

## FACULTY AT WORK: Focus on Teaching

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Within the framework of cognitive motivation theory, selected personal and environmental motivational variables for faculty in English, chemistry, and psychology from community colleges, comprehensive colleges and universities, and research universities were regressed against faculty allocation of work effort given to teaching. The data came from a 1988 national survey. Gender (*sociodemographic*); quality of graduate school attended, career age, and rank (*career*); self-competence, self-efficacy, institutional commitment, personal interest in teaching, and percent time preferred to give to teaching (*self-valuations*); and institutional preference, consensus and support, and colleague commitment to teaching (*perception of the environment*) were entered into regressions.  $R^2$  were generally strong (.86 for community college chemists) and significant. For all institutional types, self-valuation and perception of the environment motivators significantly accounted for the explained variance whereas sociodemographic and career variables did not.

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The annals of higher education show a recurring concern about the quality of teaching going on in our colleges and universities. Today's current debates, however, seem more heated and certainly more prolonged. They began in the late 1960s and continue unabated today. Even those who do not believe the quality of teaching is in as serious disrepair as many claim do agree that pedagogy needs improvement.

A common assumption is that faculty could teach better if only they would try harder. Consequently, the colleges and universities have employed a number of strategies to increase motivations. Some of the incentives are in the form of rewards—if not merit raises and promotion, the prizes for outstanding teacher of the year or public recognition in newsletters. Other motivations come in the form of invited experts to stimulate interest or instructional improvement

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centers with available grants. All are designed to motivate faculty to engage in activities that will improve instruction.

None of these institutional strategies takes into account the differential self-valuations faculty make with respect to their teaching. They also fail to recognize faculty perceptions of what the environment/organization desires and supports.

Our study investigates the degree to which cognitive motivation theory can account for faculty teaching behavior. Succinctly, cognitive motivation theory says that how people understand the environment and assess personal priorities lead them to engage more in some activities and less in other ones (Bandura, 1977; Staw, 1984). For this study, faculty teaching behavior is the level of effort the faculty member gives to the teaching role.<sup>1</sup>

## BACKGROUND/LITERATURE

Compared to the studies on faculty scholarly output, research on faculty in the teaching role is quite restricted in scope. Most studies empirically examine the relationship between indicators of teaching effectiveness (almost always student ratings) with contextual variables (e.g., class size, required course; see Feldman (1976, 1977) for reviews of this literature). Correlation studies with student learning are less frequent (see Cohen, 1981). Never are there attempts to predict teaching behavior (e.g., effort given to teaching) or productivity (e.g., creating a new course). Two recent studies have investigated self-efficacy of university faculty (Landino and Owen, 1988; Schoen and Winocur, 1988). Both, however, have limitations of either sample size or response rate.

Another general weakness in many studies attempting to predict faculty professional activities is the selection of the independent variables. Astin (1984) illustrates the point: "Researchers have usually looked at the following factors as potential predictors or independent variables: (1) gender; (2) marital status; (3) age; (4) field of specialization; (5) educational experience and characteristics of the graduate institution; (6) characteristics of the employer institution" (p. 263).

Although correlations exist between faculty research behaviors and these predictors, seldom are there strong relationships. In fact, there are instances of contradictory outcomes. For example, chronological age has been both a positive and negative predictor of faculty scholarly output (Bentley and Blackburn, 1990).

In addition, most often the research using these variables is atheoretical. Why these variables were selected is not made clear nor is it apparent that they serve as indicators of constructs within some conceptual scheme. It is possible, however, to attach motivational links to most of them.

For example, gender and age as sociodemographic variables are inherited

characteristics that can be thought of as surrogates within need motivation theory. Need theory would say that women's supportive and cooperative nature motivates them to favor teaching. Gender, of course, contains richer and more complex dimensions than a need to nurture. For example, from Gilligan (1982) and others we know a feminist perspective provides fresh insights on many intellectual issues. Consequently, we retain the gender variable for multiple reasons.<sup>2</sup>

In life-stage theory, age is an important variable for it purports that people have different needs at successive points in time and these needs motivate behavior. As male faculty become older, their need for affiliation increases. Their interest in teaching increases as they approach retirement (Baldwin and Blackburn, 1981).

Astin's next three variables (numbers 4, 5, and 6) are important within socialization theory. This theory would say that earning the Ph.D. both trains one how to conduct research and also transmits the value accorded to teaching. Socialization theory predicts that Ph.D. graduates of Research-I institutions will have less interest in teaching than those with less advanced education at universities in all other Carnegie classifications. Said another way, faculty have been socialized to value certain activities early in their careers and they continue to find them attractive. Given the high degree of autonomy faculty enjoy, what faculty do on the job is what they want to do (Finkelstein, 1984, p. 221).

A third set of motivators, not discussed by Astin, has to do with organizational rewards and incentives. Honors and prestige most often are bestowed in the form of salary, promotions, distinguished titles, and the like. National professional associations also can recognize their members with awards. As for money as an incentive, the research is not consistent. On the one hand, Tuckman and Leahey (1975) found high correlations between salary and number of articles published. Ladd and Lipset (1975) found that a faculty member's first concern in moving to a new position is salary. On the other hand, Finklestein's (1984) review of the literature led him to conclude that faculty behavior is not related to institutional incentive structures.

