152 6.83 22.13 29.86	116 5.22 16.89 35.26	61 2.74 8.88 38.85	32 1.44 4.66 35.16	18 0.81 2.62 36.00	5 0.22 0.73 23.81	687 30.89
Total	24 1.08	367 16.50	633 28.46	509 22.89	329 14.79	157 7.06	91 4.09	50 2.25	21 0.94	2224 100.00

Frequency Percent Row Percent Column Percent	10	11	12	13	14	16	18	20	Total
Male	12 0.54 0.78 54.55	6 0.27 0.39 66.67	2 0.09 0.13 50.00	1 0.04 0.07 33.33	1 0.04 0.07 100.00	2 0.09 0.13 100.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1537 69.11
Female	10 0.45 1.46 45.45	3 0.13 0.44 33.33	2 0.09 0.29 50.00	2 0.09 0.29 66.67	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.04 0.15 100.00	1 0.04 0.15 100.00	687 30.89
Total	22 0.99	9 0.40	4 0.18	3 0.13	1 0.04	2 0.09	1 0.04	1 0.04	2224 100.00

Frequency Missing = 12

Table 26. Number of Years to Complete Doctorate

During the doctoral program, a clear majority indicated they had mentors (Table 23). For the men, 76% indicated the presence of a mentor while 72% of the women did as well. Of the population reporting a mentor, 93% of the men had a male mentor and 35% of the women had female mentors (Table 24). Conversely, only 6% of the men had female mentors, while 60% of the women had male mentors. One percent of the men and 5% of the women reported the presence of both a male and female mentor. Most men and women indicated that their mentor was also their dissertation advisor, 82% and 79%, respectively (Table 25). These facts give credence to the strong relationship existing between doctoral student and dissertation advisor who is usually considered a mentor by the student.

When considering the number of years to complete the doctorate, both men and women, 29% and 28% respectively, indicated a three year time period in which they finished (Table 26). The majority of men and women in the population took two to five years to complete their degree program. After five years, 15% of the men and 20% of the women were still pursuing their degrees.

Most of the demographic data was fairly consistent with the review of literature although it was in the area of salary that the greatest differences were seen. It seems clear that at least for land-grant faculty in education, equal opportunities for women do not exist in the area of tenure, rank, salary, full-time opportunity and same-gender mentors or dissertation advisors. Importantly, much of the information gathered in this study in terms of percentages suggests a continued lack of equality for women as compared to men with no significant improvement seen over the past several years. It is incumbent upon these

institutions to evaluate the above discrepancies and seek methods and strategies to alleviate the inequities.

CHAPTER 4

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this investigation was to compare productivity levels of men and women doctorates employed in full-time faculty positions at 50 United States land-grant institutions. Productivity, as determined by the Social Science Citation Index, was the dependent variable and the primary independent variables included mentoring and part-time versus full-time doctoral work. In addition, all faculty (2236) who responded to the questionnaire were described in order to give a profile of their responses without regard to productivity.

In the first hypothesis, when looking at the entire combined sample of 304 people, the research failed to find any difference in productivity between men and women. That the subset of 304 male and female faculty were fairly equal in productivity means overall implies that both genders were achieving at the same rates during their careers. For the 1979/1980 group alone, however, the significant increase in productivity for male faculty may be attributed to various advantages during their doctoral program such as more full-time opportunity, availability of mentors and dissertation advisors, and/or having outside family and financial support (Finklestein, 1982).

Merton (1968), Finklestein (1982), and Gordon and Nucci (1984) have discussed the importance of initial advantages that should be made available to aspiring scholars such as mentors, early publishing opportunities and association with active and eminent researchers. In addition, men are more likely than women to receive financial support and full-time opportunity for graduate studies which

reduces the length of time to receive the degree and in turn enhance their productivity (Clemente, 1973).

For the second hypothesis, significant differences in productivity between those who attended their doctoral program part-time and those who attended full-time were found. Those who did their coursework full-time and those who did their dissertations full-time were more productive than their part-time counterparts.

