# Variables Influencing Time Spent in Research of Human Resource Education and Development Faculty Members

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*This study sought to determine variables that influence HRED postsecondary faculty to spend more time in research than fellow HRED postsecondary faculty. Reviewing theory and literature led to the design and evaluation of a mediated model investigating the influence of environmental variables (control variables), perceived organizational priorities (independent variables), and personal interest/abilities (mediating variable) on the amount of time spent in research.*

Keywords: Time Spent in Research, HRED Postsecondary Faculty, Mediated Model

Numerous institutions' promotion and tenure systems as well as reward systems are based on research, teaching and service (Kotrlik et al., 2002; & Read, Rae, & Raghunandan, 1998). In the past, the type of institution was the determining factor as to how weights per factor were distributed; however, a trend toward greater emphasis on research across all types of institutions has arisen and increased over time ( Seldin, 1984). Evidence of this trend is supported by research from Perry, Clifton, Menec, Struthers, and Menges (2000) who stated that Liberal arts colleges are pushing faculty members to produce more to ensure promotion and tenure. Additionally, Henthorne, LaTour, and Loraas (1998) reported many "teaching oriented" schools are requiring publications in refereed journals for tenure and promotion; while McNurlen and West (2000) reported findings from several studies that research productivity was valued over the quality of teaching and service.

Aside from the duties of establishing promotion, tenure and reward structures, institutions are also faced with the challenge of upholding their ranking, establishing their prestige, and improving their economic status (Blackburn et al., 1991; Ohio State Legislative Office of Education Oversight, 1993). Blackburn et al. (1991) stated that it is hoped that the increase in significance placed upon research productivity will enhance an institution's reputation and economic status. Perry et al. (2000) reported findings from a study by Boyer (1990) that research activity is increasingly viewed "as a key element in status attainment of postsecondary institutions" (p. 167).

Creamer (1998) addressed these issues in stating, "faculty publishing and productivity are often used as an index of departmental and institutional prestige" (p. 1). While Henthorne et al. (1998) also discussed institutional rank and performance stating that bench marking of an institution's research productivity allows demonstration of that institution's ranking and performance. DeMeuse (1987) reported program quality is commonly judged by the productivity of its faculty members. And Olsen (1994) reported that increases in productivity lead to high prestige for the university and the student alike.

Porter and Umbach (2000) reported that institutions are concerned with increasing teaching loads due to a potential loss in grant revenue. Grant revenue is an important source of an institution's budget; therefore, research derived from funding is an important factor for an institution to consider. The Ohio State Legislative Offices of Education Oversight (1993) report stated that public institutions receive state funding based on enrollment and in order to maintain enrollment, institutions must attract and retain students. An institution's prestige, that is, the presence of known faculty members (for their research), higher quality graduate programs, and exceptional departments are more likely to attract quality students, and therefore maintain adequate state funding.

Just as an individuals and institutions are assessed based on their research output, so is a discipline (Henthorne et al., 1998). Disciplines build and disseminate knowledge through productivity of research (Dundar & Lewis, 1998). Faculty members may stay current in their discipline through conducting research (Ohio State Legislative Office of Education Oversight, 1993). Progress of newly formed disciplines is also judged through evaluation of a discipline's research productivity (Williams, 2000). This calls attention to the faculty members within that discipline who are not only participating in its development, but also instructing those who will further develop the discipline in years to come. Research also serves to provide progress toward an understanding of phenomena within the discipline.

**Problem Statement**

Research productivity has been viewed as a valuable entity reaching as far back in postsecondary history as the early 1910's (Cattell, 1910). Due to the value postsecondary institutions place on research productivity, the ongoing growth of the HRD discipline, and the paucity of research on factors explaining time spent in research by HRED faculty members, a need exists to investigate what drives an HRED postsecondary faculty member to spend time in research (Bailey, 1992; & Liddle, Westergreen, & Duke, 1997). This study will complete this investigation through the use of past research on faculty members' research productivity and two National Center for Educational Statistics (NCES) data sets (National Study of Postsecondary Faculty Studies, 1992-93 and 1998-99).