What is not known in these studies is how faculty individually assess their own skills and desires in light of their personal perception of how the environment will respond. That is where cognitive motivation theory and our study come in. For each subject we have self-valuation indicators of commitment to instruction, level of teaching competence, impact of their teaching on student outcomes (efficacy), level of interest in teaching, and percent of effort desired to give to teaching. As for perceptions of the environment, faculty have told us the degree of consensus and support they experience, how committed their colleagues are to teaching, and what percentage of their work effort they believe the administration prefers they give to teaching. We assess the relative amount of variance the different kinds of motivational predictors have. Finally, as this literature review suggests, a meaningful and logical way to test these is

to enter the indicators of the various motivators in the order in which they have been presented, namely, first sociodemographic variables, then career socialization ones, then self-valuations, and last, perceptions of the environment. This order also possesses chronology—from past to current.

## METHOD

Data from a national survey conducted by the National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPAL) were analyzed. The survey, *Faculty at Work*, was administered from November 1987 to January 1988. The sample was drawn in proportion to the distribution of professors across the nine Carnegie Institutional Classification types (1987). The institutions within these nine categories were further divided according to their public or private status, thus creating a total of eighteen institutional types. This classification schema allowed for a stratified random sample that corresponds to the national distribution of faculty members across institutional types.

The survey was sent to faculty in eight disciplines (history, English, biology, chemistry, mathematics, political science, psychology, and sociology) representing the humanities, natural/physical sciences, and social sciences. The reason for selecting these specific disciplines was that they exist on all campuses. In those instances where a department had 30 or fewer faculty members, questionnaires were sent to everyone in the department. When there were more than 30 faculty in a department, all women and assistant professors were surveyed so as to increase the numbers of underrepresented groups selected at random until the total from a given department who were in the sample equaled 30.<sup>3</sup> The survey was completed by 4,400 faculty members (54 percent response rate).

The sample respondents well represent the universe of faculty from which they were drawn. When compared with the national faculty surveys conducted in 1969, 1975, and 1980, our survey requires the smallest correction factors to adjust for actual numbers of faculty in these disciplines and institutional types (Bentley, Blackburn, and Bieber, 1991).

*Faculty at Work* was designed to gather data on faculty perceptions of their work environment, their own competency and efficacy as faculty members, their assumptions about teaching, and their research, teaching, and service behaviors. The questions about the work environment varied in degree of abstraction. For example, some questions focused on respondents' perception of institutional role expectations and goals of undergraduate education. Other questions addressed the adequacy of collegial and physical resources (e.g., laboratory, library, computing facilities) and the effectiveness of administrators to whom they report.

The self-competence and self-efficacy items were developed on the basis of

extensive interviews conducted with faculty members on diverse campuses. Survey respondents rated themselves on skills associated with valued faculty members on their campuses (competence) and on their ability to bring about changes in students and their institution (efficacy). The faculty members also were asked to indicate (1) how concerned they were as teachers about a set of student outcomes, (2) how strongly they agreed with a series of assumptions about undergraduate students and the optimal teaching-learning conditions, and (3) how often they personally engaged in certain research, teaching, and service activities.

## ANALYSIS

In this study, the responses from faculty in Two-Year Public Institutions, Comprehensive Colleges and Universities-I, and Research Universities-I were analyzed. These three Carnegie types were selected for three reasons: (1) They represent the extremes of the percentage of time given by faculty to teaching. Community colleges are at one end (about 70 percent) and research universities at the other (about 35 percent) with an intermediate allocation at comprehensive institutions. Adequate variation is therefore provided on the dependent variable. (2) They are the institutions that have the highest proportion of faculty nationally (23, 25, and 15 percents, respectively). (3) They span the spectrum of faculty role expectations: from no research requirements and medium-sized classes with no graduate student assistance in community colleges to a significant research effort, graduate seminars mixed with large lecture classes, and supervising TA's in research universities. The largest departments in each of the three fields were selected: English for the humanities, chemistry for the natural sciences, and psychology for the social sciences.<sup>4</sup>

As for the *sociodemographic* variables that were used, *race* was dropped since the *N*'s in any ethnic group except Caucasian were too small to permit analyses. *Age* was not used since (1) the research literature has shown it to be a poor predictor for almost all outcome variables used on faculty (Lawrence and Blackburn, 1985) and (2) it is highly co-related to career age, a stronger predictor variable, one that was retained in the set of career variables. *Gender* was used as a surrogate for need differences related to sex and because of its relationship in some earlier findings to scholarly productivity (see, e.g., Astin, 1978).

As for the *career* variables, *rank*, *discipline*, and where faculty obtained their *highest* degree (Research University-I versus any other type of institution) and *career ages* (number of years as a faculty member at any type of institution) were used.

A number of *self-valuation* variables were employed. *Self-competence* is a factor created from four items: how able faculty feel they are as teachers, how

well they believe they communicate, how well they work with students, and how good they are as lecturers.<sup>5</sup> *Self-efficacy* is a factor constructed from two items: the degree of influence faculty have on (1) how much students learn and (2) on their students' career achievement. *Interest in teaching* is a single item asking faculty whether their interest is more in teaching or in research. *Instructional commitment* is a factor comprised of two items: how characteristic (1) commitment to teaching and (2) concern for students are for the faculty member.<sup>6</sup>

There were three *perceptions of the environment* variables. (1) *Institutional preference* is a factor indicating the faculty member's estimate of the percentage of effort toward teaching expected by the institution. (2) *Colleague commitment to teaching* is a factor comprised of two items: a belief that faculty in the institution are committed to teaching and a belief that faculty in the immediate unit (department) are committed to teaching. (3) The *consensus and support* factor combines two items: having support services and experiencing high agreement among colleagues regarding the curriculum.

