Snapshot of Pharmacy Faculty Quality of Work Life and Productivity

Mark H. Conklin
Shane P. Desselle

ABSTRACT. While much has been written about various aspects of pharmacy faculty quality of work life and productivity, there have been very few empiric investigations into these related phenomena. The purpose of this study was to provide an initial examination into a broad range of quality of work life and related issues among pharmacy faculty and compare their perceptions across a number of individual and institutional characteristics. A self-administered, anonymous survey was e-mailed to pharmacy faculty with a valid e-mail address listed by the American Association of Colleges of Pharmacy in 2005. The survey elicited responses on various single and multi-item measures of productivity, quality of work life, and demographic variables. Responding faculty reported only modest levels of commitment, satisfaction, and support, with relatively high consensus among department colleagues on a number of teaching and research issues. Faculty indicated areas of teaching and research in which they currently have the lowest confidence to execute. Much of the research productivity appeared to be generated by a relative minority of faculty. The results underscore the need for formal-

doi:10.1300/J060v14n01_05

ized mentoring programs, particularly for females and pharmacy practice faculty. doi:10.1300/J060v14n01_05 *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www. HaworthPress. com> © 2007 by The Haworth Press, Inc. All rights reserved.]*

INTRODUCTION

A number of trends are reshaping the work environment of academicians in higher education. For one, academic disciplines have become increasingly differentiated, resulting in some debate as to whether general knowledge and standards of intellectual excellence among the professoriate has declined (1). For better or worse, the proliferation of academic disciplines has facilitated a focus among faculty primarily on scholarship, as opposed to teaching, in spite of the increasing number of courses and majors from which students may now select (1). Thus, many college students are not receiving the same liberal education, grounded in arts and sciences, as their predecessors (2).

The differentiation of faculty has ushered heightened expectations. In the face of tighter budgets, faculty are expected to bring in large sums of extramural monies to support the institution's mission and compete for increasingly important widely published rankings of universities and colleges, all while these institutions are being held more accountable for teaching outcomes (3). One result has been a diminished quality of work life and an erosion of faculty autonomy in an academic culture wherein students are viewed as "customers" in the "corporatization" of higher education (4).

Pharmacy education may not be immune from these trends. In fact, shortages in the supply of pharmacy faculty (5) may even further exacerbate role overload (6). Moreover, there is concern over the challenges faced by colleges/schools of pharmacy to meet stricter and more prescriptive accreditation guidelines promulgated by the American Council for Pharmacy Education (ACPE), which mandate an increase in the required number of experiential training hours among students, thus requiring institutions to increase hires of pharmacy practice faculty and to expand and diversify experiential clerkship sites (7).

Much has been reported about the current state of affairs in pharmacy education. The American Association of Colleges of Pharmacy (AACP) has published a number of issue briefs and has commissioned a number of useful White Papers on topics ranging from scholarship, to faculty retention, to faculty development and mentoring. There has been relatively little attention by researchers, however, afforded to empirical examination of faculty quality of work life and productivity. Grillo and Latif[8] proffered that job satisfaction of junior pharmacy faculty was predicated around the fulfillment of their roles in teaching, scholarship, and service. Nair and Gaither (8) undertook a more comprehensive examination of the number of hours worked by pharmacy faculty at one institution and uncovered a relatively high degree of work-home conflict. More recently, Carter et al (9) examined turnover among faculty by discipline and gender, while Conklin and Desselle (10) advanced a model of faculty turnover intentions, based upon various situational phenomena.

STUDY PURPOSE

The purpose of this study was to provide a initial examination into a broad range of quality of work life and related issues among pharmacy faculty; that is, to obtain a "snapshot" of pharmacy faculty members' job satisfaction and employment intentions, as well as describe their organizational commitment, stress on the job, perceived support from administrators, consensus with department colleagues on teaching and research issues, their self-efficacy for teaching and research, teaching effectiveness, research productivity, and the time they currently spend and would ideally like to spend in performing various roles. The study also compared these academicians' perceptions across a number of individual (gender, race/ethnicity, discipline, academic rank, salary, type of appointment) and institutional (public/private, size of enrollment) characteristics.

METHODS

Sample Population

The target population was pharmacy faculty comprising the 4,228 persons with a valid e-mail address acquired from the 2004/2005 Amer-

ican Association of Colleges of Pharmacy Roster of Faculty and Professional Staff (AACP Roster) (11).

Mail Survey Project

A self-administered, anonymous survey hosted by SurveyMonkey was e-mailed to the target population. Study procedures received exempt status from the University's Institutional Review Board. As recommended by Dillman (12), this was preceded by an initial email during the last week of August 2005, notifying the target population of the impending survey. Approximately two weeks later, a brief cover letter and link to access the survey was emailed to each recipient. Reminder emails to non-responders with a link to access the survey were sent approximately 3 and 6 weeks later.

Operational Definitions of Study Variables

This study was part of a larger project evaluating multivariate relationships among various quality of work life variables. A comprehensive examination of the literature uncovered in searches of International Pharmaceutical Abstracts, ERIC, PsycINFO, Social Sciences Index, CINAHL (nursing faculty literature), and Medline (medical faculty literature) assisted in the development of a draft model (Figure 1) used to guide various phases of the project, but not empirically tested in total.

Many of the measures used in this study were taken directly or slightly modified from previously validated and widely reported instrumentation. The investigators believed it important to use the same number of intervals (points) on any of these scales. In contrast, some measures were created (e.g., job satisfaction) were developed by the investigators. The end result is the use of varied instruments, some of which with varied numbers of intervals (i.e., 5-point, 6-point, and other types of scales).

Job satisfaction was measured on a 6-point scale with 24 items comprising six, unique domains.[a] *Future employment intentions* were measured using a single-item question requesting that respondents indicate their intention to stay at their current institution, leave their current institution, or leave academia altogether within the next two years (10). The predictive validity of similar single-item measures for turnover intentions has been established (13). *Organizational commitment* was measured using a 14-item, 5-point scale of agreement adapted from Porter, et al (14), only changing "organization" to "institution" in the items.