A significant finding pertaining to this study was the part-time versus full-time variable. For both coursework and dissertation, the ability of an individual to study for the doctorate full-time was significantly related to increases in their productivity. It is clear by the findings of this study that opportunities for full-time study should be increased for those pursuing the doctorate. Most institutions require that faculty publish and bring credibility to an institution's programs. Since full-time study is positively related to productivity, as in this study, institutions may consider using this variable in screening applicants as another part of their hiring process. Clemente (1973) found a positive relationship between the length of time it takes to receive the doctorate degree and productivity which suggests agreement with the findings of this study.

For the third hypothesis, the research failed to find any difference in productivity between those who did not identify the presence of a mentor, those who had a mentor of the same gender, and those who had a mentor of the opposite gender. Therefore, statements cannot be made that men with male mentors produce more than women with male mentors or that men with male mentors produce more than women with female mentors.

Because the mentor and gender interaction was not significant and the main effect mentor failed to be significant, it cannot be said that for women, the three

mentor groups differ in productivity. Although a clear majority of the respondents to the questionnaire indicated that they had a mentor, the mentors for this study did not have a positive effect on productivity. In view of the literature review on mentoring indicating the positive aid of mentoring, these findings were interesting (Levinson, 1978; Schmidt & Wolfe, 1980; Lester, 1981; O'Neil, 1981; Busch, 1985). Perhaps mentors were not an important variable for this group of faculty or they did not have the impact on productivity that has been suggested in the research. Mentors, however, may have contributed in other ways in that the relationship can be both formal and informal and interchanged to help individuals at certain points of their careers (Phillips & Jones, 1982).

In the final question, the relationship between productivity and age and productivity and full-time dissertation work was found to be significant for both men and women when each gender was tested separately using the step-wise regression (Table 8 and Table 9). Specifically, the older one was, the less productive he or she was. Also, those who worked full-time on their dissertations were more productive than those who worked part-time. In addition to these two relationships, it was found that for women, salary was associated with productivity. The higher a woman's salary, the more productive she was. Finally, the step-wise regression with both genders in the model found that rank was positively related to productivity for males and females. Specifically, the higher the rank, the more productive the faculty member.

Better salaries may be either the cause or effect of productivity for some faculty members. Women who are productive are paid a higher salary as would be expected or it may be that being paid a higher salary creates a publish or perish

atmosphere with expectations for publishing more as a result of an increased salary.

Interestingly, the study found two seemingly conflicting factors. First, the older one was, the less productive he or she was. Second, the higher the rank, the more productive. It is logical to assume that with age comes rank and rank may be a direct result of productivity. Yet older faculty persons in this study were not as productive. This may be a result of talented faculty burning bright and fast, obtaining rank and a higher productive level quickly, then losing interest in heavy productivity. For these faculty, incentives other than tenure and rank may be important (e.g., merit pay in order to keep publishing). These faculty in later stages may also be accepting more administrative duties, thus limiting publishing opportunity. Furthermore, increased citations may parallel a faculty member's rise in rank allowing a faculty person to appear more productive when using SSCI as an evaluative measure.

The results of the full model regression separating males and females also found that for each population, age is negatively correlated to productivity. In other words, the younger the faculty member, the more productive they were. It is unclear why the younger faculty in this study produced more when the research shows that journal productivity peaks at about age 45 and then declines gradually while the number of citations continues to rise to a maximum and continuing level at about age 55 (Gordon & Nucci et al., 1984). No other demographic variables were significant at the .05 level.

Recommendations

Based upon this study, it is recommended that persons both male and female pursue their coursework and dissertation full-time. While there may be considerable obstacles to achieving this method of study for many individuals, full-time study is clearly an advantage for completing the degree in a timely fashion and increasing the possibility for productivity. There are additional pitfalls to be avoided if part-time study is necessary or chosen. Mentors are more difficult to obtain and/or close relationships with mentors and faculty are harder to develop.

If part-time study is chosen, it is suggested that coursework faculty and dissertation advisors monitor more closely their part-time graduate students. Part-time students may be working at outside jobs or travelling various distances in order to pursue their doctoral degrees. This creates different sets of problems for both faculty and students when it comes to developing a working relationship and a successful learning environment. Faculty and students alike may set up meetings prior to or following specific classes in order to touch base on needs or questions regarding the curriculum. They may develop time frames for telephone conferences or independent study in some cases where the student may interact with the professor on a weekend or evening unrelated to the class. This may become more critical during the dissertation phase which is primarily directed by the student at his or her own pace with little structure. Both parties must accept some responsibility for the exchange of information and fostering success in the overall degree program.