The *outcome/dependent* variable is the actual percent of effort faculty allocated to teaching. Respondents were instructed to include in their estimation of effort not only actual time in class but also time given to preparation, grading, working with students, and other activities that are related to instruction.

At first glance it might seem that interest in teaching or preferred effort for teaching rather than actual effort would be better dependent variables. After all, many colleges and universities prescribe the teaching load and include it in contracts. Institutional rules, however, state the number of courses or credit hours per year, not the amount of time given to the role (other than the minimum classroom contact hours). We defined effort given to teaching to include preparation, grading, and other related pedagogical tasks. Faculty can vary appreciably here, ranging from near zero to several times actual teaching hours. In addition, most often options exist for faculty to teach more or fewer hours. One can trade committee work for an additional course or buy out of a course with research grants or taking on special administrative assignments. In short, even in a prescribed teaching load setting, faculty vary appreciably on the percentage of their total work effort they give to the teaching role.<sup>7</sup>

Descriptive statistics were run to display the characteristics of the sample.<sup>8</sup> Regressions were run to test the strength of the predictor variables and to determine the percent of the variance that each variable accounted for.

## DESCRIPTIVE RESULTS

Table 1 displays the sociodemographic variables by institutional type and by discipline that were used in this study: *career, self-valuation, perceptions of the environment, and behavior*. The *N*'s for each category are shown at the top.

**TABLE 1. Descriptive Data on the Sample and on the Variables Entered into the Regression**

Rank	Two-Year Public											
	Comprehensive I						Research I					
	(N = 186)	(N = 42)	(N = 51)	(N = 199)	(N = 104)	(N = 131)	(N = 87)	(N = 72)	(N = 80)			
	English	Chemistry	Psychology	English	Chemistry	Psychology	English	Chemistry	Psychology			
Full Professor	38.7%	48.8%	46.0%	53.8%	60.6%	54.2%	43.8%	72.2%	64.5%			
Assoc. Professor	27.6%	22.0%	30.0%	26.1%	23.1%	29.8%	37.9%	12.5%	20.3%			
Asst. Professor	11.1%	2.4%	8.0%	19.6%	15.4%	16.0%	16.1%	15.3%	15.2%			
Instructor	21.5%	26.8%	16.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Lecturer	1.1%	0.0%	0.0%	0.9%	0.9%	0.0%	2.2%	0.0%	0.0%			
Female %	42.6%	22.8%	29.7%	34.3%	12.4%	16.9%	31.0%	7.0%	26.6%			
	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)	Mean (Std)			
Career Age	18.1 (7.5)	19.7 (6.2)	19.7 (7.2)	21.0 (9.7)	18.7 (8.7)	17.5 (7.9)	17.9 (10.5)	19.9 (11.9)	20.5 (10.1)			
% Allotted to Teaching	69.7 (16.3)	75.3 (16.3)	65.9 (19.1)	61.6 (18.0)	63.3 (17.5)	54.2 (17.8)	43.7 (20.9)	28.9 (17.1)	31.8 (13.9)			
% Preferred by Inst.	66.4 (16.6)	74.7 (12.4)	67.3 (17.7)	52.1 (19.5)	55.7 (16.5)	52.2 (18.8)	33.3 (15.6)	31.3 (12.2)	27.9 (12.3)			
% Preferred to Teach	60.5 (15.6)	68.2 (16.7)	59.5 (17.3)	53.0 (16.0)	55.0 (15.5)	46.5 (16.4)	37.3 (12.9)	28.0 (9.5)	26.0 (12.9)			
Competence* Factor	.196 (.86)	.295 (.86)	.244 (.95)	.046 (1.0)	-.068 (1.06)	-0.17 (1.0)	-.090 (1.0)	-.481 (1.1)	-.339 (1.1)			
Self-Efficacy* Factor	.043 (.94)	.491 (.97)	-.008 (1.1)	-.198 (1.1)	.241 (.88)	-.093 (.93)	-.008 (.98)	-.016 (.93)	-.137 (1.1)			
Interest in** Teaching	.912 (.28)	.950 (.22)	.920 (.27)	.750 (.43)	.810 (.40)	.674 (.47)	.341 (.48)	.125 (.33)	.152 (.36)			
Instructional Commitment*	.312 (.71)	.491 (.47)	.195 (.82)	.090 (.98)	.270 (.65)	-.121 (1.04)	-.308 (1.1)	-.811 (1.24)	-.807 (1.24)			
Colleague* commitment to Teaching	.550 (.63)	.792 (.54)	.730 (.54)	.191 (.63)	.301 (.69)	.223 (.71)	-1.11 (.68)	-1.362 (.69)	-1.60 (.60)			
Consensus*	.097 (1.0)	.370 (.92)	.070 (.96)	-.260 (1.1)	.194 (1.0)	.057 (.88)	-.210 (1.1)	.181 (.89)	-.073 (.85)			

\*Scaled scores with  $\bar{x} = 0.0$  and S.D. = 1 (range from -3.0 to +3.0)

\*\*Single item with a range from 0 (low interest) to 1 (high interest)

The percentage of faculty in different ranks is not as informative for the two-year colleges as it is for the comprehensive and research universities. Many community colleges have but a single rank, namely, instructor, whereas other two-year colleges have the full complement of professorial titles. Mixing community colleges that have all ranks with those that only have the single title of instructor distorts the reality for all.