FIGURE 1. Pharmacy Faculty Quality of Work Life Model (hypothesized).
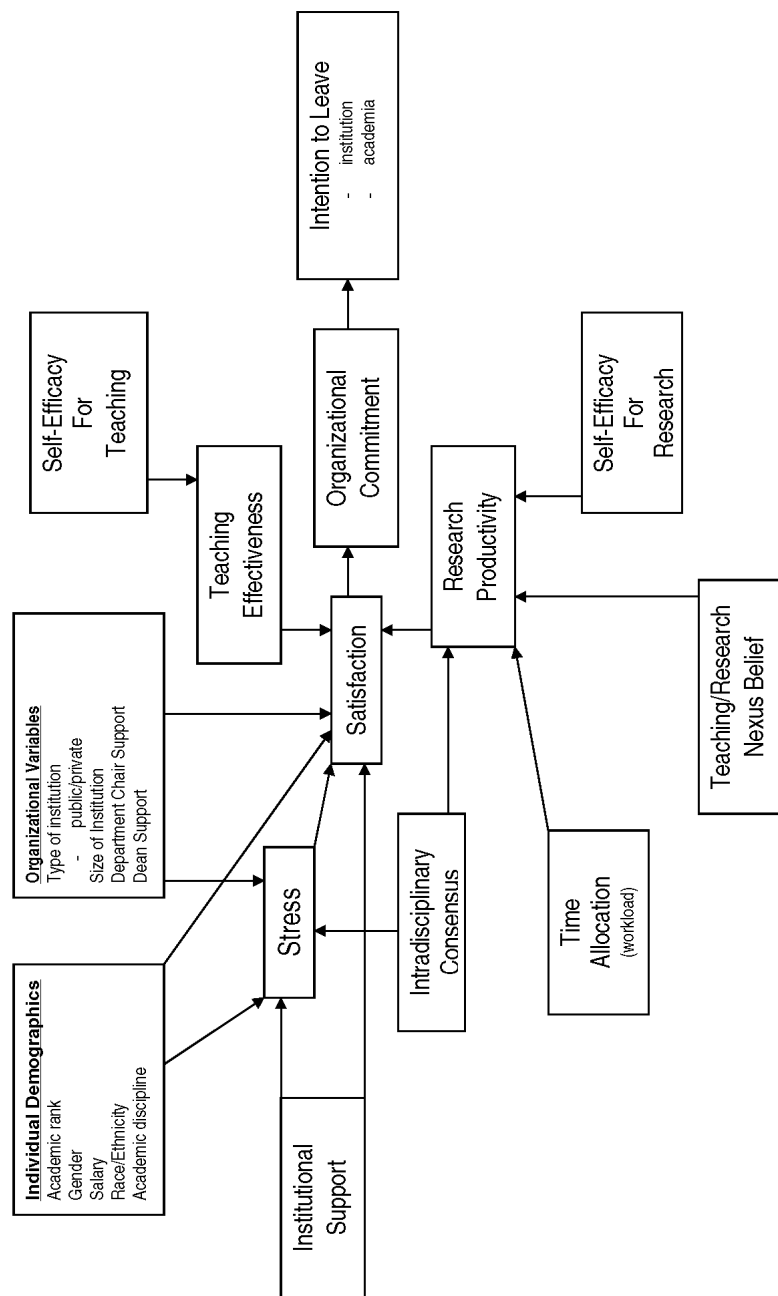
Two unique domains of intradisciplinary consensus (consensus basic issues and consensus graduate programming issues) were examined using 16 items scored on a 5-point scale ranging from 0 (considerable disagreement) to 4 (considerable agreement) (15). Intradisciplinary consensus is a measure of a discipline's progress toward achieving its scientific paradigm, or in other words, the level of agreement among its constituent scholars on methods and priorities for research and teaching. Intradisciplinary consensus has been observed to impact faculty productivity, stress, satisfaction, and overall quality of work life (1). The consensus basic construct in this study measures perceptions of the department's similar views on scholarship, governance, and teaching entry-level degree program students, while the consensus basic construct deals with issues related to graduate programming, including the oversight and mentoring of teaching and research assistants.

A measure of *institutional support* was borrowed from Eisenberger et al. (16) and was comprised of 14 items on six-point scales of agreement (strongly disagree, moderately disagree, vaguely disagree, vaguely agree, moderately agree, strongly agree). *Department/Division Chair support* and *Dean support* were each measured on global, one-item assessments on four-point scales (far less than adequate, less than adequate, adequate, exemplary). *Job stress* was measured using a 9-item, 6-point, Likert-type scale. Six of the items were adapted from a faculty stress index reported by Gmelch (17), and 3 other items assessed stress emanating from fulfilling teaching, research, and service role functions (8).

The measurement of *research productivity* is not without controversy, particularly in regard to the growing acceptance of various forms of scholarship (18). That being said, the overwhelming evidence suggests that the number of full-text, peer reviewed publications is highly correlated with most other forms of scholarship (19, 20). Moreover, faculty in various disciplines in pharmacy have been observed to be more alike than different in their perceptions of scholarship, in addition to the fact that they are governed and evaluated by the same administrators at their respective colleges/schools of pharmacy (15, 21). As such, productivity was measured by respondents' self-report of their number of full-text, peer reviewed publications during the previous 3 years. In the absence of any similar gold standard to measure teaching effectiveness, respondents were asked to indicate effectiveness in seven aspects of their teaching (eg, student evaluations, quality of student work/output, rigor of courses) on a seven-point scale ranging from 1 = much lower than my colleagues, to 4 = approximately equal to my colleagues, to 7 =

much higher than my colleagues. Evidence suggests self-evaluations of teaching effectiveness are fairly well correlated with students' evaluations (22).

Self-efficacy for research was measured using a 20-item scale adapted from a factor analysis of 58 research activities reported by Forester and Kahn (23). Respondents were asked to indicate a level of confidence in executing each of these activities on a scale ranging from 0 = no confidence at all, to 100 = extraordinary confidence (24). *Self-efficacy for teaching* was measured using the same 101-point scale to assess confidence in performing each of 17 teaching activities adapted from the Ohio State teacher efficacy scale (25).

Respondents were asked to indicate the typical number of hours per week they work, the *percent of time presently spent* in any or all of 9 work activities (e.g., teaching, community service, maintaining a practice) and the *percent of time they would preferably spend* in these same activities.

Respondents were asked to report personal and institutional data including *age*, *gender*, *race/ethnicity*, *academic rank*, *type of appointment* (academic or calendar year), *salary range*, *type of institution* where employed (public or private), *size of* Pharm.D. *student enrollment,* their *salary*, and whether they hold any *administrative positions*. For the purpose of categorization and subsequent inferential analyses, respondents' *discipline* was acquired through respondents' self-report, rather than through the AACP Roster.

Data Analysis

Data were imported from SurveyMonkey into a spreadsheet and then into SPSS 13.0 (26) for analysis. Descriptive statistics were tabulated. Responses to individual items on multi-item scales are reported, in addition to an overall item mean, which reflects reverse coding for negatively phrased items. Multi-item scales were subjected to principal components analysis and purification procedures prior to their use and reporting in this study, all of which demonstrated Cronbach's alpha values between 0.72 and 0.95 (27). Responses to measures of stress, intradisciplinary consensus, teaching self-efficacy, research self-efficacy, institutional support, dean support, department chair support, and research productivity, were compared along various individual and institutional characteristics by independent sample t tests and one-way analyses of variance (ANOVA), as appropriate. Mean actual and preferred percentages of time spent in various work activities was

compared by discipline (one-way ANOVA) and gender (independent sample t test). Given the increased likelihood of α-error resulting from the use of multiple tests, the *a priori* level of significance was adjusted to $p \leq 0.01$. For analysis purposes, race/ethnicity was collapsed into White and Non-White, given the small sample size of Non-White respondents. Additionally, when comparing responses by academic rank, those reporting "instructor" were excluded from analysis, as were those from reported belonging to either of several disciplines categorized as "other" (Table 1) when comparing respondents by discipline, due to small sample size.