**Background**

Numerous research efforts have been conducted in related disciplines addressing faculty research productivity. Resulting from these studies is a key set of variables that have been shown to be related to research productivity including institutional support, funding, teaching load and level, time spent, faculty opinion of the environment, interest in research and characteristics of the research environment.

"Institutions play a significant role in determining both individual and departmental productivity" (Dundar & Lewis, 1998, p. 613). Institutional support has been measured as the number of teaching/research assistants assigned to a faculty member, the hours of assignment, the ratio of such hours allocated per faculty member, institutional and departmental support for research, administrative support, quality of computing facilities, size of libraries, and funding. The variable funding was found to be of major importance in a study by Snyder, McLaughlin, & Montgomery (1990). They stated that in order to have successful research faculty members, research activities must be properly funded. Teodorescu (2000) found the amount of research funds received in the past three years to be an important correlate in the majority of countries in his study. Dundar & Lewis (1998) also found that financial support was highly correlated to productivity.

The type of institution has been reported to be correlated to research productivity (Bailey, 1992). Radhakrishna et al. (1994) reported previous research determined that faculty members in major research institutions published more than faculty members at four-year colleges. Bailey (1992) found an increase in research productivity from Liberal Arts II Colleges through Research I Universities. Related to type of institution, Bland and Ruffin (1992) found several characteristics of one's environment to be associated with research productivity including clear goals, research emphasis, culture, positive group climate, assertive participative governance, decentralized organization, frequent communication, accessible resources, sufficient size, age and diversity of the research groups, appropriate rewards, concentration on recruitment and selection, leadership with research expertise, and skill in initiating appropriate organizational structure and participatory management practices.

Noser et al., (1996) investigated teaching loads and teaching level. Teaching load and teaching level were found to be significantly related to research output. Faculty members with lower teaching loads and those who taught primarily at the graduate level demonstrated the highest mean research scores. Butler & Cantrell (1989) found that the valance of a reduced teaching load was positively related to research production.

Choices faculty members make about how they spend their time may affect productivity (Cohen & Gutek, 1991). Faculty members' time can be spent or allocated for numerous duties: teaching, research, service, committee work, editing, advising, and administration. A report conducted by Oklahoma State Regents for Higher Education (1993) stated faculty members felt they spent too much time in administrative roles and not enough time in personal development activities.

Williams et al. (2001) found teaching, research, service and administrative time percentages explained a significant proportion of the variance found in research productivity. Bailey (1992) found an increase in research productivity was supported by amount of time spent on research activities. Liddle et al. (1997) studied operalization of time spent in relation to publication productivity, and their study found time spent in research activities, time spent advising, and total hours worked significantly correlated with increased production of research, with the majority (78%) indicating they would prefer to spend more time in research. Teodorescu (2000) found time spent on research significantly affected productivity in four countries including the United States. Conversely, Kotrlik et al. (2001) and Bartlett et al. (2001) found that time allocated to research did not significantly explain research productivity.

Faculty opinion may influence productivity whether it is an opinion of job satisfaction, research/training environment, funding adequacy, or freedom to collaborate. DeMeuse (1987) found a strong relation between subjective opinions of program quality and the number of articles that a university published using Journal of Applied Psychology articles. Blackburn et al. (1991) reported characteristics of employing institution were not

related to research productivity. Additionally, Williams et al. (2001) found organizational culture/support for research did not explain a significant proportion of the variance in research productivity.

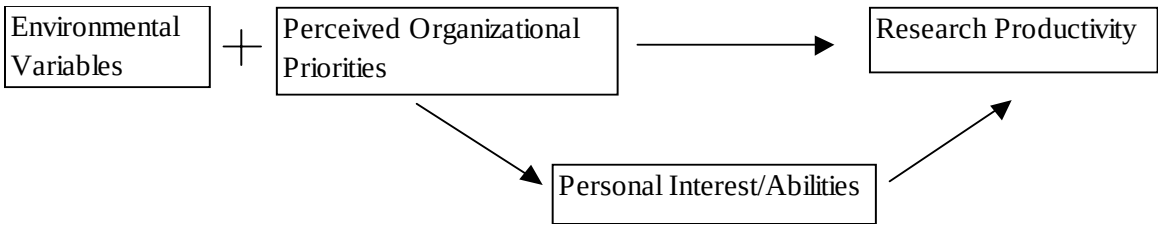
Lastly, interest in research has also been investigated. Blackburn et al. (1991) found this variable did not predict productivity. However, Behymer (1974) found research interest to be the best predictor of research productivity and Gottlieb et al. (1994) found personal preferences predicted productivity. Ramsden (1994) found early interest in research to be correlated with research performance. Noser et al. (1996) found attitude toward research to be related to research productivity.