Faculty should make every attempt to involve full-time as well as part-time students in publishing as soon as possible in order to reinforce the desire and knowledge base for these activities. Encouraging publication through

collaboration with the senior professor can help establish a professional bond or promote a student's career that may otherwise stall for lack of involvement, particularly if they are a part-time graduate student.

With specific regard to full-time versus part-time doctoral work, conventional practice has been for individuals to complete their coursework full-time and their dissertations part-time. This method of study can delay or prevent the completion of the doctorate and subsequent publishing opportunities. Individuals may want to pursue their coursework part-time as it is more structured and attend full-time during the dissertation phase to better take advantage of all the resources available to them, including the possibility of earlier publishing.

It is still recommended that mentors be identified and utilized. While the productivity of the population in this study did not appear to be affected by the presence or absence of a mentor regardless of gender, it does seem clear throughout the literature that mentors are helpful during the pursuit of the doctorate.

The results showed the highest productivity for the younger faculty, which is an anomaly in the literature, but remedies also need to be found for the burnout of older but already highly ranked professors. Other incentives, such as merit pay or salary adjustments may be able to be tied to productivity, that is, monetary increases or decreases in salary as warranted by the faculty member's level of productivity. Institutions may also develop guidelines for research faculty in terms of their amount of publishing on a year to year basis. It is recommended then, that institutions reward higher productivity with merit pay or monetary inducements to act as a catalyst for older faculty as well as encourage the younger faculty to keep

producing research. In addition, the policies for awarding rank and tenure may need to be re-evaluated.

Further research is recommended in the area of part-time versus full-time study when considering specific strategies to enhance productivity. The subject of mentoring warrants additional study to assess the types of mentors and the specific effect upon the student that mentoring may have. Research is also recommended to determine reasons for the rank, tenure and salary inequity issues and their subsequent effect on productivity. Finally, further study is suggested in resolving the age and rank issue where the results of this study showed that younger faculty were more productive than older faculty although higher ranked faculty were more productive than lower ranked faculty.

BIBLIOGRAPHY

- Aguilar-Gaxiola, S. O. (1984). The roles of mentors in the lives of graduate students. Paper presented at the annual meeting of the American Educational Research Association. New Orleans. (ERIC Document Reproduction Service ED 244 529)
- Anderson, L.G. *Land-Grant Universities and Their Continuing Challenge*, (Michigan State University Press, 1976).
- Astin, H. S., & Bayer, A. E. (1973). Sex discrimination in academe. In A. S. Rossi & A. Calderwood (Eds.), Academic Women on the Move (pp. 139-79). New York: Russell Sage.
- Astin, H. S. & Hirsch, W. (Eds.). (1978). The Higher Education of Women. New York: Praeger.
- Backstrom, C. H. & Hursh-Cesar, G. (1981). Survey Research. (p. 174). New York: Macmillan Publishing Co.
- Baldrige, J. V. (et al.). (1978). Policy Making and Effective Leadership. San Francisco, CA: Jossey-Bass.
- Baldwin, R. G., & Blackburn, R. T. (1983). New directions for institutional research: Versatile human resources in a period of restraint. (pp. 19, 27, 32-41). San Francisco, CA: Jossey-Bass, Inc.
- Bayer, A. E. & Astin, H. S. (1975). Sex differentials in the academic reward system. Science, 188, 796-802.
- Bernard, J. (1964). Academic woman. University Park, PA: The Pennsylvania University Press.
- Bernard, J. (1981). Women's educational needs. In A. Chickering & Assoc. (Ed) The modern American college. San Francisco, CA: Jossey-Bass Pub.
- Biklen, S. K., Dwyer, C. A., Koester, L. S., Pollard, D., Scheuneman, J. D., & Shakeshaft, C. (1983). Equity in a cold climate: New challenges for women and AERA. (March). Educational Researcher. 15-16.
- Bolton, E. (1980). Mentors and career development of women. Adult Education. 30(4), 195-207.
- Borg, W.R. & Gall, M. D. (1983). Educational Research. (4th ed.). New York: Longman.
- Bova, B.M. & Phillips, R. (1984). Mentoring as a learning experience for adults. Journal of Teacher Education. (May-June). 35, 16-20.
- Busch, J. W. (1985). Mentoring in graduate schools of education: mentor's perceptions. American Educational Research Journal. (Summer), 22(2).

