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ABSTRACT

This study examined faculty research productivity in terms of four common explanations for variance in productivity and tested a regression model while controlling for factors such as institutional affiliation, rank, and gender. The study used data from the 1989 survey of the professoriate conducted by the Carnegie Foundation for the Advancement of Teaching. A two-stage, stratified, random sample design was used to select faculty for inclusion in the survey. The final sample consisted of 9,996 faculty from 306 institutions of whom 4,380 returned usable surveys. Results of the analysis of the data indicated that levels of faculty research productivity increased, overall, from Liberal Arts II Colleges through Research I Universities, the rank of instructor through the rank of professor non-tenured to tenured faculty, nonreceipt of internal research support to receipt of support, non-engagement in scholarly work to engagement in such activity, and spending 10 or less hours per week on research/scholarly activities through spending 40 hours per week on such activities. Rank and institutional affiliation were significant predictors while gender was insignificant. An appendix includes 66 tables detailing study findings. (Contains 33 references.) (JB)

FACULTY RESEARCH PRODUCTIVITY

by

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Presented at the annual meeting of the
Association for the Study of Higher Education

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Source of Data: The Carnegie Foundation for the
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FACULTY RESEARCH PRODUCTIVITY

The Problem

From the early 1980s, an aggressive movement to "upgrade the importance of scholarly productivity as a criterion for academic personnel decisions" has been observed in diverse colleges and universities throughout the United States (Bowen & Schuster, 1985, p. 14). The "research surge" has not been limited to "universities" but has been prevalent at other institutions where research previously received lower priority status (Bowen & Schuster, 1986, p. 147; Seldin, 1984). Findings from a study of fifty-nine chairs of promotion and tenure committees in ninety-three universities indicated that research productivity was the central criterion for making promotion and tenure decisions (Gibbs & Locke, 1989). The importance of research performance is widely accepted and understood by those working on college and university campuses. However, the high variation in individual faculty research performance remains an enigma in higher education.

While one commonly finds four explanations in the literature for the variance in faculty research productivity--psychological-individual factors, cumulative advantage, reinforcement, and disciplinary norms--no single study (more than 100 studies of faculty research performance have been conducted since 1940) analyzes all four explanations (Creswell, 1985a, p. 241; Wood, 1990, p. 83). Only four studies have tested multivariate models (Creswell, 1985, p. 27; Creswell, 1992; Megel, Langston, & Creswell, 1988). Further, many studies of faculty research performance are limited by their failure to account adequately for factors such as institutional affiliation, academic rank, discipline, tenure status, and gender (Creswell, 1985, vii). Failure to control for such factors poses limitations to college and university administrators for translating research findings into practice and to scholars of higher education for increasing their

understanding of faculty research productivity (e.g., gender inequities). Finally, criteria for the measurement of faculty research productivity are generally limited to publication counts, citation counts, and/or peer or colleague ratings. While these three measures of faculty research performance are intercorrelated (Creswell, 1985, p. 7), few writers consider alternative measures (Finkelstein, 1984). Sixty-eight percent of all faculty surveyed by the Carnegie Foundation in 1989 agreed that better ways, besides publications, were needed to evaluate the scholarly performance of faculty (Carnegie, p. 52). Creswell (p. 7) suggests that empirical studies of faculty research performance should include such measures as research grants.

Objectives of the Study

The purpose of this study was fourfold: to examine faculty research productivity in terms of the relationship between and among factors selected from all four of the explanations found in the literature for the variance in faculty research productivity; to test a comprehensive regression model; to control for factors such as institutional affiliation, rank, and gender in order to facilitate the utilization of results of this study; and to broaden the set of measures for faculty research performance to include the receipt of external research support.

Since there has been no published research on faculty research performance that utilizes the 1989 Carnegie data base, it is anticipated that the results of this study will benefit scholars of higher education by providing recent profiles (by gender, for example) of individual faculty research productivity. Because of the high degree of variance in faculty research performance, it is anticipated that the results of this study, which are disaggregated to facilitate their utilization, will be an important information source for (1) faculty and academic administrators--presidents, deans, chairs, and personnel committees--who review faculty credentials from different departments and

disciplines; and (2) scholars who seek to increase their understanding of faculty research productivity.

The following research question prompted and guided this research.

> How does the level of faculty research productivity vary by institutional type? by academic rank? by discipline? by tenure status? by gender? by the number of hours spent per week on research and/or scholarly activities? by current engagement in scholarly work? by internal research support?

In order to answer this primary research question, subsidiary questions were addressed.

1. How many hours per week do faculty spend on research and/or comparable scholarly activities?

2. What percentage of faculty is currently engaged in scholarly work that is expected to lead to a publication, an exhibit, or a musical recital?