**Theoretical Framework**

Cognitive motivation theory was utilized as the theoretical framework for this research effort which allowed the investigation of both individual and institutional factors to be considered as potential drivers or motivational antecedents to the time spent in research by faculty members. Campbell's (1990) discussion workplace performance, Staw's (1984) discussion of work motivation theory, and Thierry's (1998) and Bandura's (1977) discussions of the individualist nature of educational environments were referenced and utilized to develop a HRED Faculty Research Productivity Model - where research productivity is operationalized as time spent in research.

The HRED Faculty Research Productivity Model is a mediated model constructed for the purpose of identifying factors driving HRED faculty to spend time in research in which environmental variables are controlled, perceptions of organizational priorities are considered motivational antecedents, and personal interest/abilities are assumed to mediate the relationship between the motivational antecedents and the time spent in research by HRED faculty members. The model is presented in Figure 1.

*Figure 1. HRED Faculty Research Productivity Model*




**Purpose and Objectives**

The purpose of this research effort is to investigate what drives an HRED postsecondary faculty member to spend more time in research than other HRED faculty members. The objectives of this research effort are to 1) describe HRED faculty members on selected demographic/professional variables; 2) describe differences in faculty members' actual time spent verses their preferred time spent teaching, at research, on professional growth, at administration, on service activity, and on consulting; and 3) determine if selected variables explain a significant proportion of the variance in the amount of time spent in research of HRED faculty members.

**Methodology**

The National Center for Education Statistics (NCES) conducted three national studies of post-secondary faculty in the years 1988-89, 1992-93, and 1998-99. The database from the 1988-89 study was not used in this study because the instrumentation and data collection procedures were modified significantly after the 1988-89 study; therefore, only the data from the 1992-93 and 1998-99 databases were utilized. Since no significant difference existed between the time spent in research by the faculty in the two datasets ($t$=1.01, df=289, $p$=.32), the procedures presented below will be based on the combined data set (i.e., both the 1992-93 and 1998-99).

*Population and Sample*

The target population and frame for this study was all HRED full-time and part-time instructional and research faculty in colleges and universities across the United States who possessed academic and/or research responsibilities during the 1992-93 and 1998-99 school years. The sample consisted of 155 HRED faculty members (49 HRD, 59 Adult Education (AE), and 47 Organizational Behavior (OB) faculty members) for the 1992-93 survey, and 136 HRED faculty members (31 HRD, 53 AE, and 52 OB faculty members) for the 1998-99 survey for a total sample

size of 291. It should be noted that of the 291 total sample size, duplication of respondents might have occurred from the 1992-93 and 1998-99 surveys. This information was not available from NCES to determine the possibility of duplication. However, due to the randomness of the sample selection procedure and the large pool in the HRED target population and frame, it was assumed duplication of respondents was not a substantial concern.

*Representativeness of Population*

To determine if this sample was representative of the population and to control for non-response error, research productivity scores were compared by sample response mode (mail versus phone follow-up) as recommended by Borg (1987) and Miller and Smith (1983) utilizing *t*-test procedures with an *alpha* level set a' priori at 0.05. The results of the *t*-test ($t$=1.35, df=251, $p$=.16) revealed that no significant difference existed in the time spent in research between the mail and phone respondents, and it was concluded that the sample was representative of the population.

*Instrumentation*

Face and content validity of the instrument were evaluated by NCES in the design of their study. NCES claimed that the instrument possessed face and content validity. To verify the face and content validity of the instrument, a panel of experts consisting of 40 HRED faculty members from across the nation were asked to review the questions and instructions. These individuals were selected on the basis that they had participated in research efforts utilizing survey research and would therefore possess an understanding of the concepts of validity as it applies to HRED faculty research productivity. The panel determined that the instrument possessed face and content validity, which supported the validity claimed by NCES.