The comprehensive colleges and universities and the research universities show a heavy proportion at the top ranks and very few at the assistant professor level. These data are in accord with the evidence for an aging professoriate and a marketplace cramped by economic constraints. There has been little hiring at the entry level (see, for example, Bowen and Schuster, 1986). The average number of years as a college teacher (career age) is almost identical across the three institutional types: 19.3 for two-year colleges, 19.5 for comprehensive colleges and universities, and 18.6 for research universities. Also, there is little variation across disciplines. Since the average age of receiving the Ph.D. is in the late twenties in the natural sciences and in the early thirties in the humanities, the average age of the sampled faculties is between forty-four and fifty-two, well within the range reported in other national surveys.

The number of women faculty is somewhat misleading. Within the humanities, English has more women faculty than does history, and within the social sciences, psychology has a higher percentage than do sociology and political science. The number of women academics has increased in the last decade. However, since the disciplines selected here have an above average percentage of women, the national numbers are not as high as the table shows.

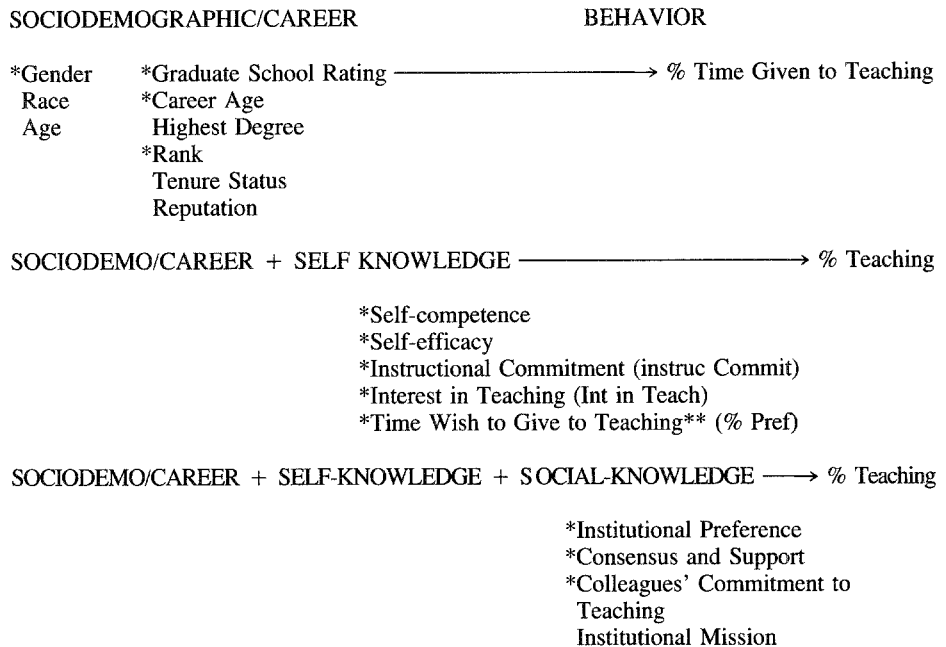
Striking differences appear in the percent time allocated to teaching (the outcome variable) across institutional types. Differences across disciplines are smaller within institutional types. Two-year college faculty reported twice as much time, on average, given to teaching than did research university faculty (70 percent and 35 percent, respectively). All reported they believe their institutions prefer them to give less effort to teaching than they do (68 percent, 53 percent, and 31 percent, respectively). At the same time, most faculty prefer to do even less teaching than they believe is expected (62 percent, 51 percent, and 31 percent, respectively). Two-year and comprehensive college and university faculty prefer to teach some 8 to 9 percent less than they are; research university faculty prefer about 4 percent less.

There is somewhat more discipline variation in time given to teaching in the research universities. There faculties with access to grants (e.g., chemistry and psychology) are often released from teaching whereas faculties in English have less external funding. They are appreciably above the institutional average in the percentage of time given to teaching. Furthermore, humanities faculty have traditionally seen teaching as a fundamental component of their profession, a basic value difference from faculty in the sciences.

As for the remaining variables in Table 1, all but one are factors and are



FIG. 1. Sequence of Variables/Factors Entered into the Regressions



\*The asterisked variables represent those actually used in the analysis.

\*\*Because percent time preferred to give to teaching (% Pref) so strongly predicted percentage of time allocated to teaching, multiple regressions were run to determine whether self-competence or self-efficacy predicted this variable. Neither were strong predictors.

scored in such a manner as to have a mean of zero and a standard deviation of one. Consequently, approximately 68 percent of the means will be between -1 and +1 and 95 percent will be between -2 and +2.<sup>9</sup> The *interest in teaching* variable is a single item turned into a dummy variable with higher interest in teaching coded as 1 and higher interest in research coded as 0.

A number of differences are worth noting. When it comes to competence in teaching, two-year college faculty rate themselves above the mean, comprehensive faculty at approximately the mean, and research faculty a little below it. By itself, however, "being below the mean" is a misleading statement. The means for respective items that constitute the teaching self-competence factor for two-year and research university faculty, are, respectively, 3.73 and 3.45 (where maximum is 4.00) for "teaches effectively"; 3.52 and 3.39 for "communicates well"; 3.51 and 3.23 for "works skillfully with students"; and 3.30 and 3.18 for "is an excellent lecturer." All of the actual differences are small; both two-year and research faculty rate themselves as competent teachers.