- Cameron, S.W. & Blackburn, R. T. (1981). Sponsorship and academic career success. Journal of Higher Education. 52(4), 369-377.
- Carnegie Commission on Higher Education. (1973). Opportunities for women in higher education. New York: McGraw-Hill.
- Centra, J. A. (1974). Women, men and the doctorate. Princeton, New Jersey: Educational Testing Service.
- Clark, D. L. & Guba, E. G. (1976). "Studies of productivity in knowledge production and utilization by schools, colleges and departments of education." RITE, Occasional paper series. Research on Institutions of Teacher Education. Bloomington, Indiana.
- Clawson, J. (1980). Mentoring in managerial careers. In C. Brooklyn Dorr (Ed.). Work, family, and the career (pp. 144-165). New York: Praeger.
- Clemente, F. (1973). Early career determinants of research productivity. American Journal of Sociology. (September), 79, 409-419.
- Chronicle of Higher Education. (1988). Fact file: A profile of 1986 recipients of doctorates. Chronicle of Higher Education. February 3, p. 33.
- Cole, J. R. (1979). Fair science: Women in the scientific community. New York: Free Press.
- Dambrot, F., Borus, J., & Clinefelter, R. (1988). Status of women at Ohio public universities: Participation rates and salary data for 1982-1988. (September), Report prepared by Ohio Conference American Association of University Professors, Columbus, Ohio.
- deBeauvoir, S. (1952). The second sex. New York: Bantam.
- DeCoster D. A. & Brown, R. D. (1982). New directions for student services. San Francisco, CA: Jossey-Bass, Inc.
- Denmark, F. L. (1980). Psyche: From rocking the cradle to rocking the boat. American Psychologist. 35, 1057-65.
- DeYoung, A. J. (1985). Assessing faculty productivity in college of education: Penetration of the technical thesis into the status system of academe. Educational Theory. 35(4), 417-478.
- Ferguson, G. A. (1981). Statistical analysis in psychology and education. (5th ed.). (p. 175). New York: McGraw-Hill.
- Finklestein, M. (1982). Faculty colleagueship patterns and research productivity. (pp. 3-23). Paper presented to American Educational Research Association. New York.

- Finkelstein, M. J. (1985). Women and minority faculty. In ASHE reader on faculty and faculty issues in colleges and universities (pp. 294-325). Lexington, MA: Ginn Press.
- Frary, R.B., McBee, J. K. & Weber, L. J. (1985). AERA opinions on women's equity issues. Educational Researcher. 14(2), 12-17.
- Freeman, B. C. (1977). Faculty women in the American university: Up the down staircase. Higher Education, (May), 6, 165-188.
- Garcia, R. L. (1979). Affirmative action hiring. Journal of Higher Education, 45, 268-76.
- Garfield, E. (1979). Citation indexing - Its theory and application in science, technology and humanities. (pp. 471-478). New York, NY: John Wiley & Sons.
- Geiger, L.G., Higher Education in a Maturing Democracy (1963; reprint Greenwood Press, 1977).
- Geiger, R.L. (1984). American Research Universities: Their Role in Undergraduate Education, Background paper prepared for The Study Group on the Conditions of Excellence in American Higher Education.
- Goldstein, E. (1979). The effect of same-sex and cross-sex role models on the subsequent academic productivity of scholars. American Psychologist. (May), 34, 407-410.
- Gordon, M. & Kerr, C. (1978). University behavior and policies: Where are women and why? In H. S. Astin & W. Z. Hursch (Eds.), The higher education of women: Essays in honor of arks. New York: Praeger.
- Gordon, N. J. & Nucci, L. P. et al. (1984). Productivity and citations of educational research: Using educational psychology as the data base. Educational Researcher, (August/September), 14-20.
- Hyer, P. B. (1985). Women faculty at doctorate-granting universities: A ten year progress report. Journal of Educational Equity and Leadership, 5(3), 234-249.
- Klein, S.S. & Bogart, K. (1985). Achieving sex equity in education: A comparison at the pre- and post-secondary levels. Unpublished manuscript.
- Kroc, R. J. (1983). Measuring Scholarly Productivity. Unpublished doctoral dissertation, University of Colorado.
- Kroc, R. J. (1984). Using citation analysis to assess scholarly productivity. Educational Researcher. 13(6), 17-22.
- Levine, D. & A. Ornstein. (1983). Sex differences in ability and achievement. Journal of Research and Development in Education. (Winter), 16(2), 66-72.
- Levinson, D. J. (1978). The seasons of a man's life. New York: A. Knopf.