RESULTS

Respondent Characteristics

In addition to 154 emails returned as undeliverable, several phone calls were received from staff and other persons not employed as full-time faculty. As such, the 22.7% response rate calculated from 885 completed responses is a conservative estimate. Respondents providing demographic information were primarily White, male, and from public institutions, with a mean age of 43.1 years (Table 1). Respondents were distributed fairly well in accordance to expectations regarding academic rank, gender, and race/ethnicity (28); however, a disproportionately large number of responses were received from faculty in the social & administrative sciences. Responses were acquired from 5 Deans, 33 Chairs, 55 Assistant or Associate Deans, and 113 part-time or full-time Directors. The majority (85%) of respondents held calendar year appointments. Salary ranges were fairly well distributed among ranges $65,000-$75,000 to greater than $95,000 per year. Slightly fewer than 1/3 of respondents carried any formal administrative positions.

Actual and Preferred Time Spent in Various Work Activities

Respondents reported working an average of 54.56 ± 8.97 hours per week (median = 55, mode = 50 hours per week). Table 2 reveals percentages of time currently spent in various work activities and respondents' preferences for the amount of time they would ideally like to spend in these activities. The total number of hours worked per week did not vary by discipline or gender. Respondents reported spending

TABLE 1. Demographics characteristics of the respondent population (n = 885).

Variable	N *	Percent *
Gender		
Male	363	54.8
Female	299	45.2
Ethnicity		
White/Caucasian	584	83.4
Asian	32	4.7
Hispanic	19	2.9
African-American	15	2.2
Other	12	1.8
Academic Rank		
Instructor/Lecturer	11	1.6
Assistant Professor	262	39.3
Associate Professor	220	33.0
Professor	174	26.1
Administrative Position		
No administrative position	459	69.0
Director of office or program (part-time)	63	9.5
Director of office or program (full time)	50	7.5
Assistant or Associate Dean	55	8.3
Chair	33	5.0
Dean	5	0.8
Discipline		
Medicinal/Pharm. Chemistry/Pharmacognosy	55	8.6
Pharmaceutics	50	7.8
Pharmacology/Toxicology	57	8.8
Pharmacy Practice	360	56.7
Social and Administrative Sciences	122	18.1
Other (includes biological sciences, libraries/ educational resources and other disciplines)	23	3.4
Type of Institution		
Public	571	69.3
Private	201	30.7
Appointment Length		
Academic (9 month)	98	15.0
Calendar (12 month)	507	85.0
Salary		
< $65,000	40	6.0
$65,000 - $75,000	128	19.2
$75,000 - $85,000	165	24.7
$85,000 - $95,000	131	19.6
> $95,000	168	25.1
Future Employment Intentions†		
Stay at my current institution	672	79.2
Leave my current institution	108	12.7
Leave academia, altogether	68	8.0
Employment History		
First job in academia	547	65.0
Not first job in academia	294	35.0

*Reported numbers do not add up to 885 due to missing data.
†Intentions over the next two years.

nearly 1/3 of their time teaching and approximately 1/5 of their time in scholarship and administrative responsibilities, respectively. Respondents indicated a preference to spend nearly 1/3 of their time in scholarship and just over 1/4 of their time in teaching. While respondents reported spending 8.71% and 4.02% of their time in college/university

TABLE 2. Mean percents of time spent performing various work activities.

Activity—Time Currently Allocated	Mean ± SD*
Teaching/Preparation	31.96 ± 18.06
Scholarly Activity/Research	21.71 ± 17.53
Advising Students (incl. graduate students and experiential students)	9.55 ± 8.70
Administrative Duties (incl. Director/Coordinator activities)	18.87 ± 20.97
Community Service	4.09 ± 4.50
Professional Service (i.e. officer of a professional organization)	5.08 ± 4.19
College/University Service (incl. committee work)	8.71 ± 6.43
Outside consulting	4.02 ± 4.45
Maintaining a Practice Site	20.32 ± 19.94
Activity—Time Would Ideally Like to Allocate	
Teaching/Preparation	27.94 ± 15.41
Scholarly Activity/Research	30.60 ± 19.56
Advising Students (incl. graduate students and experiential students)	9.70 ± 7.63
Administrative Duties (incl. Director/Coordinator activities)	15.71 ± 19.17
Community Service	5.30 ± 4.78
Professional Service (i.e. officer of a professional organization)	6.19 ± 4.32
College/University Service (incl. committee work)	6.55 ± 4.76
Outside consulting	6.44 ± 6.69
Maintaining a Practice Site	20.24 ± 18.14

*Percents of both actual time and ideal amount of time allocated exceed 100 due to "zero" responses calculated as missing data. Proportions are similar when all missing data are converted to zeros .

service and community service, they indicated a preference to spend 6.55% and 5.30% of their time in these activities, respectively. Faculty in pharmacy practice reported spending less time in scholarship and a greater amount of time in maintaining a practice site than all other faculty. Faculty in pharmacology and medicinal chemistry reported a preference to spend nearly 47% of their time in scholarship, while faculty in pharmaceutics and social and administrative sciences (SAdS) reported a preference to spend approximately 35%, while pharmacy practice faculty indicated a preference to spend approximately 21% (p < 0.01) of their time in scholarship. Faculty in SAdS reported a preference to spend nearly 21% of their time in administrative responsibilities, versus only 8% for faculty in medicinal chemistry (p < 0.01).

Job Satisfaction, Organizational Commitment, and Turnover Intentions

The overall item mean on the 24-item, 6-point job satisfaction scale was 3.96, indicative of moderate job satisfaction. Faculty reported highest levels of satisfaction on the teaching issues domain (item mean = 4.68)[b] and lower levels of satisfaction on the graduate program (item mean = 3.52) and institutional reward (item mean = 3.76) domains. Re-

spondents reported modest commitment to their employing institution, with an overall mean of 3.60 among 14 items on the 5-point scale. They agreed most with a statement eliciting their willingness to put in extra effort for the success of their institution (mean = 4.22 ± 0.84), but were less likely to agree that the institution provided inspiration (mean = 3.07 ± 1.10) and with the institution's policies (mean = 3.10 ± 1.19). Nearly 80% of respondents reported intentions to remain with their current institution during the next two years. Approximately 8% of respondents reported intentions to leave academia, altogether, during that time. Additional details regarding pharmacy faculty job turnover intentions, job satisfaction, and organizational commitment are available elsewhere (10).

Job Stress

Mean responses to the job stress scale are reported in Table 3. Faculty reported the least amount of stress from interactions with students and the greatest amount of stress emanating from the lack of time to get things done. Assistant professors reported a mean total stress of 27.97 ± 4.89 compared to 23.23 ± 4.16 for professors (p < 0.01). Females reported higher stress (mean = 27.50 ± 5.70) than males (mean = 25.17 ± 6.43) (p < 0.01). No other variables were associated with job stress.