3. What percentage of faculty has received internal research support during the past twelve months?

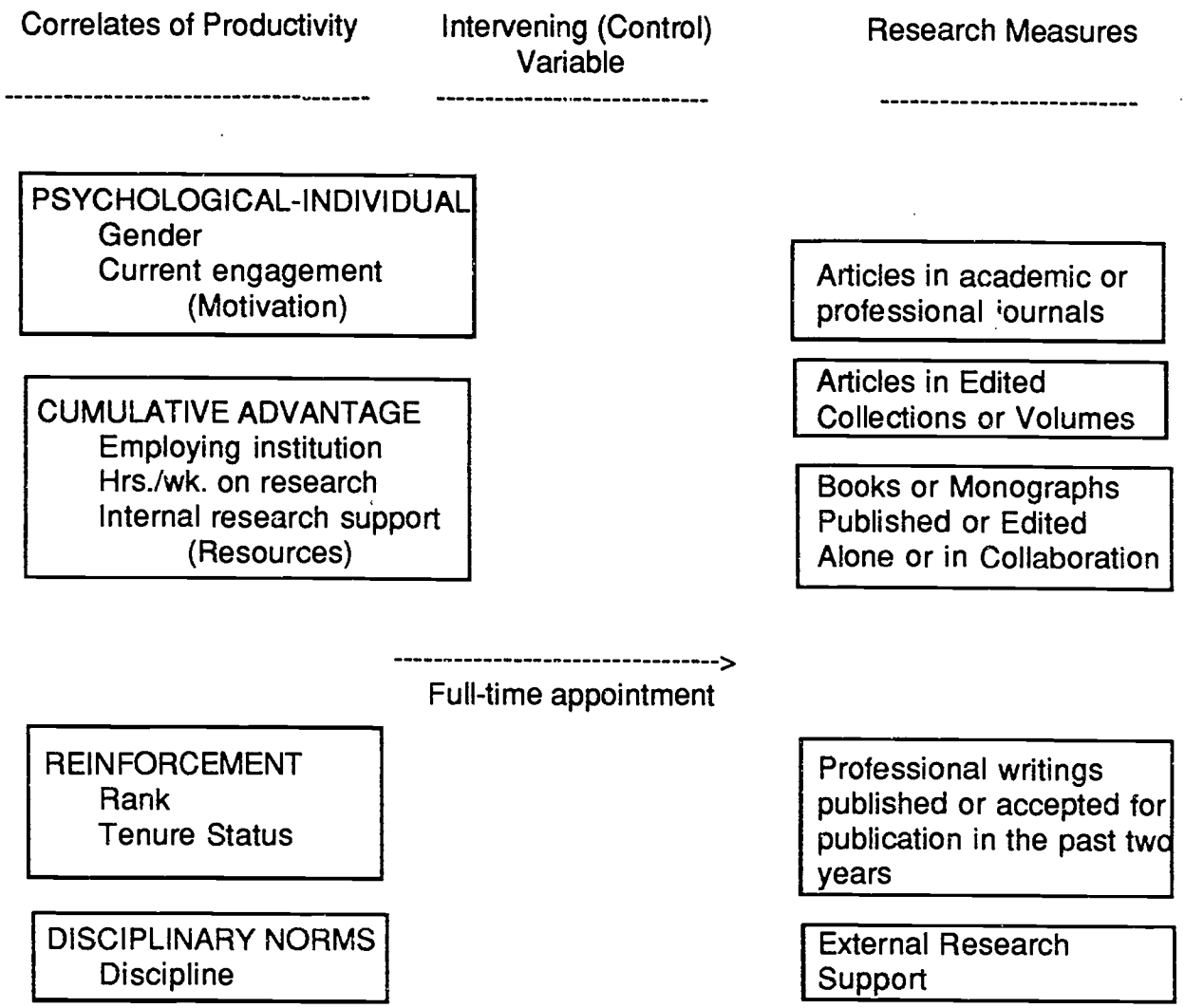
4. What is the level of faculty productivity as determined by (a) the number of articles published in academic or professional journals? (b) the number of articles published in edited collections or volumes? (c) the number of books or monographs published or edited alone, or in collaboration? (d) the number of professional writings published or accepted for publication in the past two years? (e) the receipt of external research support within the last twelve months?

5. What percentage of variance in faculty research productivity can be explained by (a) institutional affiliation? (b) rank? (c) discipline? (d) tenure status? (e) gender? (f) hours spent per week on research and/or scholarly activities? (g) current engagement in scholarly work? (h) receipt of internal research support?

Conceptual Framework

Substantially modifying the faculty research model developed by Megel, Langston, and Creswell (1988, p. 47) to include all four explanations for the variance in faculty research productivity found in the literature and the measures of research performance germane to this study, the researcher utilized the following research model to examine faculty research productivity.

RESEARCH MODEL



Data Source

The data utilized in this study were generated by the 1989 survey of the professoriate conducted by the Carnegie Foundation for the Advancement of Teaching. A two-stage, stratified, random sample design was used to select faculty for inclusion in the survey.

In the first stage, 306 four-year and two-year institutions were selected from the Carnegie Foundation data bank of U.S. colleges and universities. The institutions selected for the survey were equally divided among the nine Carnegie Classifications, with thirty-four colleges/universities per classification. Since the purpose of this study was to study the research productivity of faculty in four-year institutions, the researcher restricted data analysis to the first eight of the nine Carnegie Classifications.

In the second stage of the sample design, faculty were designated at the selected institutions. A total of 9,996 faculty, equally distributed among the nine Carnegie Classifications, were randomly selected for the Carnegie study. Of the 9,996 faculty selected for the survey, 5,450 returned their questionnaires, for a response rate of 54.5 percent. Of the faculty who returned the survey, 4,380 faculty indicated they were employed on a full-time basis for at least nine months of the academic year. The responses of this cohort on selected questions from the survey were analyzed in this study.

Limitations

Correlates and measures of faculty research productivity for this study are limited to related items on the 1989 Carnegie Foundation Survey of faculty. For example, intelligence scores, stress, prestige of doctoral program, mentoring, and early productivity are not used as correlates of faculty research performance, and presentations of papers at regional or national conferences cannot be used as a

measure of faculty research productivity in this study, because no item on the survey instrument addresses these factors.

By analyzing the selected measures of research productivity as determined by the questions on the survey, one can conclude that the quantity of publication counts dominates the methods of measurement. In reporting the number of publications, the Carnegie survey may give equal credit to poorly written papers in badly edited journals and to well-written papers in high-quality journals (Bayer & Folger, 1966; Smith & Fieldler, 1971) and give equal credit to shorter and longer works. The researcher has attempted to balance the four survey questions related to the number of publications with a question that relates to external research support received during the past twelve months.

Another limitation of this study is the reliance on self-report data of faculty related to research productivity. In one study, Allison and Stewart (1974) estimated the reliability of self-reported information relative to faculty research productivity by comparing responses from chemists with publication counts from Chemical Abstracts and found the correlation was r=.94.

Further, no single study has been conducted using all four explanations for the variation of faculty research performance found in the literature. Therefore, existing published research provides a limited base for projecting outcomes of this study or for corroborating the results.

Finally, interpreting the results of the study is limited to reporting the levels of faculty research productivity across selected research correlates and to providing explanations from the literature for the variance in individual faculty research performance based on the selected research correlates across specific research measures. From the selected research correlates, profiles of faculty with high levels of research performance can be determined for each measure of scholarly research.

Data Analysis

For the purpose of this study, the researcher downloaded the data tape, coded the data, and applied the statistical software package SPSS to the Carnegie Survey data for computer-based analysis. Data analysis relied primarily on descriptive statistics and stepwise multiple regression techniques. In order to answer the research questions, means or percentages were calculated for each category of comparison. Stepwise multiple regression techniques were utilized to determine the amount of variance that could be attributed to the eight faculty research productivity correlates for each of the five measures of faculty research performance. The probability of entry in the regression procedure was set at .1 with a tolerance level of .0001. This study of faculty research productivity was restricted to include only the responses of faculty who indicated they had a full-time appointment for at least nine months of the academic year at the designated institution.