The self-efficacy scores are all close to the mean, the exception being chem-

ists in two-year colleges. These chemists believe they really make a difference in what students learn and in their career achievement.<sup>10</sup> As for interest in teaching, which turns out to be strongly correlated with preferred allocation of effort to teaching, community college faculty have, on average, the highest interest (.9 out of a possible 1), with comprehensive college and university faculty somewhat lower (about .75), but still very high. Research university faculties respond with the general reputation they have, namely, more interest in research than in teaching. The instructional commitment indicator maintains the same differences across institutional types, but the means shift downward to less than .5 for two-year faculty, to around zero for the comprehensive university faculty, and to below zero for the research university faculty. On both of the variables the discipline differences tend to be rather small with no consistent pattern appearing. The perceptions of the environment factors—colleague commitment to teaching and institutional support (bottom two rows)—are similar.

## REGRESSION RESULTS

Regressions were run with percentage of time given to teaching as the outcome variable. Figure 1 displays the sequence in which the predictor variables were entered. The results of the regressions are shown by institutional type, discipline, and predictor variables in Table 2.

Within each discipline column in Table 2 are two numbers. The first is the percentage of variance in teaching effort attributable to all the variables entered into the regression up to that particular step ( $R^2$ ); the second is the significance of the  $F$  score. When the  $F$  score was significant at .05 or less, the variables that contributed significantly to the  $R^2$  are indicated, along with the significance level for each variable.

By way of illustration, when controlling for discipline, note the first two entries in the upper left for the English faculty in two-year colleges (the first column of data in the table). The first four variables entered into the regression were *sociodemographic* (*gender*) and *career status* (*rating of graduate school, career age, and rank*). These variables in step 1 produced an  $R^2 = .10$  with  $p < .08$ . These four demographic and career variables were entered simultaneously since our conceptual framework does not draw causal connections between them. They were entered first because these surrogate motivation variables have been hypothesized (and tested) to be direct predictors of faculty behaviors, although not heretofore to percent time given to teaching.

*Self-valuation* variables were entered next. In step 2 of the regression the *self-competence* indicator was added. In step 3 *self-efficacy* was entered. (All prior variables are retained.) Staying with the example of English faculty in two-year colleges, *self-competence* and *self-efficacy* did not add to the  $R^2$ ; still

**TABLE 2. Additive Regressions Predicting % Time Allocated to Teaching Variables by Institutional Type and Discipline**

Regression Steps	Variables	Partial $R_2$ English	$P$ for $F$	Two-Year Publics			Comprehensives			Research-U's								
				Chemistry	Psychology	English	Chemistry	Psychology	English	Chemistry	Psych							
1	<i>Sociodemo</i> (gender,...)	.10	.08	.14	.60	.09	.90	.10	.04	.04	.50	.06	.36	.11	.50	.03	.92	.11
	<i>Career</i> (Grad Schl, Rank...)						Grad Schl			.03								
2	<i>Self-Valuation</i> Self-	.10	.12	.16	.64	.10	.92	.10	.07	.06	.47	.06	.48	.11	.62	.03	.97	.11
3	Competence <i>Self-Valuation</i>	.10	.17	.16	.76	.12	.94	.10	.10	.06	.59	.06	.61	.11	.73	.03	.99	.14
4	Self-Efficacy <i>Self-Valuation</i>	.32 +	.00*	.74 +	.02	.38	.62	.41 +	.00	.56 +	.00	.36 +	.00	.31	.15	.26	.44	.34 +
	Instructional Commitment	% Pref	.00	% Pref	.00	Grad Schl	.00	% Pref	.00	% Pref	.00	% Pref	.00	% Pref				
	Interest in Teaching	% Pref	Female	.01	Asst Prof	.03												
	% Teaching Preferred			Full Prof	.02		% Pref		.03		Full Prof	.02						

TABLE 2. (Continued)

Regression Steps	Variables	Partial $R^2$	English	P for F	Two-Year Publics		Comprehensives		Research-I's								
					Chemistry	Psychology	English	Chemistry	Psychology	English	Chemistry	Psych					
5	<i>Perception of Environment</i>																
	% Institutional Preference	.40	.00	.00	.67 +	.03	.43	.00	.58	.00	.44	.00	.21	.27	.53	.36	
	% Pref	.00	.00	.00	%Pref	.03	Grad Schl	.00	% Pref	.00	% Pref	.00	.31				
	% Inst Pref	.00	.01	% Inst Pref	.00	Asst Prof	.02	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref					
	Full Prof	.02	.02	Full Prof	.00	% Inst Pref	.04	Inst Pref.	.00	% Inst Pref	.00	% Inst Pref					
6	<i>Perception of Environment</i>																
	Consensus & Support	.38	.00	.86	.68	.09	.49	.00	.59	.00	.46	.00	.34	.27	.71	.37	
	Colleague Commitment to Teaching	% Pref	.00	% Pref	.00	Grad Schl	.00	% Pref	.00	% Pref	.00	% Pref	.00				
	% Inst Pref	.00	.00	Female @	.00	Asst Prof	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00				
	% Inst Pref	.00	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00				
7	All Disciplines		.44	.00	.00	.46	.00	.00	.46	.00	.00	.32	.00				
	Predicting Actual Time Allocated	% Pref	.00	% Pref	.00	% Pref	.00	% Pref	.00	% Pref	.00	% Pref	.00				
	% Inst Pref	.00	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00	% Inst Pref	.00				