To investigate reliability of the instrument, an internal consistency coefficient was calculated for the faculty opinion of institutional research resources scale (the only scale used in this study). Cronbach's *alpha* of .72 was calculated as recommended by Carmines and Zeller (1979). According to Robinson, Shaver & Wrightman's Standards of Reliability (1991), this scale possessed extensive reliability, which supported the reliability findings by NCES in which it was reported that all variables had acceptable reliability based on test-retest procedures.

*Data Analysis*

Descriptive statistics were used to describe the demographic and professional variables, and time spent data. A mediated hierarchal regression analysis was used to determine if selected variables explained a significant proportion of the variance in the time spent in research of HRED postsecondary faculty members. Regression assumptions and influential observations were evaluated. Assumptions and tests conducted were based on research by Hair et al. (1994) and Bates, Holton, and Burnett (1999).

To perform mediated hierarchical regression, the *alpha* level was set a' priori at 0.05 with an entry level of 0.05. The recommended ratio of observations per variable (10:1) was adhered to (Hair et al., 1994). $R^2$ was presented to represent effect size and was interpreted using the descriptors by Cohen (1988). Four steps were conducted to determine if mediation existed and if mediation was partial or full based on hierarchal regression procedures reported by Hair et al. (1994), Bates and Khasawneh (2002), and Baron and Kenny (1986).

## Findings

*Objective 1: Describe HRED faculty members on selected demographic/professional variables.* Gender was divided approximately evenly among males (49.8%) and females (50.2%). The number of teaching assistants ranged from 0 to 9. Less than one-fourth (14.4%) of the respondents received research funding of some type (mainly from their institution). Tenure was possessed by 25.4% of respondents, while 14.4% were on tenure track. The most common principal activity reported was teaching (79%), followed by research (5.2%). Approximately half (48.8%) of the respondents were engaged in research, writing, and/or creative works, mainly applied research.

*Objective 2: Describe differences in faculty members' actual time spent verses their preferred time spent teaching, at research, on professional growth, at administration, on service activity, and on consulting.* HRED respondents reported preferring to spend less time teaching and in administrative duties, and more time in research and professional growth; however, time spent teaching demonstrates only statistical significance and not practical significance as seen by the negligible Cohen's *d* value (.12), while other differences between preference and actual time spent in administration, research and professional growth demonstrate practical significance (Table 1).

Table 1. *Time Spent Descriptive Statistics and Comparisons of HRED Respondents*

| Time spent | Actual | | Preferred | | Comparison | | | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *df* | *p* | *Cohen's d*[a] |
| Teaching | 53.49 | 32.79 | 51.36 | 29.90 | 2.01 | 290 | .046 | .12 |
| Administration | 14.97 | 25.70 | 10.15 | 20.28 | 6.35 | 290 | <.001 | .37 |
| Research | 10.88 | 15.88 | 15.53 | 18.53 | -7.88 | 290 | <.001 | .46 |
| Consulting | 8.87 | 21.02 | 8.78 | 18.56 | .17 | 290 | .865 | NA |
| Service activity | 5.87 | 12.26 | 5.96 | 12.36 | -.15 | 290 | .883 | NA |
| Professional growth | 5.24 | 8.44 | 7.55 | 8.43 | -4.72 | 290 | <.001 | .28 |

[a]*Cohen's d* descriptors: large effect size=.80, medium effect size=.50, small effect size=.20.

*Objective 3: Determine if selected variables explain a significant proportion of the variance in the amount of time spent in research of HRED faculty members.* Following the evaluation of the regression assumptions and influential observations, 13 cases were removed due to the presence of outliers. Removing these cases reduced the TSR data set to 278 cases or respondents. Once these cases were removed, regression assumptions were again evaluated and no violation of assumptions was present. Also, the condition of multicollinearity was not present. Once the TSR overall data set was corrected, descriptive statistics of model variables were calculated. Tables 2 and 3 present the descriptive statistics for the TRS overall data set.