Intradisciplinary Consensus

Faculty reported relatively high perceptions of consensus on basic and graduate issues (Table 4), with overall item means of 2.52 and 2.41, respectively, on scales ranging from 0 to 4. Respondents reported higher levels of consensus on basic concepts to teach PharmD students and the most reputable journals in which to publish, and lower consensus on how department decisions are made. Males reported greater consensus on basic issues (mean = 29.04 ± 7.69) than females (mean = 26.21 ± 7.31) (p < 0.01). Faculty in public institutions reported higher levels of consensus on basic (mean = 28.38 ± 7.66) and on graduate issues (9.85 ± 3.53) than faculty in private institutions (mean = 26.31 ± 7.33 and 8.66 ± 3.13, respectively) (p = 0.01) (p = 0.01). Professors reported higher consensus on basic issues (mean = 30.87 ± 7.08) than assistant professors (mean = 25.94 ± 7.75) (p < 0.01).

TABLE 3. Mean responses to the job stress measure.*

Item	N	Mean ± SD
Fulfilling my role in teaching	712	2.78 ± 1.10
Fulfilling my role in scholarship	708	3.54 ± 1.15
Fulfilling my role in service	708	2.43 ± 1.17
Attaining reward and recognition	707	2.88 ± 1.22
Lack of time to get everything done	708	4.02 ± 1.08
My involvement, or lack thereof, in the decision -making processes within my department	712	2.70 ± 1.30
Fulfilling my own self-expectations	712	3.41 ± 1.17
Interactions with students	713	1.92 ± 0.94
Making a name for myself among colleagues in my discipline	710	2.50 ± 1.24

*Scored on a scale from 1 = minimal stress, to 5 = considerable stress.

TABLE 4. Mean responses to the intradisciplinary consensus measures.*

Consensus Basic Item	N	Mean ± SD
The sequence of my discipline's course offerings for the entry -level degree program (ELDP)	718	2.28 ± 1.09
The basic concepts to teach in my discipline's c ourse offerings for the ELDP	718	2.89 ± 0.99
The most effective teaching methods and strategies that facilitate learning among students in the ELDP	718	2.43 ± 0.97
The quantity of outside work assignments given to students in the ELDP by members of my discipline	718	2.39 ± 0.94
The standards required for successful completion of my discipline's course offerings	718	2.64 ± 1.02
The standards for excellence in scholarship in my discipline	718	2.54 ± 1.03
The most reputable journals in which to publish in my discipline	718	2.86 ± 0.92
The methods of recognition and reward for excellence in scholarship in my discipline	718	2.35 ± 1.06
The requirements for tenure and promotion in my discipline	718	2.34 ± 1.09
The qualities to look for in hiring a new facu lty member in my discipline	718	2.43 ± 1.11
Department decision making as governance (how decisions are made, level of input by department faculty, etc.)	718	2.06 ± 1.29
Consensus Graduate Item†		
The requirements for successful completion of graduate d egrees in my discipline	538	2.60 ± 1.08
The roles of graduate students as teaching assistants	540	2.25 ±1.11
The roles of graduate students as research assistants	540	2.57 ±1.07
The nature of graduate student stipends (amount of stipend, limits on the l ength of time students may receive stipends, etc)	539	2.22 ±1.11
Teaching methods and strategies in graduate courses	539	2.43 ± 1.05

*Scored on a scale from 0 = considerable disagreement to 4 = considerable agreement.
†Responses acquired only from faculty involved in a graduate program.

Support from Deans, Chairs, and the Institution

Mean responses to each item comprising the institutional support scale are shown in Table 5. The overall item mean was 3.86. Faculty agreed that their institution (college/university) valued their teaching contributions and disagreed that their institution (college/university) would ignore any complaint from them. They also acknowledged their

TABLE 5. Mean responses to the institutional support measure.*

Item	N	Mean ± SD
My college/university fails to appreciate any extra effort fr om me	669	3.57 ± 1.54
My college/university strongly considers my goals and val ues	662	3.60 ± 1.30
My college/university would ignore any complaint from me	653	2.79 ± 1.38
My college/university disregards my best interests when it makes decisions that affect me	665	3.05 ± 1.37
My college/university is willing to help when I have a problem at work	668	4.16 ± 1.18
My college/university really cares about my professional well -being	667	3.98 ± 1.33
My college/university cares about my general satisfaction at work	663	3.76 ± 1.38
If given the opportunity, the college/university would take advantage of me	669	3.51 ± 1.56
My college/university shows very little concern for me	665	2.86 ± 1.42
My college/university cares about my opinions	666	3.86 ± 1.29
My college/university values my teaching contributions	667	4.22 ± 1.23
My college/university values my research accomplishments	662	4.00 ± 1.36
My college/university values my service contributions	666	4.06 ± 1.32
My college/university provides the financial support necessary for my scholarly endeavors	667	3.06 ± 1.38

* Scored on a scale from 1 = strongly disagree, to 6 = strongly agree.

institution demonstrating concern and its willingness to help with problems. While still above the scale's midpoint, respondents expressed weaker agreement that their institution provides appropriate financial support for scholarly endeavors and that it appreciates any extra effort they put forth. There was a trend among respondents employed by public institutions (mean = 52.22 ± 14.78) to indicate greater support than those from private institutions (mean = 54.74 ± 13.68); however, the difference did not achieve statistical significance.

Respondents were relatively positive about the support received from their respective deans, with 131 (19.9%) reporting exemplary support, 275 (41.8%) reporting adequate support, 147 (22.3%) reporting somewhat less than adequate support, and 105 (16.0%) reporting far less than adequate support. Respondents also expressed favor with their department chair's support, with 103 (15.4%) of them reporting far less than adequate support, while 137 (20.5%) reported it was somewhat less than adequate, 253 (37.9%) reported it was adequate, and 175 (26.2%) reported it was exemplary. Assigning values to the response intervals on a 4-point scale, Non-White faculty respondents reported lower department chair support (mean = 1.51 ± 1.02) than White faculty respondents (mean = 1.79 ± 1.01) (p = 0.01).