The twenty-nine disciplines included on the Carnegie Survey were collapsed into ten categories for this study as follows:

Biological Sciences
Agriculture/Forestry/Natural Resources
Biological/Life Sciences

Business
Business/Management

Education
Education (including Administration and Counseling)
Physical and Health Education

Engineering
Engineering

Fine Arts
Fine Arts (Art, Drama, Music)

Health Sciences
Health Professions (Dentistry, Medicine, Nursing, Veterinary)

Humanities
Foreign Languages
Humanities (Literature, History, Philosophy, Religion, Theology, Rhetoric)

Physical Sciences
Mathematics/Statistics
Physical Sciences

Social Sciences
Area/Ethnic Studies
Economics
Geography
Psychology
Social Sciences (Anthropology, Political Science, Sociology, Social Work)

Other
Allied Health (Medical Technologies)
Architecture/Environmental Design
Communications/Journalism
Computer/Information Science
Home Economics
Industrial Arts
Law
Library Science
Military Science/Technologies
Public Affairs
Vocational/Technical Training
Other Discipline

In order to answer the research questions, means or percentages were calculated for each category of comparison and are reported in the study. Levels of research productivity for full-time faculty by institutional type, academic rank, discipline, tenure status, gender, hours spent per week on research and/or scholarly activities, current engagement , and receipt of internal research support were measured by the number of articles published in academic or professional journals, the number of articles published in edited collections or volumes, the number of books or

monographs published or edited alone or in collaboration, the number of professional writings published or accepted for publication in the past two years, and the receipt of external research support within the last twelve months.

Results

While there were notable exceptions, findings from this study indicate that the levels of faculty research productivity increased, overall, from Liberal Arts II Colleges through Research I Universities, the rank of instructor through the rank of professor, non-tenured to tenured faculty, females to males, nonreceipt of internal research support to receipt of such support, no engagement in scholarly work to engagement in such activity, and spending ten or less hours per week on research/scholarly activities through spending forty hours per week on such activities. Rank and institutional affiliation were found to be significant predictors ($p \leq .1$) for each of the five measures of faculty research productivity. Current engagement in scholarly work, tenure status, and the hours per week spent on research and/or scholarly activities were significant predictors ($p \leq .1$) for four of the five measures of research productivity. Gender was found to be an insignificant predictor ($p \leq .1$) for four of the five measures of research performance. Engineering faculty were the most productive in four of the five measures of research performance. Faculty in the Biological Sciences ranked second on three of the five measures of research productivity and Fine Arts faculty ranked last on three of the five research measures.

Institutional Affiliation

A comparison between the levels of individual faculty research productivity across institutional types in this study indicates, on the whole, a predictable decrease in performance levels as one moves from Carnegie Classifications one through eight (i.e., from Research I to Research II to Doctorate I to Doctorate II to Comprehensive I to

Comprehensive II to Liberal Arts I to Liberal Arts II). Notable exceptions include faculty in the Liberal Arts I institutions. For each category of comparison, faculty in Liberal Arts I institutions ranked higher, with one exception, than faculty in Comprehensive I and II institutions. Liberal Arts I faculty did not report higher publication levels than Comprehensive I faculty for books or monographs. Other exceptions are the Doctoral I faculty, who ranked higher than Research II faculty on the mean number of books or monographs published or edited by faculty. Finally, faculty in Research I institutions did not rank the highest in all categories of comparison. In terms of the percentage of faculty who received external research support and the percentage of faculty who had received internal research support within the last twelve months, Research I institutions ranked second and third, respectively. This overall pattern of variation in faculty research productivity by institutional type is not unexpected in terms of the respective institutional missions and reward structures (Creswell in Finkelstein, 1985, p. 256). When regressed with the other seven correlates of faculty research productivity, institutional affiliation was found to be a significant predictor ($p \leq .1$) for all five measures of research performance.

In terms of institutional affiliation, the results of this study corroborate Kim's (1990) findings in a recent study of the effects of organizational context characteristics on the research performance of chemistry faculty. Kim found that organizational context advantages, such as the research orientedness of the affiliated institution, were related to high faculty research productivity.

Rank

The levels of individual faculty research productivity across four ranks--professor, associate professor, assistant professor, and instructor--varied as expected (Blackburn, Behymer & Hall, 1978; Creswell, 1985, p. 40; Fulton & Trow, 1974). Overall, the levels of research productivity increased with higher ranks. Assistant

professors did rank higher than associate professors in terms of hours per week spent per faculty member on research/scholarly activities, current engagement in scholarly work, and receipt of internal research support. A high percentage of assistant professors seeking promotion and/or tenure may help explain why they may be engaged in scholarly work and spending more time than associate professors on research. When regressed with the other seven correlates of faculty research productivity used in this study, rank was found to be a significant predictor ($p \leq .1$) for each of the five measures of research performance. Rank was the highest correlate for three research measures (Tables 62-64). This trend may be explained, in part, by the reinforcement role that rank plays in the reward system for faculty in higher education (Finkelstein, 1984, p. 101).

For each of the five measures of scholarly productivity used in this study, levels of research productivity increased from the rank of instructor through the rank of professor. It is not surprising that faculty in the higher ranks reported, on average, higher numbers of publications. Three of the four publication measures were cumulative. Cumulative research productivity is generally related to longevity, and longevity to higher rank.

Discipline

Results of this study corroborate the findings of earlier studies relative to the rank order of faculty research productivity for three disciplinary categories--natural sciences, social sciences, and the humanities (Biglan, 1973; Finkelstein, 1984, p. 100; Wanner, Lewis, & Gregorio, 1981). One exception can be noted. In terms of the mean number of books or monographs published or edited, Education faculty in this study ranked first and were followed by faculty in Social Sciences, Humanities, Business/Management, and Fine Arts. In pre-paradigmatic disciplines, such as education, books and monographs are required (Biglan, 1973).

The results of this study indicate that faculty in the Biological Sciences and the Social Sciences received internal research support in greater percentages than in any other disciplinary group, while faculty in Engineering and the Biological Sciences reported the receipt of external research support in greater percentages. Biological Sciences, Engineering, Physical Sciences, and Social Sciences were the disciplines which had the highest mean numbers of hours per week spent per faculty member on research/scholarly activities. Faculty in Social Sciences, Fine Arts, and Engineering reported the highest level of current engagement in research and/or scholarly activities.