Table 2. *Descriptive Statistics for Interval Model Variables*

| Variable | Minimum | Maximum | *M* | *SD* |
|---|---|---|---|---|
| Percent of time spent in research | 0 | 59 | 9.78 | 13.56 |
| Percent of time spent teaching | 0 | 100 | 53.82 | 32.73 |
| Age | 25 | 77 | 48.74 | 10.31 |
| Research is rewarded more than teaching at this institution | 1 | 4 | 2.30 | 1.06 |
| Research should be promotion criteria at this institution | 1 | 4 | 2.03 | .83 |
| Institutional research support scale | 1 | 5 | 2.99 | .86 |
| Percent of time preferred to be spent in research | 0 | 70 | 13.94 | 16.54 |

Note. *N*=278.

Table 3. *Descriptive Statistics for Categorical Model Variables*

| Variable | Frequency | Percent |
|---|---|---|
| **Carnegie rank**[a] | | |
| High rank | 158 | 56.8 |
| Low rank | 120 | 43.2 |
| **Total** | 278 | 100.0 |
| **Presence of institutional funding** | | |
| Funding present | 25 | 9.0 |
| Funding not present | 253 | 91.0 |
| **Total** | 278 | 100.0 |

The evaluation of the HRED Faculty Research Productivity Model utilizing TSR as the dependent variable is broken down into the four steps of testing a mediated model. The results of each step follow with "C" representing the control variable, "X" representing the independent variables, "Z" representing the mediating variable, and "Y" representing the dependent variable. Step 1 (C+X=Y) produced a statistically significant model ($p$=.000), $R^2$=.330; Step 2 (C+Z=Y) produced a statistically significant model ($p$<.000), $R^2$=.786; and Step 3 (C+X=Z) produced a statistically significant model ($p$<.000), $R^2$=.289. Due to the significance of the models in Steps 1 through 3, Step 4 (C+Z+X=Y) was conducted and produced a statistically significant model ($p$=.009), $R^2$=.794. See Table 4 for the Model Summary, Table 5 for variables that entered into each step of the equation, and Table 6 for Step 4's correlation matrix.

Table 4. *Time Spent in Research Model Summary*

| Model | $R^2$ | SE | *df* | *p* | Effect Size[a] |
|---|---|---|---|---|---|
| Step 1: C+X=Y | .330 | 11.38 | 258 | <.001 | Large |
| Step 2: C+Z=Y | .786 | 6.32 | 273 | <.001 | Large |
| Step 3: C+X=Z | .289 | 15.26 | 258 | <.001 | Large |
| Step 4: C+Z+X=Y | .794 | 6.33 | 257 | .009 | Large |

[a]Effect sizes interpreted accords to the standards proposed by Cohen (1988).

Table 5. *Time Spent in Research Steps 1, 2, 3, and 4 Standardized Betas*

| Variables | Standardized betas | | | |
|---|---|---|---|---|
| | Step 1 (C+X=Y) | Step 2 (C+Z=Y) | Step 3 (C+X=Z) | Step 4 C+Z+X=Y) |
| Percent of time spent teaching | -.10 | -.08* | -.03 | -.08* |
| Age of respondent | -.05 | -.01 | -.05 | -.01 |
| Low rank | -.20* | -.03 | -.24* | -.01 |
| Funding not present | -.17* | NA | -.14* | -.06 |
| Research should be primary promotion | .28* | NA | .26* | .07* |
| Research is rewarded more than teaching | .17* | NA | .14* | .05 |
| Opinion of institutional research resources | -.14* | NA | -.13* | -.04 |
| Preferred amount of time spent in research | NA | .86* | NA | .81* |

Note. "NA" represents not applicable, i.e., that variable was not entered into that step.
*$p$<.05.

Table 6. *Time Spent in Research Step 4 Mediated Model Correlation Matrix*

| Variable | 1 | 2 | 3 | 4 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 1 - Percent of time in research | – | – | – | – | – | – | – | – | – |
| 2 - Percent of time in teaching | -.212* | – | – | – | – | – | – | – | – |
| 3 - Age | -.103* | .036 | – | – | – | – | – | – | – |
| 4 - Low rank | -.383* | .236* | .061 | – | – | – | – | – | – |
| 6 - Percent preferred in research | .880* | -.145* | -.102* | -.389* | – | – | – | – | – |
| 7 - Research should be promotion criteria | .357* | -.091 | -.144* | -.161* | .334* | – | – | – | – |
| 8 - Research rewarded more than teaching | .345* | -.112* | .059 | -.395* | .320* | .223* | – | – | – |
| 9 - Institutional research support | -.165* | .024 | .063 | .077 | -.149* | .078 | .032 | – | – |
| 10 - Funding not present | -.279* | .085 | .008 | .199* | -.244* | -.020 | -.201* | .175* | – |

*$p$<.05.