Teaching and Research Self-Efficacy

Mean responses to items comprising the teaching self-efficacy scale are reported in Table 6. The overall item mean on the 101-point scale

TABLE 6. Mean responses to the teaching self-efficacy measure.*

Item	N	Mean ± SD
Help your students think critically	679	92.56 ± 24.85
Provide an alternate explanation or example when students a re confused	679	84.57 ± 14.36
Craft appropriate examination questions	679	79.64 ± 17.71
Adjust your teaching strategies to accommodate various student learning styles	679	73.84 ± 18.87
Respond to difficult questions from your students	679	82.44 ± 16.25
Adjust your course content to the proper level for students	679	80.15 ± 26.64
Employ a variety of effective student learning assessment strategies	679	74.54 ± 20.17
Gauge student comprehension of what you have taught	679	75.75 ± 17.89
Provide appropriate challenges for very capable students	679	78.57 ± 18.29
Control or prevent disruptive behavior in the classroom	679	77.52 ± 20.59
Respond to defiant students outside of the classroom	679	75.54 ± 22.06
Get students to believe they can do well in your c ourse	679	80.09 ±17.06
Help your students value learning	679	75.66 ± 19.24
Motivate students who show low interest in your course	679	66.13 ± 21.95
Improve the understanding of a student who is failing	679	72.11 ± 19.71
Foster student creativity	678	70.75 ± 20.03
Make time available to students outside of the classroom	679	82.40 ± 19.36

*Scored on a scale from 0 = no confidence, to 100 = extraordinary confidence.

was 77.74. Highest mean self-efficacies were reported for helping students think critically, providing alternative explanations when students are confused, responding to difficult questions, and making time for student consultation. The lowest reported self-efficacies were motivating students with low interest in the course and fostering student creativity, followed by improving failing students' understanding of the material and adjusting teaching strategies to accommodate learning styles. Differences in teaching self-efficacy were associated with academic rank and gender. Professors (mean = 1392.67 ± 191.00) and associate professors (mean = 1374.95 ± 654.10) reported higher teaching self-efficacies than assistant professors (mean = 1237.31 ± 240.62) ($p < 0.01$). Males (mean = 1377.77 ± 523.98) reported higher teaching self-efficacies than females (mean = 1260.75 ± 236.87) ($p < 0.01$).

Table 7 provides mean responses to items comprising the research self-efficacy scale. The overall item mean on the 101-point scale was 74.72, slightly lower than the mean on the teaching self-efficacy scale. Additionally, the range of 20 item means was wider than the means on the teaching self-efficacy scale. Faculty reported lower self-efficacies on acquiring extramural funding, interpreting statistical output from software, choosing appropriate data analysis strategies, and preparing grant proposals. Faculty reported higher self-efficacies on working with others in a research group, discussing research ideas with colleagues,

TABLE 7. Mean responses to the research self-efficacy measure.*

Item	N	Mean ± SD
Design a research project	740	74.75 ± 26.28
Choose appropriate data analysis strategies	740	59.87 ± 32.43
Identify areas of needed research, based on the literature	740	76.39 ± 24.63
Develop a logical rationale for your particular research idea	740	77.97 ± 24.10
Generate researchable questions	740	76.78 ± 25.36
Interpret and understand statistical output form appropriate software	739	58.46 ± 31.76
Organize your proposed research ideas in writing	740	76.50 ± 24.15
Complete a significant project	740	76.64 ± 24.87
Deliver research findings at professional seminars/conferences	740	83.94 ± 21.76
Discuss research ideas with colleagues	740	84.87 ± 19.98
Work with others in a research group	740	86.07 ± 18.84
Utilize criticism from reviews of your research	740	83.22 ± 19.63
Prepare a manuscript for submission to a refereed journal	740	83.51 ± 21.60
Supervise student researchers	738	75.56 ± 27.02
Train assistants to collect data	740	75.72 ± 26.82
Attend to all relevant details of data collection	740	75.55 ± 25.70
Construct reliable data collection methods	740	74.22 ± 26.58
Ensure validity in your data collection methods	740	69.36 ± 28.70
Prepare a grant proposal	740	67.23 ± 30.43
Acquire extramural funding	740	58.03 ± 30.74

*Scored on a scale from 0 = no confidence, to 100 = extraordinary confidence.

delivering research findings at conferences, and preparing manuscripts for submission to peer-reviewed journals. Research self-efficacy was associated with faculty discipline, academic rank, type of institution, and gender. Faculty from pharmacy practice reported significantly lower research self-efficacy (mean = 1341.11 ± 429.38) than faculty from all other disciplines (means ranging from 1661.77 ± 351.40 for SAdS, to 1758.84 ± 192.58 for pharmacology/toxicology) ($p < 0.01$). Assistant professors reported significantly lower research self-efficacy (mean = 1334.17 ± 454.96) than associate professors (mean = 1562.98 ± 374.73) and professors (mean = 1698.67 ± 252.84) ($p < 0.01$). Faculty from public institutions (mean = 1530.02 ± 405.59) reported significantly higher research self-efficacy than faculty from private institutions (mean = 1437.73 ± 431.55) ($p < 0.01$). Males (mean = 1599.80 ± 365.18) reported significantly higher research self-efficacy than females (mean = 1386.26 ± 437.94) ($p < 0.01$); however, as females make up a disproportionate share of faculty from pharmacy practice, a subsequent comparison of males' and females research self-efficacy among faculty in disciplines other than pharmacy practice (n = 302) revealed no significant difference between them.

Teaching Effectiveness

Table 8 provides mean responses to items comprising the teaching effectiveness. Interestingly, the mean responses all exceed the scale's midpoint of 4.00, labeled "equivalent to my department colleagues." The highest mean was reported for "student evaluations of my teaching in entry-level PharmD courses," while the lowest was reported for "student output in graduate courses." The association between teaching effectiveness and teaching self-efficacy was found to be significant ($r = 0.30$, $p < 0.01$). The only factor associated with differences in teaching effectiveness was type of appointment, as respondents with academic (9-month) appointments (mean = 35.21 ± 5.90) reported higher teaching effectiveness than faculty with calendar-year appointments (mean = 32.72 ± 6.26) ($p < 0.01$).

Research Productivity

The mean number of publications in a 3-year period reported by faculty was 6.30 (median = 4.00, Mode = 0.00). Nearly 1/2 of respondents (368, of 788 valid responses) reported 3 or fewer peer-reviewed publications in the previous 3 years, or = 1 paper per year. These figures were calculated after discarding four outlier responses exceeding 85. While 50 was viewed to be rather high, there were 3 respondents who reported this exact figure; as such, all cases reporting 50 or fewer publications were retained for further analysis. Multiplying the total number of hours worked by the percent of time spent in scholarship provides an estimate for the total number of hours spent in research/scholarship per week, which ranged from 7.68 ± 1.16 hours for faculty in pharmacy practice, to 19.85 ± 3.08 hours for faculty in medicinal chemistry. Research pro-

TABLE 8. Mean responses to the teaching effectiveness measure.