- Lincoln, Y. S. & Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills, CA: Sage Publications.
- Lipsett, S. M. & Ladd, E. (1979). The changing social origins of American academics. In R. K. Merton et al. Qualitative and quantitative social research. New York: Free Press.
- Lodge-Peters, D. S. (in press). Suave and savvy as attributes of academic leadership. Progressio.
- Lynch, S. M. (1980). The mentor link: Bridging education and employment. Journal of College Placement, 41(1), 44-47.
- Lyson. (1983). Journal of Research and Development in Education, (Winter), 16(2), 66-72.
- Menard, H. E. (1971). Science: Growth and change. Cambridge, MA: Harvard University Press.
- Merriam, S. (1983). Mentors and proteges. Adult Education Quarterly, 33, 161-73.
- Merriam, S., Thomas, T. K. & Zeph, C. P. (1987). Mentoring in higher education: What we know now. The Review of Higher Education. (Winter), 11(2), 206.
- Merton, R. K. (1968). The Matthew effects in science. Science, 175, 56-63.
- Menges, R. J. & Exum, W. H. (1983). Barriers to the progress of women and minority faculty. Journal of Higher Education, 54(2).
- Myers, C. R. (1970). Journal citations and scientific evidence in contemporary psychology. American Psychologist, 25, 1041-1048.
- National Center for Educational Statistics. (1981). Faculty salaries, tenure, and benefits, 1980-81, U.S. Department of Education, Washington D.C.
- National Research Council. (1982). Summary report 1981: Doctorate recipients from United States universities. Washington D.C.: National Academy Press.
- Nevins, A., The State Universities and Democracy (1962, reprint, Greenwood Press, 1977).
- O'Neil, J. M. (1981, August). Mentoring: Psychological, personal, and career implications. Symposium presentation to the American Psychological Association. Los Angeles, CA.
- Ottinger, C. (1990). American Association of University Professors, The Annual Report on the Economic Status of the Profession, 1989-90, Academe, March-April 1990.

- Pearson, C. R., Shavlik, D. L., & Touchton, J. G. (1988). Educating the majority: Women challenge tradition in higher education. New York: Macmillan Publishing Co.
- Peters, D. S. (1974). And pleasantly ignore my sex. Academic Woman, Center for the Study of Higher Education, The University of Michigan, Ann Arbor, Michigan.
- Phillips, R. R. & Bova, B. M. (1984). Mentoring as a learning experience for adults. Journal of Teacher Education. (May/June), 35(3).
- Phillips, R. R. & Jones, L. (1982). Mentors and proteges. New York: Arbor House.
- Randour, M. L. (1982). Women in higher education: Trends in enrollments and degrees earned. Harvard Educational Review. 52(2), 189-202.
- Roche, G. R. (1979). Much ado about mentors. Harvard Business Review. 57, 14-16, 20, 24-27.
- Rogers, C. (1958). Personnel and Guidance Journal. 37, 6-16.
- Rossi, A.S. & Calderwood, A., Editors, (1973). Academic Women on the Move, Russell Sage Foundation, New York, NY.
- Sampson, E. E. (1978). Scientific paradigms and social values: Wanted - a scientific revolution. Journal of Personality and Social Psychology, 36, 1332-43.
- Schein, E. H. (1978). In career dynamics: Matching individual and organizational needs. Reading, MA: Addison-Wesley.
- Schmidt, J. & Wolfe, J. (1980). Mentor partnerships. NASPA. 17(3), 45-51.
- Shapiro, H.T. (1986). American Higher Education: A Special Tradition Faces a Special Challenge. Paper presented at the Annual Dinner of the Academy for Educational Development, pp. 5,6, New York, NY.
- Simon, R. J., Clark, S. M., & Galway, K. (1967). The woman Ph.D.: A recent profile. Social Problems, (Fall), 15, 221-236.
- Smart, J. C. and C. F. Elton. (1981). Structural characteristics and citation rates of education journals. American Educational Research Journal. (Winter), 18(4), 339-413.
- Stein, S. L. (1979, April). Sex differences in expectations of mentors. Paper presented to the American Education Research Association. Los Angeles, CA.
- Tidball, M. E. (1976). Of men and research. Journal of Higher Education, (July/August), 47, 373-389.