While earlier studies found that the paradigmatic stage of a discipline affects scholarly research (Lodahl & Gordon, 1972) in terms of acceptance rates in journals (Gaston, 1978) and the form of communication (Biglan, 19[illegible]), in this study discipline was found to be a significant predictor ($p \leq .1$) for only two of the five measures of research performance--the number of articles published in academic or professional journals and the receipt of external research support. Discipline was found to be an insignificant predictor ($p \geq .1$) for the number of articles published in edited collections or volumes, the number of books or monographs published or edited alone or in collaboration, and the number of professional writings published or accepted for publication in the past two years.

Tenure.

The levels of research productivity for tenured faculty in this study were higher than those for non-tenured faculty in every category of comparison. These findings would seem to substantiate Alstyne's (1985, p. 167) observation that the function of tenure is to encourage and maximize scholarly activity. When regressed with the other seven research correlates utilized in this study, tenure status was found to be a significant predictor ($p \leq .1$) for four of the five measures of faculty research

productivity--number of articles published in academic or professional journals, number of articles published in edited collections or volumes, number of professional writings published or accepted for publication in the past two years, and receipt of external research support. Tenure status was not found to be a significant predictor ($p \geq .1$) for the number of books or monographs published or edited.

Gender

The results of this research add to the compelling evidence presented in previous studies that males publish more than females (Astin, 1984, 1969; Babchuk & Bates, 1962; Cole, J. 1979; Cole & Zuckerman, 1984; Hargens, McCann, & Reskin, 1978). Male faculty reported higher levels of research productivity than female faculty reported in every category of comparison. However, when regressed with the other seven correlates of faculty research performance used in this study, gender was found to be an insignificant predictor ($p \geq .1$) for four of the five measures of research performance. Gender was found to be a significant predictor ($p \leq .1$) for the number of articles published in academic or professional journals. Findings from this study corroborate results from previous studies pertaining to the relationship between gender and research performance: while gender helps to explain variations in the quantity of faculty research publications (Rosenfeld, 1987), it is, comparatively, an insignificant correlate of faculty research performance (Bernard, 1964; Blackburn, Behymer, & Hall, 1978; Cameron & Blackburn, 1981; Cole & Zuckerman, 1984).

Hours Spent per Week on Research/Scholarly Activities

The levels of faculty research productivity increased, overall, as the mean number of hours per week spent per faculty member on research and/or scholarly activities increased. As faculty reported spending more time on research activities, the mean number of books or monographs published or edited and the number of professional writings published or accepted for publication within the last two years

increased. The mean number of articles published in academic or professional journals, the mean number of articles published in edited collections or volumes, and the percentage of faculty who received external research support increased as the number of hours spent per week on research/scholarly activities increased, up to forty hours per week. These means or percentages declined for faculty who indicated they spent forty-one hours or more per week on research. This finding corroborates an earlier study conducted by Pelz & Andrews (1966), which reported that spending too much time on research activities can hamper research productivity. As the number of hours faculty reported spending per week on research/scholarly activities increased, the percentages of faculty who reported the receipt of internal research support within the past twelve months and current engagement in research/scholarly activities also increased.

The number of hours per week spent per faculty member on research/scholarly activities was found to be a significant predictor ($p \leq .1$) for four of the five measures of faculty research productivity used in this study--number of articles published in academic or professional journals, number of articles published in edited collections or volumes, number of articles published or accepted for publication within the last two years, and receipt of external research support. The number of hours per week spent on research/ scholarly activities was found to be an insignificant predictor ($p \geq .1$) for the number of books or monographs published or edited alone or in collaboration. These findings corroborate results of previous studies that found the amount of time faculty spend on research to be an important predictor of high research productivity (Allison & Stewart, 1974; Harrington, 1985).

Current Engagement in Research

Levels of research productivity for faculty who reported current engagement in research were higher in all categories of comparison than research levels for faculty

who indicated no current engagement in research. Current engagement in research/scholarly activities was found to be a significant predictor ($p \leq .1$) for four of the five measures of research productivity utilized in this study--number of articles published in academic or professional journals, number of articles published in edited collections or volumes, number of books or monographs published or edited alone or in collaboration, and number of professional writings published or accepted for publication in the past two years. Current engagement in research was not found to be a significant predictor ($p \geq .1$) for the receipt of external research support.

Internal Research Support

Faculty who indicated the receipt of internal research support in the past twelve months reported higher levels of research performance across all categories of comparison than faculty who indicated no receipt of internal research support reported. The need for internal research support in order to be a productive researcher has been documented in previous studies by Creswell (1985, p. 50), Ingalls (1982), and Wood (1990). When regressed with the other seven correlates of faculty research productivity used in this study, internal research support was found to be a significant predictor ($p \leq .1$) for two of the five measures of faculty research performance--the number of articles published or accepted for publication in the last two years and the receipt of external research support. Receipt of internal research support was the highest correlate for receipt of external research support. The receipt of internal research support was not found to be a significant predictor ($p \geq .1$) for the number of articles published in academic journals, the number of articles published in edited collections or volumes, and the number of books or monographs published or edited.

Research Correlates/Measures

The rank order found between the correlates of faculty research productivity used in this study and the measures of faculty research performance is as follows: 1-

the number of articles published in academic or professional journals (R=.26); 2-the number of professional writings published or accepted for publication in the past two years (R=.18); 3-the receipt of external research support (R=.09); 4-the number of articles published in edited collections or volumes (R=.08); and 5-the number of books or monographs published or edited alone or in collaboration (R=.06).

Questions for Future Research

A synthesis of the literature relevant to faculty research productivity and the limitations of this study raise questions and indicate possible avenues for further scholarly investigation.

1. How do specific correlates of the work environment such as colleagues, socialization processes, participation in campus governance, and reward systems affect faculty research productivity? Researchers might consider holding variables such as institutional affiliation, discipline, and rank constant in order to examine significant correlates of the work environment that would have a positive predictive influence on individual faculty research performance.

2. What is the relationship between faculty career stages and the level of research performance? Researchers could attempt to relate the levels of individual faculty research productivity to career or developmental stages.

3. What measures of faculty research performance in addition to publication counts, citation counts, and peer or colleague ratings can be used to measure individual faculty research productivity? Researchers should endeavor to expand commonly used measures of faculty research productivity to include alternative measures of research performance such as production of computer software, receipt of patents, and participation in art exhibits, musical recitals, and competitions.