Item	N	Mean ± SD
Student output in entry-level PharmD courses	647	4.76 ± 1.23
Student output in graduate courses	387	4.48 ± 1.38
Student evaluations of my teaching in entry-level PharmD courses	649	5.10 ± 1.39
Student evaluations of my teaching in graduate courses	374	4.83 ± 1.32
Peer evaluation of my teaching	524	4.97 ± 1.18
The number of courses taught	661	4.67 ± 1.52
The rigor of my courses	670	4.84 ± 1.25

*Scored on a scale from 1 = much less/lower than my department colleagues, to 7 = much more/higher than my department colleagues.

ductivity was associated with the number of hours per week spent in research/scholarship (r = 0.44, p < 0.01) and with research self-efficacy (r = 0.37, p < 0.01). Research productivity was associated with faculty discipline, academic rank, type of institution and gender. Faculty in pharmacy practice reported fewer peer-reviewed publications (mean = 4.82 ± 6.04) than those in other disciplines (means ranging from 7.13 ± 7.98 for SAdS, to 9.72 ± 10.04 for pharmaceutics) (p < 0.01). Professors (mean = 9.31 ± 9.73) and associate professors (mean = 7.25 ± 7.73) reported more peer-reviewed publications than assistant professors (mean = 3.83 ± 4.55) (p < 0.01). Males (mean = 7.98 ± 8.98) reported significantly more peer-reviewed publications than females (mean = 4.35 ± 4.85) (p < 0.01). The difference between males' and females' productivity remained significant (Spearman's r = 0.23, p < 0.01) even after controlling for discipline, wherein males from disciplines other than pharmacy practice reported 9.19 ± 9.81 peer-reviewed publications, versus 5.77 ± 5.19 for females. The difference between males and females also remained significant after controlling for research self-efficacy (Spearman's r = 0.16, p < 0.01) and hours per week devoted to research activity (Spearman's r = 0.19, p < 0.01). Faculty from private institutions (mean = 4.29 ± 6.02) reported significantly fewer peer-reviewed publications than those from public institutions (mean = 7.19 ± 7.99) (p < 0.01). Institutional, dean, and department chair support were not associated with research productivity.

DISCUSSION

Nair and Gaither (6) reported that the amount of time spent at work was negatively correlated with overall life satisfaction. The 54 1/2 hours per week worked by respondents in this study is even higher than the 48 1/2 hours per week reported by Nair and Gaither (6); however, their study gathered responses from faculty at only one college of pharmacy approximately 8 years ago and may not have included non-professional service as work. Their findings corroborated previous reports that faculty lives' at and away from work have become a "seamless web," due to consistently being wired into work through technology and the scheduling of vacation around attending conferences (29). Faculty in this study reported a preference to spend more time in research and scholarship than they do currently. This is in spite of the fact that the pleasure derived from good teaching outcomes is a principal driver of

work satisfaction (30). However, faculty understand that productivity in scholarship is necessary for career advancement, and that teaching may not be weighed as much as it perhaps should be, and in some cases, not evaluated for quality/effectiveness as well as it could be (31). Moreover, while faculty enjoy the fruits borne from effective teaching, it becomes a frustration when the time it requires to attain teaching goals are underestimated (32).

The long hours that faculty reported working are further evident when examining organizational commitment, with most respondents indicating a willingness to put in extra effort, presumably as it may mutually benefit them and their employing institutions; however, faculty commitment, overall, was modest, highlighted by a lack of strong agreement with their institution's policies. This has significant implications for job turnover intentions (10) and actual turnover behavior, which has been estimated to be relatively high, particularly among pharmacy practice faculty (9). It is worth noting that solid commitment from employees may be engendered only *after* they perceive commitment made to *them* by the employing institution (16), which in this case may transcend issues of tenure and promotion and include a collegial climate characterized by equitable treatment and mutual goal-setting that may ameliorate turnover resulting from unanticipated offers (33), and participation in the institution's and college/school's planning. Faculty reported modest agreement that their personal accomplishments are valued, as such accomplishments usually reflect well on the institution; however, they had less faith that their institution appreciates the effort it takes to accrue these accomplishments and the extent to which their goals and values are considered by the institution.

While Dean and Chair support were perceived to be at least adequate by most respondents, there remains room for improvement. Evidence suggests that chairs play an important role in establishing the tone for the department's constituent faculty by modeling appropriate behaviors (34). This may be especially important for enhancing the productivity of pharmacy practice faculty and facilitating a collegial atmosphere among all faculty. The statistically lower level of perceived support among Non-White faculty merits further study. Non-White faculty have been reported to experience marginalization of their research, greater communication barriers, and social isolationism that may greatly diminish their quality of work life (35).

The aforementioned issue of decision-making also arises when examining intradisciplinary consensus. In this case, responding faculty indicated that faculty within their respective departments were not

necessarily in agreement on how decisions are made. Faculty may be increasingly concerned with what might be viewed as "top-down" or authoritative management styles in a setting that has traditionally been known as a bastion for collegiality and shared decision-making (36) or might simply be concerned about erosions in their autonomy. The results of this study corroborate a prior study demonstrating higher perceptions of consensus among faculty at public institutions (15). It was suggested that private institutions may struggle with teaching and scholarship identities more so than public institutions, even at the departmental and individual faculty level (15). While some degree of tension might be beneficial, a lack of consensus has been demonstrated to impart deleterious effects on quality of work life and productivity (37), and as such should be addressed by college/school administrators. Faculty in the rank of professor who have been around a department longer may put any lack of agreement on issues within a broader context; however, dissonant perceptions of consensus among faculty of lower rank may be indicative of their having less input into decision-making.

Assistant professors also reported higher levels of stress than did professors. While the lack of tenure may be a source of stress for newer faculty, other sources of stress are well documented, including discrepancies between actual, preferred, and expected allocation of time, unclear expectations, lack of feedback, large teaching loads, and ineffective time management (38). Higher stress among female faculty is corroborated in the literature, as female faculty are less likely to be networked with powerful or influential persons, struggle with work-home balance, and have greater difficulty in earning tenure (39, 40). Future research may examine the consequences of administrative policies aimed to mitigate stress among all faculty, especially junior and female faculty.

Teacher (teaching) self-efficacy has been implicated in students' achievement, motivation, and their own sense of self-efficacy (25). Motivating students who appear uninterested in a course may be a formidable task. This becomes even a greater challenge when considering contemporary students' unique learning styles and their propensity to crave high levels of stimulation (41). Faculty development programs and texts aimed to help faculty improve their ability to motivate students and incorporate technology into learning assessment seem plentiful; however, it may behoove college/school administrators to more formally recognize effective teaching and determine the extent to which a lack of confidence may play a role in teachers' struggles.

The AACP asserts that "scholarship ensures the continued intellectual vitality of faculty; it ensures that faculty will be capable of dealing

with change in science and practice; and it ensures that students are exposed to scholarly philosophies and principles (42)." This affirmed AACP's Research and Graduate Affairs Committee over two decades ago, when they stated "every full-time faculty member is expected to participate in research . . . and its dissemination to an extent consistent with the mission of the school or college (43)." While AACP has documented increases in faculty productivity in recent years (44), the fact that nearly 1/2 of respondents reported publishing 3 or fewer papers during the previous 3 years (i.e., 1 paper per year) is cause for concern. It would appear that much of the scholarship is being produced by a relative minority of faculty.

Research self-efficacy is critically important in research productivity. Faculty at public institutions may have higher research self-efficacy because of greater resources and opportunities for collaboration, or may self-select into positions at public institutions because of their research proclivity. The fact that pharmacy practice faculty reported lower research self-efficacy may not be surprising, given the unique nature of their training, compared to faculty from other disciplines. While the number of specialty residencies and fellowships continues to rise, the level of research training among these programs may vary (45). Faculty and administrators may attempt to reconcile the need to fill vacant pharmacy practice faculty positions (9) with the need to hire teacher-scholars who have the talent to become productive scholars.