- Tuckman, H. (1976). Publication, teaching and the academic reward system.
Lexington, MA: Lexington Books.
- Vetter, B. & E. Babco. (1981). Professional women and minorities. (2nd. Ed.).
Washington D.C.: Scientific manpower Commission, 1978. First Supplement,
1980; Second Supplement, 1981.
- Walberg. H. J., B. F. Strykowski, E. Rovai, & S. Hung (1983). Exceptional
Performance. Review of Educational Research, 54(1), 87-112.

APPENDICES

APPENDIX A
INSTITUTIONS SURVEYED

Alabama: Auburn University
Alaska: University of Alaska (Anchorage)
Arizona: University of Arizona
Arkansas: University of Arkansas
California: University of California at Berkeley
Colorado: Colorado State University
Connecticut: University of Connecticut
Delaware: University of Delaware
Florida: University of Florida
Georgia: University of Georgia
Hawaii: University of Hawaii
Idaho: University of Idaho
Illinois: University of Illinois
Indiana: Purdue University
Iowa: Iowa State University
Kansas: Kansas State University
Kentucky: University of Kentucky
Louisiana: Louisiana State University
Maine: University of Maine
Maryland: University of Maryland
Massachusetts: University of Massachusetts
Michigan: Michigan State University
Minnesota: University of Minnesota
Mississippi: Mississippi State University
Missouri: University of Missouri
Montana: Montana State University
Nebraska: University of Nebraska
Nevada: University of Nevada (Reno)
New Hampshire: University of New Hampshire
New Jersey: Rutgers - The State University of New Jersey
New Mexico: New Mexico State University
New York: Cornell University
North Carolina: North Carolina State University
Ohio: Ohio State University
Oklahoma: Oklahoma State University
Oregon: Oregon State University
Pennsylvania: Pennsylvania State University
Rhode Island: University of Rhode Island
South Carolina: Clemson University
South Dakota: South Dakota State University
Tennessee: University of Tennessee
Texas: Texas A & M University
Utah: Utah State University
Vermont: University of Vermont
Virginia: Virginia Polytechnic Institute
Washington: Washington State University
West Virginia: West Virginia University
Wisconsin: University of Wisconsin
Wyoming: University of Wyoming

APPENDIX B
LETTER TO SURVEY VALIDATORS

Date

Dear Dr.

I am undertaking a study on the effects of mentoring on faculty productivity. It is my intention to combine this information with additional attribute variables on a questionnaire that I have included for your information.

In order to validate my questions on mentoring, I would like your assistance. Specifically, I would like your comments regarding the questions in the instrument in terms of:

1. clarity,
2. appropriateness,
3. suggestions for improvement.

I appreciate your assistance and will trust in your comments. I believe you are a leading authority in the field of education with specific regard to mentoring. I would appreciate it if you would return this instrument to me with your comments by (date) so that my research can begin as soon as possible. I have enclosed a self-addressed stamped envelope for your convenience.

Please also know that your responses will be treated with confidentiality. Thank you very much for your assistance.

Sincerely,

Linda J. Schoenstedt
Research Associate

APPENDIX C

LETTER TO LAND-GRANT FACULTY IN EDUCATION

April 18, 1990

Dear

I am undertaking a study of the effects that mentoring and part-time or full-time doctoral study have on faculty productivity. This study is directed at all major land-grant institutions in the United States. I would like to invite you to participate as a primary respondent in the research project. Please be assured that all data and information about your position will be treated with professional confidentiality and in no way will you be identified as an individual in the final research report.

More specifically, the purpose of the research is to update parts of a study originally conducted by Simon, Clark, and Galway in 1967 and to gain additional insights about faculty productivity and its relationship with mentoring and part-time or full-time study. A survey instrument that requests demographic data as well as information about perceived mentoring or sponsorship and part-time or full-time study is enclosed. The survey will take approximately two-three minutes to complete and is numbered for the purpose of follow-up.