4. What practical application does research on individual faculty research productivity have for academic administrators and faculty? Efforts should continue to translate research findings into viable approaches to faculty development and evaluation.

These research questions represent potential areas of future inquiry relative to individual faculty research productivity. It is evident from these questions that the relationship between research correlates and measures of research performance must be included in further study to facilitate a better understanding of individual faculty research performance. Because of the importance placed on individual faculty research productivity on college and university campuses, continued efforts to understand correlates that have a positive influence on research performance, to expand commonly used measures of research productivity, to relate the levels of individual faculty research productivity to career or developmental stages, and to translate research findings into practical approaches to faculty development and evaluation are imperative.

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TABLES

Table 1

Mean No. of Articles in Academic or Professional Journals by Institutional Type

	Mean	Std Dev	Minimum	Maximum	n
RI	29.99	37.07	0	325	549
RII	25.22	34.13	0	380	586
DI	17.48	26.20	0	320	592
DII	14.58	24.28	0	300	569
CI	9.28	18.03	0	300	532
CII	3.78	5.83	0	63	495
LAI	9.75	14.66	0	125	573
LAII	2.65	4.83	0	50	352

RI=Research I RII=Research II DI=Doctoral I
DII=Doctoral II CI=Comprehensive I CII=Comprehensive II
LA I=Liberal Arts I LA II=Liberal Arts II

Table 2

Mean No. of Articles in Edited Collections or Volumes by Institutional Type

	Mean	Std Dev	Minimum	Maximum	n
RI	7.02	11.52	0	110	528
RII	5.90	10.71	0	100	550
DI	4.41	14.03	0	208	557
DII	3.66	6.63	0	60	535
CI	1.83	3.51	0	35	501
CII	1.17	3.48	0	50	462
LAI	2.44	4.70	0	50	540
LAII	1.61	11.69	0	200	326

RI=Research I RII=Research II DI=Doctoral I
DII=Doctoral II CI=Comprehensive I CII=Comprehensive II
LA I=Liberal Arts I LA II=Liberal Arts II

Table 3

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Institutional Type

	Mean	Std Dev	Minimum	Maximum	n
RI	2.55	4.62	0	45	519
RII	2.11	3.72	0	35	556
DI	2.15	5.97	0	114	561
DII	1.74	9.03	0	200	526
CI	1.41	3.10	0	32	509
CII	.88	2.84	0	30	462
LAI	1.24	2.61	0	40	537
LAII	.60	2.16	0	25	324

RI=Research I RII=Research II DI=Doctoral I
DII=Doctoral II CI=Comprehensive I CII=Comprehensive II
LA I=Liberal Arts I LA II=Liberal Arts II

Table 4

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Institutional Type

	Mean	Std	Dev	Minimum	Maximum	n
RI	5.29	5.20		0	45	549
RII	4.52	5.30		0	70	573
DI	3.61	4.25		0	35	582
DII	2.91	3.52		0	30	564
CI	2.08	3.80		0	50	521
CII	1.11	1.96		0	15	473
LAI	2.23	2.88		0	25	566
LAII	1.06	3.41		0	40	346

RI=Research I RII=Research II DI=Doctoral I DII=Doctoral II
CI=Comprehensive I CII=Comprehensive II LA I=Liberal Arts I
LA II=Liberal Arts II

Table 5

Percentage of Faculty Who Received External Research Support in the Past Twelve Months by Institutional Type

RI	RII	DI	DII	CI	CII	LAI	LAII
19.1% (519)	19.5% (544)	13.0% (532)	11.8% (507)	7.5% (479)	8.4% (439)	10.6% (509)	6.4% (299)

RI=Research I RII=Research II DI=Doctoral I
DII=Doctoral II CI=Comprehensive I CII=Comprehensive II
LA I=Liberal Arts I LA II=Liberal Arts II

*The total number of respondents is given in parentheses.

Table 6

Mean No. of Articles in Academic or Professional Journals by Academic Rank

	Mean	Std Dev	Minimum	Maximum	n
Professor	25.35	34.48	0	380	1769
AssoProf	9.82	13.35	0	220	1310
AssiProf	4.57	5.73	0	44	939
Instructor	1.26	3.15	0	30	137

AssoProf=Associate Professor AssiProf=Assistant Professor

Table 7

Mean No. of Articles in Edited Collections or Volumes by Academic Rank

	Mean	Std Dev	Minimum	Maximum	n
Prof	5.80	12.15	0	208	1665
AssoProf	2.78	7.77	0	200	1226
AssiProf	1.54	3.65	0	40	886
Instruc	.37	1.18	0	10	135

Prof=Professor AssoProf=Associate Professor
AssiProf=Assistant Professor Instruc=Instructor

Table 8

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Academic Rank

	Mean	Std Dev	Minimum	Maximum	n
Prof	2.61	6.80	0	200	1681
AssoProf	1.21	2.98	0	32	1232
AssiProf	.59	1.84	0	25	860
Instruc	.47	1.66	0	12	133

Prof=Professor AssoProf-Associate Professor
AssiProf=Assistant Professor Instruc=Instructor

Table 9

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Academic Rank

	Mean	Std Dev	Minimum	Maximum	n
Prof	3.80	5.00	0	70	1738
AssoProf	2.60	3.78	0	45	1294
AssiProf	2.45	3.13	0	50	918
Instruc	.61	1.35	0	8	135

Prof=Professor AssoProf=Associate Professor
AssiProf=Assistant Professor Instruc=Instructor

Table 10

Percentage of Faculty Who Received External Research Support in the Past Twelve Months by Academic Rank

Prof	AssoProf	AssiProf	Instruc
15.5% (1591)	10.9% (1168)	10.4% (863)	2.6% (116)

Prof=Professor AssoProf=Associate Professor
AssiProf=Assistant Professor Instruc=Instructor

*The total number of respondents is given in parentheses.