The higher levels of productivity among male faculty in this study corroborates available evidence (46); however, the difference between males' and females' productivity in this study persisted even after controlling for discipline, research self-efficacy, and hours per week allocated to research activity. The study design precludes any means by which to establish the reason(s) for the discrepancy in productivity; however, the results would appear to underscore the need for effective faculty development and mentoring programs. Mentoring programs have been demonstrated to benefit protégés in regards to organizational power, confidence, self-esteem, and reduced role stress, while also improving collegiality and enhancing mentors' feelings of self-worth (47-49). The presence of mentoring programs, along with climates conducive to collaboration among colleagues, also has been shown to boost faculty productivity (46). The development of effective mentoring programs was the first recommendation listed by Kennedy et al (50) in their "White Paper" on developing and sustaining a culture of scholarship in colleges/schools of pharmacy. As of the year 2000, there were very few formalized programs for mentoring faculty at U.S. colleges/schools of

pharmacy (51). There appears to be at least anecdotal evidence of interest in the development of mentoring programs, and the pharmacy literature contains a number of excellent resources on faculty development and mentoring (52-58).

Limitations and Future Research

The current study relied on self-report to elicit perceptions about phenomena upon which opinions may be biased by personal feelings or that which may be affected by a lack of complete information (e.g., institutional and dean support). Self-report also was used to elicit opinions on teaching effectiveness and research productivity. Moreover, the study employs publication counts in peer-reviewed journals as the operational definition for research productivity, which in spite of its correlation with other aspects of research productivity does little to account for an expanded view of scholarship, such as that proffered by Boyer (18). Additional research is needed to determine the contribution of various correlates to research productivity, teaching self-efficacy, and research self-efficacy so as to devise effective faculty development and mentoring programs.

The results are limited to the population of respondents, especially given the survey's relatively low rate of return. The rate of return may have been a reflection of faculty's busy schedules and the response burden associated with a relatively lengthy questionnaire. Responses were over-represented from social & administrative science faculty, and under-represented from basic science faculty, which according to the AACP's 2005-2006 Institutional Research Series (28), would comprise approximately Roster, would normally comprise over 1/3 and less than 10% of full-time pharmacy faculty, respectively. Furthermore, the low response rate exacerbates the potential for non-response bias, as faculty with particularly strong feelings about their work environment may have been more inclined to respond, and persons skeptical of the validity of survey research may have been less inclined to do so. The construct validity and reliability of the single-item measures used in this study (department chair and dean support) cannot be discerned.

This paper provided a glimpse into various quality of work life, productivity, and institutional phenomena and employed the use of descriptive and bivariate statistics. Future studies may cull the literature to develop and test models of each phenomenon (e.g., turnover intentions, satisfaction, productivity, support) while employing the use of multivariate statistical procedures, as appropriate.

CONCLUSIONS

Current trends in pharmacy education suggest a need to examine pharmacy faculty quality of work life and productivity in a systematic manner. The current study revealed only modest levels of commitment among faculty to their current institution and relatively high levels of stress, in the face of moderate institutional support. Faculty perceived relatively high levels of support from deans and department chairs and fairly high levels of consensus among department colleagues on a number of teaching and research issues. The study identified some causes for concern, particularly among female and pharmacy practice faculty and underscored the need for the development and implementation of effective mentoring programs that may, among other goals, enhance their research and teaching self-efficacy. Future studies may examine each of the phenomena described in this paper more closely.

NOTES

a. Papers describing the development and construct validation of the job satisfaction measure and other multi-item measures used in this study are currently under review.

b. Standard deviations are not reported for means calculated from multiple items comprising a domain.

REFERENCES

1. Braxton JM, Hargens LL. Variation Among Academic Disciplines: Analytical Frameworks and Research. In: J.C. Smart, ed. *Higher Education: Handbook of Theory and Research*. New York, NY: Agathon;1996:1-46.

2. American Association of Colleges of Pharmacy. 1998 CAPE Educational Outcomes. Available at: http://www.aacp.org/Docs/MainNavigation/ForDeans/5763_CAPEoutcomes.pdf. Accessed January 31, 2007.

3. Zabriskie MS, Dey EL, Riegle SG. Job satisfaction in teaching: An examination of personal and environmental influences on faculty. AIR Forum paper. 2002. Accessed via ERIC, January 30, 2007.

4. Andrews JG. How we can resist corporatization. *Academe.* 2006;92(3):16-19.

5. AACP Issue Brief: Faculty Recruitment and Retention. Available at: *http://www.aacp.org/site/tertiary.asp?TRACKID = search.yahoo.com/search?p = a acp + institu&VID = 2&CID = 880&DID = 6694*. Accessed January 28, 2007.

6. Nair KV, Gaither CA. Effects of work, non work, and role conflict on the overall life satisfaction of pharmacy faculty. *Am J Pharm Educ*. 1999;63:1-12.

7. Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree, Accreditation Council for Pharmacy Education, Available at: http://www.acpe-accredit.org/standards/default.asp. Accessed January 17, 2007.

8. Latif DA, Grillo JA. Satisfaction of Junior Faculty with Academic Role Functions. *Am J Pharm Educ*. 2001; 65:137-44.

9. Carter O, Nathiswuan S, Stoddard GJ, Munger MA. Faculty turnover within academic pharmacy departments. Annals Pharmacother. 2003;37:197-201.

10. Conklin MH, Desselle SP. Job turnover intentions among pharmacy faculty. *Am J Pharm Educ*. In press.

11. American Association of Colleges of Pharmacy Roster of Faculty & Professional Staff, 2004-2005.

12. Dillman DA. *Mail and Internet Surveys: The Tailored Design Method, 2nd ed*. New York: John Wiley & Sons, Inc; 2000.

13. Johnsrud LK, Heck RH. A university's faculty: Predicting those who will stay and those who will leave. *J Higher Educ Mgmt*. 1994;10:71-84.

14. Porter LW, et al. Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *J Appl Psychol*. 1974;59:603-9.

15. Desselle SP, Collins CC, Harrold MW, Kalis MM, Quattrocchi EJ. Consensus within five academic subdisciplines of pharmacy: Progress toward establishing their scientific paradigms. *J Pharm Teaching*. 2002; 9:27-46.

16. Eisenberger R, Huntington R, Huchison S, Sowa D. Perceived organizational support. *J Appl Psychol*. 1986;71:500-7.

17. Gmelch WH, Wilke PK, Lovrich NP. Dimenisons of stress among university faculty: Factor-analytic results from a national survey. *Res Higher Educ*. 1986; 24:266-86.

18. Boyer EL. Scholarship reconsidered: Priorities of the professoriate. The Carnegie Foundation for the Advancement of Teaching. Princieton, NJ. 1990.

19. Toutkoushian, RK, et al. Using publications counts to measure an institution's research productivity. *Res Higher Educ*. 2003;44:121-48.