**Conclusions**

HRED faculty members' preferences concerning how their time is spent differed from how they actually spent their time in teaching, research, professional growth and administration. Throughout the sample, HRED faculty members preferred to spend more time in research and professional growth, and less time in administration.

The blocks of variables - environmental, perceived organizational priorities, and personal interest/abilities - are significant predictors of time spent in research suggesting the existence of a mediated relationship. A partially mediated relationship exists, indicating that after controlling for personal interests/abilities, the significant relationship between the independent variables (perception of organizational priorities) and the dependent variable, time spent in research, was not reduced to nonsignificance.

The HRED Faculty Research Productivity Model was proposed as a mediated model based on cognitive theory. This model received support by the analyses conducted in this study. HRED faculty members processed multiple factors including their environment and organizational priorities and their self (interests/abilities), storing this information and producing some outcome, action or behavior, i.e., the amount of time spent in research. Research by Thierry (1998) and Bandura (1977) is supported by this model. In this HRED Faculty Research Productivity Model, the faculty member's perception of organizational priorities and personal interest/abilities significantly affect the amount of time spent in research. Organizational priorities may represent incentives or component capabilities as stated by Bandura (1977) that are encouraging individuals to spend more time in research. Staw (1984) states that for variables to influence productivity in a postsecondary educational environment, they must be of value to the faculty members and governed by the norms of self rather than controlled by the system.

HRED faculty with higher personal interests/abilities in research spends more time in research. This variable may represent performance accomplishments (Bandura, 1977) or internal focus on an individual (Staw, 1984). The moderate to very strong positive correlations between this variable and the dependent variables highlights the significance of preferred percent of time spent in research as a mediating variable across all dependent variables. Preferred time spent in research is a surrogate variable to represent the individual's perception of his or her research interests, skills and abilities. Therefore, a HRED faculty member's perception of their personal interests/abilities in research is a crucial factor to their success in research productivity.

Additionally, significant beta weights demonstrate the relative importance of percent of time spent teaching, research should be the primary promotional criteria, research is rewarded more than teaching, and preferred amount of time spent in research. The most influential variable in the model was preferred time spent in research, which again supports the value of personal interests and abilities in research driving time spent in research. The remaining three variables with significant betas demonstrate the value of an organization's priorities on research and how the faculty perceives these; e.g., as time spent teaching increases, time spent in research decreases; and as research is rewarded more than teaching and used as a primary promotional criterion, time spent in research increases.

**Recommendations and Contribution To New Knowledge In HRD**

If it is the goal of an institution to increase the time its HRED faculty spends in research, it is recommended that the institution should review its time allocation policies, clarify and communicate their perspective on research, and recruit or build individuals with interests in research. Institutions can reduce time spent in administrative duties and teaching, while increasing time spent in research and professional growth. Professional growth programs can include mentorship, workshops, or conferences specifically designed to build research capabilities and interests. These programs can also assist faculty in furthering their capabilities to carry out research in areas of interest by providing funding and placing research as a priority in promotion and tenure. Additionally, evaluation of and recognition of the preferences of faculty's time spent in various activities by administrators could allow for more appropriate allocation of duties possibly creating a faculty that is more productive in all areas of faculty responsibility.

Further, institutions with this goal can design hiring structures to select individuals who have personal interests and abilities in research. This may be accomplished by combining advertisement of research as primary promotional criteria and as the primary factor of the reward structure, and selection based on past publication and presentation records. If the applicant is a recent graduate, his or her previous research productivity (publications and presentations), advisor's research productivity and the department's scholarly output of their academic origin can be evaluated (Williamson and Cable, 2003).

Lastly, this model presents a starting point for institutions housing HRED faculty who desire to increase their faculty member's time spent in research. Also, this is the first model of its kind in HRD addressing HRED faculty productivity and therefore, it serves as a bridge between traditional management productivity literature and postsecondary productivity literature.

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