I hope you will enjoy being a part of this study and I will look forward to your participation. For your convenience, I have enclosed a return envelope.

Thank you for your interest and consideration.

Sincerely,

Linda J. Schoenstedt
Research Associate

Enclosure

APPENDIX D
QUESTIONNAIRE

This questionnaire will only take a few minutes to complete. Please check the appropriate responses.

1. Gender:

- ☐ 1. Male
- ☐ 2. Female

2. Marital status when doctoral degree was initiated:

- ☐ 1. Single
- ☐ 2. Married

3. Current marital status:

- ☐ 1. Single
- ☐ 2. Married

4. Have you published under another name? If so, please print your other name fully and clearly.

5. Did you have any children when you initiated your doctoral degree?

- ☐ 1. Yes
- ☐ 2. No

6. Do you currently have children?

- ☐ 1. Yes
- ☐ 2. No

7. Current academic rank:

- ☐ 1. Assistant Professor
- ☐ 2. Associate Professor
- ☐ 3. Full Professor

8. Tenure status:

- ☐ 1. Tenured
- ☐ 2. On tenure-track but non-tenured
- ☐ 3. Other. Please specify: _____

9. Ethnicity:

- ☐ 1. Native American
- ☐ 2. Asian/Oriental
- ☐ 3. African-American/Black
- ☐ 4. Hispanic
- ☐ 5. Caucasian/White
- ☐ 6. Other. Please specify: _____

10. Salary range for the 1989-1990 academic year: (AY)

- ☐ 1. below \$19,999
- ☐ 2. \$20,000-24,999
- ☐ 3. \$25,000-29,999
- ☐ 4. \$30,000-34,999
- ☐ 5. \$35,000-39,999
- ☐ 6. \$40,000-44,999
- ☐ 7. \$45,000-49,999
- ☐ 8. \$50,000-54,999
- ☐ 9. \$55,000-59,999
- ☐ 10. above \$60,000

11. Year doctoral degree was begun: _____

12. Year doctorate was granted: _____

13. Were you a part-time or full-time student during "coursework"?

- ☐ 1. Predominantly full-time
- ☐ 2. A combination of both
- ☐ 3. Predominantly part-time

14. Were you a part-time or full-time student during the writing of your dissertation?

- ☐ 1. Predominantly full-time
- ☐ 2. A combination of both
- ☐ 3. Predominantly part-time

15. Current Age

- ☐ 1. below 25
- ☐ 2. 25-30
- ☐ 3. 31-35
- ☐ 4. 36-40
- ☐ 5. 41-45
- ☐ 6. 46-50
- ☐ 7. 51-55
- ☐ 8. 56-60
- ☐ 9. 61-65
- ☐ 10. above 65

16. Total number of years in education profession since earning the doctorate degree:

- ☐ 1. 0-5
- ☐ 2. 6-10
- ☐ 3. 11-15
- ☐ 4. 16-20
- ☐ 5. 21-25
- ☐ 6. 26-30
- ☐ 7. 31-35
- ☐ 8. 36-40
- ☐ 9. 41-45
- ☐ 10. over 45

17. Daniel Levinson (1978) defines mentoring as "Teacher, sponsor, exemplar, counselor, provider of moral support, and facilitator of the mentee's dream."

Using this definition, did you have a mentor during your doctoral program?

- ☐ 1. Yes
- ☐ 2. No

If your answer is YES to question 17, please complete questions 18-20.

If your answer is NO to question 17, please complete question 21.

18. Gender of mentor:

- ☐ 1. Male
☐ 2. Female

19. Was your mentor also your dissertation advisor?

- ☐ 1. Yes
☐ 2. No

20. Do you have any comments regarding your experience and/or relationship with your mentor, the effect he/she had on you, or his/her impact on your professional career? Please continue your response on the back of this sheet, if necessary.

*Complete the following question if you **DID NOT** have a mentor during your doctoral study.*

21. Do you have any comments relating to the absence of a mentor during your doctoral study Please continue your response on the back of this sheet, if necessary.

Thank you for your participation.

Please return this information to:

Linda Schoenstedt
Wright State University
Dayton, OH 45435

MONTANA STATE UNIVERSITY LIBRARIES



3 1762 10189955 5