@Also, Consensus & Support .01; Grad Schl .01; Career Age .02; Assoc Prof .00; Full Profe .02; Self-Competence .03; Int in Teach .00  
 \*\*“.00” means less than .00. We are reporting only two decimal places.  
 + Increase in F (and  $R^2$ ) is significant  $p < .07$

.10 after both are added. The  $p$  values became increasingly less significant, increasing to .12 and then to .17. However, when *instructional commitment* (Inst. Commit), *interest in teaching* (Int. in Teach.), and *percent time faculty prefer to give to teaching* (% Pref.) are added to the regression at step 4, overall, 32 percent of the variance for teaching effort is accounted for, an amount significant at  $p < .01$ .<sup>11</sup> *Preferred time given to teaching* (% Pref.) was itself significant at  $p < .01$ ,<sup>12</sup> as was the increase in the  $F$  value.

*Perception of the environment* variables were entered next. Step 5 added the percentage of *time faculty believe their institution prefers them to spend on teaching* (% Inst. Pref.). As can be seen in Table 2, the  $R^2$  for these same English faculty for all variables increased to .40, not a significant increase. The variable, % Pref., remains significant at  $p < .01$  and % Inst. Pref. also predicts at that level. When the two conceptually related variables of *consensus and support* and *colleagues' commitment to teaching* (Colleagues' Commit.) were entered (step 6), neither added to the predictive power with respect to the percentage of time these English faculty gave to the teaching role; the principal predictors remained the same. Also, the change in  $R^2$  was not significant and actually dropped by .02 to .38.<sup>13</sup>

Before examining the consequences of step 7 (the last row of Table 2), what has happened in the other institutional types is briefly discussed. First, in general, the sociodemographic and career variables, as well as the self-competence and self-efficacy variables from the self-valuation category, do not predict percent time allocated to the teaching role; the amount of variance they account for is not significant. The exceptions are for two career variables (having the *highest degree from a Research-I university* and being an *assistant professor*) for English faculty in Comprehensive Colleges and Universities.

Second, with the remaining self-valuation variables—*instructional commitment*, *interest in teaching*, and *percent of time the faculty member prefers to give to teaching*—the percent of variance explained increases significantly.  $R^2$ 's become statistically significant at  $p < .05$  for all faculty except those in English and chemistry in Research-I universities and psychology in two-year colleges. Also, the dominant predictor in every instance (except English in Comprehensive Colleges and Universities) is % Pref—the fraction of their time faculty would like to give to the pedagogical role.

Adding the *percent faculty believe their institution wants them to give to teaching* (step 5) increases the  $R^2$ 's even higher. In many instances it becomes a significant predictor itself except in the case of all faculty in the Research-I institutions. There is no significant change in the  $R^2$ 's for research university faculty. In fact, the psychology faculty  $p$  value found in step 5 is no longer significant although it was in step 4.

The remaining perception of the environment variables added in step 6 also have little consequence in Research-I universities. Moreover, with the excep-

tion of chemistry faculty in Two-Year Publics, these two variables have little effect in the other institutional types and disciplines.

Having run the planned regressions and found which variables did and did not predict when discipline/department was controlled, another regression was run for all faculty within each institutional type but without a control for discipline. Step 7, the bottom row of data, is a repeat of steps 1 through 6; it uses the same variables, only this time for *all* faculty in each of the three institutional types. As can be seen, all of the  $R^2$ 's are significant, including the one for Research-I's.<sup>14</sup>

## DISCUSSION

There are, of course, the obvious limitations of a sample drawn exclusively from arts and science departments and not from professional and vocational fields. We cannot generalize to *all* faculty in *all* specializations in *all* places.

There is also the limitation of the inconclusiveness of causal directionality. It is possible that the percent of time faculty give to teaching (behavior) is what determines their interest in teaching (self-valuation), and not vice versa. Since the data do not allow an answer to this possibility, using path analyses or LISREL is not justified. The noncausal model employed here is the appropriate mode of analysis, but regressions do not settle the causal direction. Most likely the variables act in a looped manner and are not in a single direction.

The self-competence (except for chemistry faculty in two-year publics) did not contribute to the explained variance. One reason for the failure of self-competence is that our factor has very little variation. Faculty rated themselves high on all four of the items that comprised the factor in the comprehensive and two-year institutions. Hence there was inadequate variance for correlations to reach statistical significance.<sup>15</sup>

The self-efficacy factor also did not add to the regression. The reason may lie in the items themselves. They were not situation specific. Unlike more global concepts such as self-esteem, self-efficacy is task specific. Asking faculty the degree to which they influence student career achievement is too broad. Faculty answered truthfully, saying for the most part they really do not know the extent to which they exert influence. They recognize that students have thirty or forty other instructors in the course of their college careers and their influence alone most likely is not very great. For example, if they had been asked to estimate their influence on students' learning how to conduct specific chemical experiments rather than student learning, this variable may have increased the predictive power of the factor.