Table 11

Mean No. of Articles in Academic or Professional Journals by Discipline

	Mean	Std Dev	Minimum	Maximum	n
BS	25.94	27.67	0	200	306
BU	12.58	24.73	0	250	274
ED	14.60	24.74	0	325	319
EN	26.69	34.83	0	205	215
FA	4.21	7.22	0	50	339
HS	11.54	30.20	0	300	157
HU	10.17	18.62	0	300	809
PS	26.64	42.06	0	380	528
SS	14.10	18.11	0	150	697
OT	10.96	17.46	0	140	479

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences HU=Humanities
PS=Physical Sciences SS=Social Sciences OT=Other

Table 12

Mean No. of Articles in Edited Collections or Volumes by Discipline

	Mean	Std Dev	Minimum	Maximum	n
BS	5.67	11.59	0	100	286
BU	3.56	7.32	0	60	266
ED	2.90	4.94	0	40	295
EN	8.59	19.80	0	200	200
FA	1.80	12.20	0	208	308
HS	1.95	5.28	0	52	146
HU	3.49	9.61	0	200	768
PS	3.19	7.40	0	100	499
SS	4.31	7.52	0	80	665
OT	3.07	6.10	0	45	449

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences
HU=Humanities PS=Physical Sciences SS=Social Sciences
OT=Other

Table 13

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Discipline

	Mean	Std Dev	Minimum	Maximum	n
BS	.80	1.66	0	18	283
BU	1.86	4.10	0	30	261
ED	2.94	8.07	0	114	301
EN	1.15	3.59	0	45	195
FA	1.35	4.31	0	40	309
HS	.71	1.29	0	8	146
HU	2.01	3.21	0	35	767
PS	.89	2.29	0	25	491
SS	2.21	8.35	0	200	669
OT	1.59	3.18	0	31	449

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences
HU=Humanities PS=Physical Sciences SS=Social Sciences OT=Other

Table 14

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Discipline

	Mean	Std Dev	Minimum	Maximum	n
BS	4.33	6.35	0	70	301
BU	2.69	3.31	0	25	271
ED	3.05	3.95	0	28	312
EN	4.64	5.20	0	28	211
FA	1.37	3.11	0	40	325
HS	2.16	3.14	0	20	153
HU	2.86	3.94	0	50	802
PS	3.53	4.96	0	40	519
SS	3.23	3.88	0	45	691
OT	2.66	3.47	0	35	468

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences
HU=Humanities PS=Physical Sciences SS=Social Sciences
OT=Other

Table 15

Percentage of Faculty Who Received External Research Support by Discipline

BS	BU	ED	EN	FA	HS	HU	PS	SS	OT
21.3% (296)	9.5% (242)	12.6% (269)	22.2% (198)	11.9% (302)	15.8% (139)	8.9% (710)	12.8% (501)	11.1% (633)	13.1% (434)

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences
HU=Humanities PS=Physical Sciences SS=Social Sciences
OT=Other

*The total number of respondents is given in parentheses.

Table 16

Mean No. of Articles in Academic or Professional Journals by Tenure Status

	Mean	Std Dev	Minimum	Maximum	n
Tenured	18.57	28.74	0	380	3041
Non-tenured	5.59	2.09	0	300	1207

Table 17

Mean No. of Articles in Edited Collections or Volumes by Tenure Status

	Mean	Std Dev	Minimum	Maximum	n
Tenured	4.36	10.00	0	208	2857
Non-tenured	1.93	7.21	0	200	1142

Table 18

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Tenure Status

	Mean	Std Dev	Minimum	Maximum	n
Tenured	2.01	5.61	0	200	2875
Non-tenured	.73	2.08	0	25	1119

Table 19

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Tenure Status

	Mean	Std Dev	Minimum	Maximum	n
Tenured	3.24	4.56	0	70	2987
Non-tenured	2.35	3.17	0	40	1187

Table 20

Percentage of Faculty Who Received External Research Support by Tenure Status

Tenured	Non-tenured
13.2% (2719)	10.8% (1109)

*The total number of respondents is given in parentheses.

Table 21

Mean No. of Articles in Academic or Professional Journals by Gender

	Mean	Std Dev	Minimum	Maximum	n
Males	17.93	28.41	0	380	3130
Females	6.31	13.33	0	300	1104

Table 22

Mean No. of Articles in Edited Collections or Volumes by Gender

	Mean	Std Dev	Minimum	Maximum	n
Males	4.27	10.44	0	208	2952
Females	1.93	4.72	0	70	1035

Table 23

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Gender

	Mean	Std Dev	Minimum	Maximum	n
Males	1.81	4.10	0	114	2960
Females	1.00	2.63	0	40	1021

Table 24

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Gender

	Mean	Std Dev	Minimum	Maximum	n
Males	3.31	4.58	0	70	3093
Females	2.07	2.82	0	30	1068

Table 25

Percentage of Faculty Who Received External Research Support by Gender

Males	Females
12.9% (2856)	11.2% (961)

*The total number of respondents is given in parentheses.

Table 26

Mean No. of Articles in Academic or Professional Journals by Hours Spent Per Week on Research and/or Scholarly Activities

Hrs./Wk.	Mean	Std Dev	Minimum	Maximum	n
10 or less	9.31	16.93	0	300	2053
11-20	18.39	22.55	0	205	984
21-30	27.79	37.93	0	380	429
31-40	37.36	45.57	0	320	190
41 or more	36.36	53.30	0	310	98

Table 27

Mean No. of Articles in Edited Collections or Volumes by Hours Spent Per Week on Research and/or Scholarly Activities

Hrs./Wk.	Mean	Std Dev	Minimum	Maximum	n
10 or less	2.42	7.43	0	208	1922
11-20	4.64	9.85	0	200	936
21-30	5.98	9.85	0	70	406
31-40	8.56	18.39	0	200	189
41 or more	7.85	13.67	0	100	94

Table 28

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Hours Spent Per Week on Research and/or Scholarly Activities

Hrs./Wk.	Mean	Std Dev	Minimum	Maximum	n
10 or less	1.31	3.82	0	114	1935
11-20	2.08	3.84	0	40	932
21-30	2.11	3.99	0	32	398
31-40	2.26	4.38	0	45	178
41 or more	2.46	4.55	0	35	92

Table 29

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Hours Spent Per Week on Research and/or Scholarly Activities

Hrs./Wk.	Mean	Std Dev	Minimum	Maximum	n
10 or less	1.87	2.78	0	40	2019
11-20	4.17	4.54	0	50	970
21-30	5.56	5.2[illegible]	0	45	427
31-40	5.92	5.3[illegible]	0	30	187
41 or more	6.46	8.68	0	70	97

Table 30

Percentage of Faculty Who Received External Research Support by Hours Spent Per Week on Research and/or Scholarly Activities

Hrs./Wk.	10 or less	11-20	21-30	31-40	41 or more
	8.7% (1829)	15.9% (900)	20.0% (409)	23.9% (176)	21.5% (93)

*The total number of respondents is given in parentheses.