20. Print M, Hattie J. Measuring quality in universities: An approach to weighting research productivity. *Higher Educ*. 1997;33:453-469.

21. Desselle SP, Collins CC, Harrold MW, Kalis MM, Quattrocchi EJ. Quantitative and qualitative assessments of consensus within pharmacy's academic subdisciplines. *J Pharm Teaching*. 2002; 9(4):1-33.

22. Barnett CW, Matthews HW, Jackson RA. A comparison between student ratings and faculty self-ratings of instructional effectiveness. *Am J Pharm Educ*. 2003; 67: Article no.117.

23. Forester M, Kahn JH, Hesson-McInnis MS. Factor Structures of Three Measures of Research Self-Efficacy. *J Career Assess.* 2004; 12:3-16.

24. Bandura A. Guide to the construction of self-efficacy scales. In Pajares F and Urdan T (Eds.). Self-efficacy Beliefs of Adolescents. (Vol. 5., pp. 307-337). Greenwich, CT: Information Age Publishing, 2006.

25. Tschannen-Moran M, Woolfolk Hoy A. Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*. 2001; 17:783-805.

26. *SPSS Base 13.0 User's Guide*. Chicago, IL: SPSS, Inc., 2005.

27. Fabrigar LR, Wegener DT, MacCallum RC, Strahan EJ. Evaluating the use of exploratory factor analysis in psychological research. *Psychol Methods*. 1999; 4: 272-299.

28. *Institutional Research Series: 2005-2006 Profile of Pharmacy Faculty*. American Association of Colleges of Pharmacy, Alexandria, VA, 2005.

29. Sorcinelli MD, Gregor M. faculty stress: The tension between career demands and having it all. In: *Coping with Faculty Stress.* Seldin P (Ed.). Jossey-Bass, San Francisco, 1987.

30. Rosser VJ. Faculty members' intention to leave: A national study on their worklife and satisfaction. *Res Higher Educ*. 2004;45:285-309.

31. Wolfgang AP, Gupchup GV, Plake KS. Relative importance of performance criteria in promotion and tenure decisions: Perceptions of pharmacy faculty members. *Amer J Pharm Educ*. 1995;59:342-347.

32. Dinham SM. Being a newcoming. In RJ Menges and Associates, *Faculty in New Jobs*. San Francisco, CA: Jossey-Bass, 1999.

33. Lee TW, Holtom BC, McDaniel LS, Hill JW. The unfolding model of voluntary turnover: A replication and extension. *Acad Manage J*. 1999; 42:450-462.

34. Understanding the training needs of department chairs. Aziz S, Mullins ME, Balzer WK. *Studies Higher Educ*. 2005;30:571-593.

35. Johnsrud LK. Women and minority faculty experiences: Defining and responding to diverse realities. In: Gainen J and Boice R (Eds). Building a diverse faculty. New Directions for Teaching and Learning, no. 53. San Francisco, Jossey-Bass, 1993.

36. Holmes ER, Desselle SP. Is scientific paradigm important for pharmacy education? *Am J Pharm Educ*. 2004;68(5):Article no.118.

37. Braxton JM, Hargens LL. Variation among academic disciplines: analytical frameworks and research. In Smart JC, Ed. *Higher Education: Handbook of Theory and Research*. New York: Agathon; 1996.

38. Pugh KL. Stress new newly hired, novice faculty: Causes, coping strategies, and interventions for faculty and institutions. Unpublished master's thesis, University of Arizona, 1996.

39. Trautvetter LC. Experiences of men, experiences of women. In Menges RJ and Associates. *Faculty in New Jobs*. San Francisco, CA: Jossey-Bass, 1999.

40. Johnsrud LK. Des Jarlais CD. Barriers to tenure for women and minorities. Rev Higher Educ. 1994;17:335-53.

41. Romanelli R, Ryan M. A survey and review of attitudes and beliefs of generation X pharmacy students. Am J Pharm Educ. 2003;67:Article no.12.

42. AACP Commision to Implement Change in Pharmaceutical Education. Position Paper 4. Available at: http://www.aacp.org/Docs/MainNavigation/Educational Resources/3589_BackgroundPaper4.pdf. Accessed, January 30, 2007.

43. Speedie MK, Brouwer KL, Hak LJ, Lathers CM, Thomas J, Smith MD. Chair report for the Research and Graduate Affairs Committee. *Am J Pharm Educ*. 1982; 46:371-74.

44. AACP Institutional Research Brief, No. 4. A report on the research and teaching productivity of pharmacy faculty: changes over time and comparisons to faculty of other health professions. Available at: http://www.aacp.org/Docs/MainNavigation/Institutional *Data/6361 IRBNo4-NIHFundingComparison.pdf.* Accessed, January 29, 2007.

45. Smith KM, Romanelli F. Use of an electronic survey to assess the training and practice experiences of pharmacy residency graduates. *Am J Health-System Pharm*. 2005;62: 2283-2288.

46. Lee S, Bozeman B. The impact of research collaboration on scientific productivity. *Soc Studies Sci*. 2005;35:673-702.

47. Mullen EJ, Noe RA. The mentoring information exchange: When do mentors seek information from their protégés? *J Org Behav*. 1997;20:233-243.

48. Noe RA. An investigation of the determinants of successful assigned mentoring relationships. *Pers Psychol*. 1988;41:457-479.

49. Kogler-Hill SE, Bahniuk MH, Dobos I, Rouner D. Mentoring and other communication support in the academic setting. *Group Org Studies.* 1989;14:355-368.

50. Kennedy RH, Gubbins PO, Luer M, Reddy IK, Light KE. Developing and sustaining a culture of scholarship. *Am J Pharm Educ*. 2003;67:Article no. 92.

51. Wutoh AK, Colebrook MN, Holladay JW, Scott KR, Lombardo FA, et al. Faculty mentoring programs at schools/colleges of pharmacy in the U.S. 2000;8(1):61-72.

52. Haines ST. The mentor-protégé relationship. *Am J Pharm Educ*. 2003;67:Article no. 82.

53. Sylvia LM. Mentoring prospective pharmacy faculty: A seminar series on teaching for pharmacy residents. *Am J Pharm Educ.* 2004;68:Article no. 38.

54. Popovich NG, Peverly SL, Jackson TR. Effectiveness of a weekly faculty conversation forum about teaching. *Am J Pharm Educ*. 2006.70:Article no. 100.

55. MacKinnon, III G. An investigation of pharmacy faculty attitudes toward faculty development. *Am J Pharm Educ*. 2003;67:Article no. 11.

56. Cocaloas GH. Mentors and mentoring. *Am J Pharm Educ*. 1998;62:227.

57. Mason HL. Collaborators and mentors. *Am J Pharm Educ*. 2001;65:401-403.

58. Plaza CM, Draugalis JLR, Skrepnek GH, Slack MH. The role of administrative mentoring in the pharmacy deanship. *Am J Pharm Educ*. 2004;68:Article no. 86.