On the positive side, the percent of variance accounted for and the multiple  $R$ 's are high, especially for predicting such a complex phenomenon as effort given to teaching. Wahba and House's (1974, p. 122) examination of studies

based on the concepts of expectancy (subjective probability) and valence (anticipated value) found multiple regression coefficients for predicting job performance ranging from .11 to .72 with the majority around .30. Our related constructs of competence and efficacy, in conjunction with other predictors, produced generally higher  $R^2$ 's and hence give overall support to the conceptual framework of cognitive motivation. The sociodemographic and career correlates of behavior generally failed to contribute to the explained variance.

In this connection, the interest in teaching variable (a self-valuation) as well as the institutional and college support variables and the colleague commitment to teaching variables (perception of environment) were strongly co-related with the percent of time respondents preferred to give to teaching (e.g.,  $r = 0.5$  in Research-I's and Comprehensive-I's) and hence fail to appear as significant in the regressions. One's *current* reading of one's self and what the environment will reward—cognitive processing of a variety of clues—seems to be a much stronger motivator than are needs related to one's past.

That both personal preference for time given to teaching and perceived institutional preference were strong predictors suggest that a fit between the two variables is what matters. Said another way, if the faculty member believes he or she has the ability to achieve personally and institutionally valued goals, then the likelihood of her or him believing teaching as having an effect on students will be higher. In addition, one expects that the likelihood of her or his teaching having an effect on students would be higher, that is, efficacious.

The virtual absence of gender predicting allocation of effort given to teaching is both interesting and important. (It is significant only for chemistry faculty in two-year publics.) Earlier studies (see, e.g., Blackburn, Behymer, and Hall, 1978) report that women do more teaching and less publishing than men. The inference has been that women preferred teaching to research, that they have an inherent need for nurturing activities (teaching) and an avoidance of competitive situations (research). Others have explained the heavier teaching load for women on male administrators' biased assignment of duties (Finklestein, 1984). The findings here suggest that female/male differences with respect to teaching are disappearing.

Next, neither rank nor career age predicted percent time given to teaching.<sup>16</sup> The studies that found positive relationships between these variables are most often with student judgment of teaching effectiveness (e.g., Centra, 1977) or with faculty interest in teaching (e.g., Baldwin and Blackburn, 1981). For example, Baldwin and Blackburn found beginning assistant professors and full professors near the end of their career to show a higher degree of interest in teaching.<sup>17</sup> If there is a positive relationship between either effectiveness or interest with effort, then these results do not support the earlier research. As a surrogate for needs, age is not a good predictor.

Additionally, that education preparation in other than a Research-I university

is not related to percent effort given to teaching is contrary to what was expected. Supposedly the socialization received in these institutions is not only toward research but purposively away from teaching, including interest in teaching. This probably is not a critical finding but at least it does not ipso facto stamp a graduate of a Research-I university as an individual who disdains the classroom.

In summary, the faculty member is saying that I am very good at teaching (high self-competence); whether or not my teaching has an impact on students (self-efficacy not a predictor), if I am genuinely interested in teaching *and* I believe my institution cares, I will give a lot of time to it; if I am not very interested and/or do not believe my institution cares, I will not give a lot of time to it, all of this irrespective of my gender, where I work, what field I am in, how long I have been an academic, what rank I hold, what my specialty is, whether my department or institution supports teaching, or whether my colleagues care.

What implications do these findings have for the running of colleges and universities? To begin with, as Table 1 shows, there is a reasonably good fit between personal preferred time given to teaching, perceived institutional preference, and actual time allotted, discipline by discipline in all three institutional types. Either faculty selection, or institutional selection, or faculty adjustment to an institution has resulted in general compatibility. Consequently, if an institution wants to change faculty percent of effort given to teaching, then making these desired new levels (higher or lower) explicitly known to faculty would lead to changes in their time preference, if interest in teaching could also be altered for it is both of these variables that correlate with actual allocated effort. Only changing the environment (e.g., altering the reward system) is not adequate.

How to change interest level is another matter. It will be most difficult at Research-I's where perceived institutional preference did not directly predict percent effort given to teaching (and never when disciplines were controlled for). It may be that hiring faculty who have the institution's desires already in hand is the most effective way to accomplish institutional goals.

Indeed, one suspects that a faculty/institution sorting takes place as career decisions are made. Faculty who prefer teaching to research gravitate toward those environments and can exercise some choice in their movements. This explanation is consistent with the finding that personal preference for teaching is a strong predictor.

However, for those academics preferring research to teaching, the research universities, not individual faculty, control the degree of movement. Research institutions that now want to increase attention to undergraduate teaching have a problem.