Table 31

Mean No. of Articles in Academic or Professional Journals by Current Engagement in Scholarly Work

Currently Engaged	Mean	Std Dev	Minimum	Maximum	n
Yes	17.20	27.56	0	380	3518
No	3.72	8.42	0	90	730

Table 32

Mean No. of Articles in Edited Collections or Volumes by Engagement in Scholarly Work

Currently Engaged	Mean	Std Dev	Minimum	Maximum	n
Yes	4.29	10.13	0	208	3306
No	.71	2.13	0	25	693

Table 33

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Engagement in Scholarly Work

Currently Engaged	Mean	Std Dev	Minimum	Maximum	n
Yes	1.89	5.33	0	200	3295
No	.54	1.67	0	20	699

Table 34

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Engagement in Scholarly Work

Currently Engaged	Mean	Std Dev	Minimum	Maximum	n
Yes	[illegible]	4.43	0	70	3467
No	.67	1.08	0	10	707

Table 35

Percentage of Faculty Who Received External Research Support by Engagement in Scholarly Work

Current Engagement	Yes	No
	14.3% (3204)	3.5% (624)

*The total number of respondents is given in parentheses.

Table 36

Mean No. of Articles in Academic or Professional Journals by Receipt of Internal Research Support

Internal Research Support	Mean	Std Dev	Minimum	Maximum	n
Yes	17.16	24.80	0	310	2010
No	11.61	23.31	0	325	1835

Table 37

Mean No. of Articles in Edited Collections or Volumes by Receipt of Internal Research Support

Internal Research Support	Mean	Std Dev	Minimum	Maximum	n
Yes	4.28	9.70	0	208	1892
No	2.58	6.78	0	110	1739

Table 38

Mean No. of Books or Monographs Published or Edited Alone or in Collaboration by Receipt of Internal Research Support

Internal Research Support	Mean	Std Dev	Minimum	Maximum	n
Yes	1.77	3.46	0	40	1883
No	1.48	6.27	0	200	1756

Table 39

Mean No. of Professional Writings Published or Accepted for Publication in the Past Two Years by Receipt of Internal Research Support

Internal Research Support	Mean	Std Dev	Minimum	Maximum	n
Yes	3.83	4.35	0	50	1990
No	2.12	3.92	0	70	1798

Table 40

Percentage of Faculty Who Received External Research Support by Receipt of Internal Research Support

Internal Research Support	Yes	No
	16.8% (1758)	.3% (1882)

*The total number of respondents is given in parentheses.

Table 41

Mean Hours/Week Spent on Research/Scholarly Activity by Institutional Type

	Mean	Std Dev	*Minimum	+Maximum	n
RI	21.49	14.20	1	5	538
RII	18.21	11.21	1	5	553
DI	15.71	11.85	1	5	554
DII	14.17	11.20	1	5	519
CI	10.36	9.18	1	5	478
CII	7.57	7.25	1	5	423
LAI	12.05	11.02	1	5	517
LAII	6.53	7.79	1	5	266

RI=Research I RII=Research II DI=Doctoral I
DII=Doctoral II CI=Comprehensive I CII=Comprehensive II
LA I=Liberal Arts I LA II=Liberal Arts I
* 1=10 or less hours/week + 5=41 or more hours/week

Table 42

Mean Hours/Week Spent on Research/Scholarly Activity by Gender

	Mean	Std Dev	*Minimum	+Maximum	n
Males	14.91	11.89	1	5	2868
Females	11.29	11.49	1	5	969

* 1=10 or less hours/week + 5=41 or more hours/week

Table 43

Mean Hours/Week Spent on Research/Scholarly Activity by Tenure Status

	Mean	Std Dev	*Minimum	+Maximum	n
Tenured	14.20	11.80	1	5	2773
Non-tenured	13.43	12.09	1	5	1075

* 1=10 or less hours/week + 5=41 or more hours/week

Table 44

Mean Hours/Week Spent on Research/Scholarly Activity by Discipline

	Mean	Std Dev	*Minimum	+Maximum	n
BS	19.28	14.62	1	5	290
BU	13.69	10.27	1	5	243
ED	10.25	9.74	1	5	278
EN	16.92	11.10	1	5	200
FA	12.15	10.50	1	5	313
HS	9.88	11.95	1	5	142
HU	12.73	10.88	1	5	748
PS	16.74	13.21	1	5	483
SS	15.84	12.63	1	5	645
OT	11.78	9.87	1	5	425

BS=Biological Sciences BU=Business/Management ED=Education
EN=Engineering FA=Fine Arts HS=Health Sciences HU=Humanities
PS=Physical Sciences SS=Social Sciences OT=Other
* 1=10 or less hours/week + 5=41 or more hours/week

Table 45

Mean Hours/Week Spent on Research/Scholarly Activity by Rank

	Mean	Std Dev	*Minimum	+Maximum	n
Prof	15.12	12.08	1	5	1622
AssoProf	12.83	11.20	1	5	1204
AssiProf	14.35	12.36	1	5	850
Instruc	7.90	8.86	1	5	100

Prof=Professor AssoProf=Associate Professor
AssiProf=Assistant Professor Instruc=Instructor

* 1=10 or less hours/week + 5=41 or more hours/week

Table 46

Mean Hours/Week Spent on Research/Scholarly Activity by Current Engagement

Current Engagement	Mean	Std Dev	*Minimum	+Maximum	n
Yes	15.39	11.99	1	5	3354
No	4.46	4.59	1	4	494

* 1=10 or less hours/week + 4=31-40 hours/week
+ 5=41 or more hours/week

Table 47

Mean Hours/Week Spent on Research/Scholarly Activity by Receipt of Internal Research Support

Internal Support	Mean	Std Dev	*Minimum	+Maximum	n
Yes	16.44	12.36	1	5	1941
No	10.98	10.53	1	5	1574

* 1=10 or less hours/week + 5=41 or more hours/week

Table 48

Percentage of Faculty Currently Engaged in Scholarly Activities by Institutional Type

Research I	95.9%	(562)
Research II	93.3%	(598)
Doctoral I	90.6%	(607)
Doctoral II	86.8%	(583)
Comprehensive I	75.8%	(554)
Comprehensive II	65.3%	(516)
Liberal Arts I	82.1%	(592)
Liberal Arts II	58.4%	(368)

*The total number of respondents is given in parentheses.

Table 49

Percentage of Faculty Currently Engaged in Scholarly Activities by Gender

Male	84.4%	(3212)
Female	77.3%	(1151)

*The total number of respondents is given in parentheses.

Table 50

Percentage of Faculty Currently Engaged in Scholarly Activities by Tenure Status

Tenured	83.0%	(3134)
Non-tenured	81.0%	(1246)

*The total number of respondents is given in parentheses.

Table 51

Percentage of Faculty Currently Engaged in Scholarly Activities by Discipline

Biological Sciences	86.8%	(311)
Business/Management	77.4%	(283)
Education	76.6%	(325)
Engineering	88.9%	(216)
Fine Arts	89.4%	(378)
Health Sciences	84.6%	(162)
Humanities	83.5%	(838)
Physical Sciences	79.5%	(533)
Social Sciences	90.1%	(707)
Other	76.3%	(497)

*The total number of respondents is given in parentheses.

Table 52

Percentage of Faculty Currently Engaged in Scholarly Activities by Rank

Professor	84.8%	(1818)
Associate Professor	82.7%	(1355)
Assistant Professor	83.2%	(968)
Instructor	58.5%	(142)

*The total number of respondents is given in parentheses.

Table 53

Percentage of Faculty Currently Engaged in Scholarly Activities by Hours per Week Spent on Research/Scholarly Activities

10 or Less Hours per Week	78.0%	(2109)
11-20 Hours per Week	97.3%	(1010)
21-30 Hours per Week	99.3%	(437)
31-40 Hours per Week	99.5%	(194)
41 or More Hours per Week	100.0%	(98)

*Total number of respondents is given in parentheses.

Table 54

Percentage of Faculty Currently Engaged in Scholarly Activities by Receipt of Internal Research Support

Internal Research Support	95.2%	(2052)
No Internal Research Support	71.6%	(1895)

*The total number of respondents is given in parentheses.

Table 55

Percentage of Faculty Who Received Internal Research Support by Institutional Type

Research I	58.6%	(502)
Research II	61.3%	(530)
Doctoral I	57.1%	(559)
Doctoral II	52.8%	(527)
Comprehensive I	43.6%	(505)
Comprehensive II	38.5%	(460)
Liberal Arts I	60.4%	(545)
Liberal Arts II	34.5%	(319)

*The total number of respondents is given in parentheses.

Table 56

Percentage of Faculty Who Received Internal Research Support by Gender

Male	53.5%	(2899)
Female	48.1%	(1035)

*The total number of respondents is given in parentheses.

Table 57

Percentage of Faculty Who Received Internal Research Support by Tenure Status

Tenured	51.2%	(2800)
Non-tenured	53.8%	(1147)

*The total number of respondents is given in parentheses.

Table 58

Percentage of Faculty by Discipline Who Received Internal Research Support

Biological Science	70.5%	(285)
Business/Management	46.9%	(254)
Education	40.3%	(283)
Engineering	53.6%	(183)
Fine Arts	55.2%	(335)
Health Sciences	49.7%	(145)
Humanities	49.7%	(767)
Physical Sciences	50.2%	(490)
Social Sciences	59.9%	(654)
Other	48.0%	(442)

*The total number of respondents is given in parentheses.

Table 59

Percentage of Faculty Who Received Internal Research Support by Rank

Professor	53.7%	(1619)
Associate Professor	49.7%	(1220)
Assistant Professor	56.5%	(894)
Instructor	35.2%	(125)

*The total number of respondents is given in parentheses.

Table 60

Percentage of Faculty Who Received Internal Research Support by Current Engagement

Currently Engaged	59.0%	(3310)
Not Currently Engaged	15.4%	(637)

*The total number of respondents is given in parentheses.

Table 61

Percentage of Faculty Who Received Internal Research Support by Hours per Week Spent on Research/Scholarly Activities

10 or Less Hours per Week	45.6%	(1923)
11-20 Hours per Week	64.7%	(930)
21-30 Hours per Week	67.0%	(397)
31-40 Hours per Week	72.8%	(173)
41 or More Hours per Week	77.2%	(92)

*The total number of respondents is given in parentheses.

Table 62

Multiple Regression Summary Table: Articles Published in Academic or Professional Journals

Predictors	Multiple R	Rsq	F(Eqn)	SigF
Rank	.3588	.1288	486.948	.000
Hrs./Wk.	.4631	.2145	449.768	.000
Carnegie	.5018	.2518	369.323	.000
Engagement	.5047	.2547	281.252	.000
Gender	.5070	.2570	227.680	.000
Discipline	.5084	.2584	191.091	.000
Tenure Status	.5090	.2591	164.275	.000

Table 63

Multiple Regression Summary Table: Articles in Edited Collections or Volumes

Predictors	Multiple R	Rsq	F(Eqn)	SigF
Rank	.1914	.0366	118.670	.000
Hrs./Wk.	.2543	.0647	107.858	.000
Carnegie	.2746	.0754	84.776	.000
Engagement	.2818	.0794	67.215	.000
Tenure Status	.2847	.0811	54.993	.000

Table 64

Multiple Regression Summary Table: Books or Monographs Published or Edited Alone or in Collaboration

Predictors	Multiple R	Rsq	F(Eqn)	SigF
Rank	.2085	.0435	141.667	.000
Carnegie	.2331	.0543	89.487	.000
Engagement	.2443	.0597	65.920	.000

Table 65

Multiple Regression Summary Table: Professional Writings Published or Accepted for Publication in the Past Two Years

Predictors	Multiple R	Rsq	F(Eqn)	SigF
Hrs./Wk.	.3366	.1133	415.953	.000
Carnegie	.3842	.1476	281.882	.000
Engagement	.4059	.1647	213.893	.000
Rank	.4229	.1789	177.169	.000
Internal Support	.4277	.1830	145.651	.000
Tenure Status	.4287	.1838	122.034	.000

Table 66

Multiple Regression Summary Table: Receipt of External Research Support

Predictors	Multiple R	Rsq	F(Eqn)	SigF
Internal Support	.2847	.0810	273.415	.000
Hrs./Wk.	.2952	.0871	147.914	.000
Rank	.2990	.0894	101.400	.000
Discipline	.3019	.0911	77.652	.000
Carnegie	.3036	.0921	62.869	.000
Tenure Status	.3051	.0931	52.950	.000