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## NOTES

1. We acknowledge that a higher level of effort does not necessarily lead to an increased level of performance. However, in the absence of a quality indicator, the assumed relationship between effort and excellence is a reasonable one.
2. In a recent study of job preference and selections of new economic Ph.D.s from leading graduate departments, Barbezat (1990) found women sought and selected academic positions over private sector ones. Furthermore, their choices were appreciably greater than men's for liberal arts colleges than for research universities, institutions where the teaching role dominates.
3. This option arose in only five departments in three research universities so that the distortion from pure randomness is minute.
4. The *N*'s are shown in the result's sections of Table 1. Also, we do not argue that all disciplines within a field are alike with respect to what will predict effort given to teaching—that is, there will be some differences between, say, psychology, political science, sociology, and other disciplines within the social science field. What we do assert, however, is that the differences within a field will be smaller than those across fields (e.g., differences between psychology and political science will be smaller than differences between psychology and English or chemistry).
5. The actual survey items that comprise each of the factors are listed in Appendix A. Retest reliability coefficients are in parentheses following the items. (See Blackburn and Mackie, 1990 for full details.) Also, other studies have shown faculty accurately report self data such as rank, number of publications, and the like. (See Allison and Stewart, 1974; Blackburn, Boberg, O'Connell, and Pellino, 1980; Clark and Centra, 1985.)
6. The two constructs, *interest in teaching* and *instructional commitment*, are sufficiently distinct from one another so that including both is justified. For example, one could be more interested in research than in teaching (the *interest* variable) and still have a commitment to teaching as well (the *instructional commitment* variable). In addition, both of these indicators are different from preferred percent of time given to teaching. Two professors could each have a high interest in teaching, but one could prefer to teach less and the other more.
7. Also, our model is predicting a behavior, not a personal attribute such as interest or preference. Accounting for interest is another study.
8. Preliminary analyses showed there to be but negligible differences between private and public institutions so the data used here are from both sectors for the Research-I Universities and the Comprehensive Colleges and Universities-I. As noted above, only the public two-year institutions are included for they are different from the privates.
9. Only research universities on the next to last variable in Table 1 reside beyond the  $-1$  to  $+1$  range.
10. With one exception, it turns out that neither the self-competence nor self-efficacy variable is significant in the final regressions. (The exception is self-competence for chemistry faculty in two-year colleges.) The discussion section considers why these outcomes have occurred.
11. The three variables were entered together since they reflect teaching-related values.

12. The value in the table is “.00” and signifies the  $R^2$  is significant at less than that value. We have not written decimals beyond hundredths, here or in the text. In the text we have stayed with the convention that “<.01” is the most significant level designated. When more than one variable is significant beyond .00, they are listed in the order of their significance, the highest being entered first.
13. As one reads from top to bottom for a discipline within an institutional type, the  $R^2$ s either remain constant (nothing was added to the percent of the variance accounted for by inserting the variable into the regression) or increase to a higher percent level. Technically, they can also decrease. If they do, it should not be by more than a couple of tenths of a percent. The one case where there is a decrease in predictive power is English faculty in two-year colleges.
14. The fact that English faculty in these universities are teaching 50 percent more than are the chemistry faculty (44 percent or time as compared to 29 percent—see Table 1) may have made percent preferred to teach unable to predict when departments are controlled for. The within variance would be too low.
15. The next time we ask this question of faculty we will offer them a 100-point scale where they will be told 100 is perfect, 50 is average, etc. While responses will probably be between 70 and 95, at least we will have some variation with which to work.
16. The two are co-related. Hence if one does not, the other is not likely to either.
17. There may be a curvilinear relationship that turns a linear test to zero.

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## APPENDIX A

For each item listed below, faculty were asked to “indicate how characteristic the skills, the beliefs/attitudes/values, and the personality characteristics are for you” where

- 1 = Not at all characteristic
- 2 = Slightly characteristic
- 3 = Somewhat characteristic
- 4 = Highly characteristic

The following items comprised the respective factors:

## INSTRUCTIONAL COMMITMENT

- Highly committed to teaching ( $r = .43$ )
- Concerned about students ( $r = .49$ )

## SELF-COMPETENCE

- Teaches effectively ( $r = .52$ )
- Communicates well ( $r = .51$ )
- Works skillfully with students ( $r = .76$ )
- Is an excellent lecturer ( $r = .58$ )

For the SELF-EFFICACY factor, faculty were asked to identify the option that “best corresponds to how much influence you think you have on each of the following” where

- 1 = Really no influence at all
- 2 = Minor influence
- 3 = Some influence
- 4 = Substantial influence

The following items comprised the factor:

## SELF-EFFICACY

- Student learning ( $r = .50$ )
- Student career achievements ( $r = .58$ )

For the INTEREST IN TEACHING item, faculty were asked whether their “interests lie primarily in teaching or in research” where

- 1 = Very heavily in research
- 2 = In both, but leaning toward research
- 3 = In both, but leaning toward teaching
- 4 = Very heavily in teaching

### CONSENSUS AND SUPPORT

There is a high degree of agreement among my unit's colleagues about the content of our curriculum ( $r = .68$ ).

The support services for teaching (laboratory facilities, computers, libraries, clerical assistance, audio-visual aids, student assistance, etc.) help me teach how and what I would like ( $r = .41$ ).

For the next set of factors, faculty were asked to "indicate the degree of truthfulness it (each item) has for you" where

- 1 = Little or no truth
- 2 = Generally not true
- 3 = Generally true
- 4 = Very high degree of truth

The following items comprised the respective factors:

### COLLEAGUE COMMITMENT TO TEACHING

The faculty in my *unit* are more committed to the teaching of their discipline than they are to adding to their discipline's knowledge base ( $r = .70$ ).

The faculty in this *institution* are more committed to teaching than they are to doing research in their disciplinary domain ( $r = .83$ ).

For the following items, faculty were asked to respond in actual percentages:

My institution's preferences for how much time I spend on teaching (institutional preference) ( $r = .80$ ).

My personal preferences for how much time I spend on teaching (personal preference) ( $r = .79$ ).

The actual amount of time I spend on teaching (outcome variable) ( $r = .80$ ).