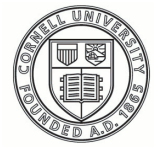

November 2004

Understanding Faculty Out-of-Class Interaction with Undergraduate Students at a Research University

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Keywords

higher education, student-faculty interaction, academic performance

Comments

Suggested Citation

Einarson, M. K. & Clarkberg, M. E. (2004) *Understanding faculty out-of-class interaction with undergraduate students at a research university* (CHERI Working Paper #57). Retrieved [insert date], from Cornell University, ILR School site: http://digitalcommons.ilr.cornell.edu/cheri/20/

Required Publisher Statement

Published by the Cornell Higher Education Research Institute, Cornell University.

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Paper presented at the annual meeting of the Association for the Study of Higher Education in Kansas City, MO, November 5, 2004

Abstract

While much has been published about the ways in which *students* gain from contact with faculty, much less is known about the patterns and correlates of such contact for *faculty members*. Drawing upon data from a survey of faculty (n=901) conducted at a large, highly selective, research-extensive university in spring 2004, this study explores the factors that promote or inhibit faculty members' engagement in two types of out-of-class interactions with undergraduate students: research-based activities and other out-of-class activities that are less narrowly focused on academic issues. We test four explanations of faculty engagement using OLS regression, and estimate separate models for research-based and other types of out-of-class involvement. Our results provide little support for two of the most prevalent explanations of factors that inhibit faculty involvement: competing time demands, and a lack of institutional rewards or supports for out-of-class interaction. Two other explanations received more support. First, faculty members' personal values and beliefs were strongly associated with their extent of engagement in out-of-class interactions, particularly for non-research based interactions. Second, the block of variables reflecting faculty members' interpersonal knowledge and abilities had the strongest association with engagement in out-of-class interactions; this relationship was nearly twice as strong for activities that were not research-based than for those that were circumscribed as research. Our findings suggest that institutions may best be able to support out-of-class interactions between faculty and undergraduate students by brokering information flows concerning opportunities for engagement and the actual "how to's" of making such interactions work.

Introduction

Scholars have emphasized that out-of-class contact between students and faculty significantly enhances the quality of the undergraduate experience (Boyer Commission, 1998; Chickering & Gamson, 1987; Kuh, Schuh, Whitt, & Associates, 1991). Indeed, empirical studies conducted over the past three decades document that out-of-class contact with faculty is associated with increases in students' quality of effort, persistence, academic achievement, intellectual and personal development, and evaluations of their college experience (Astin, 1993; Feldman & Newcomb, 1969; Kuh & Hu, 2001a; Pascarella & Terenzini, 1991; Tinto, 1993). Recognition of the potential benefits to students of less formal kinds of student-faculty contact outside the classroom has led many institutions to undertake initiatives intended to promote such interaction, such as creating various forms of living-learning communities (Gabelnick, MacGregor, Matthews, & Smith, 1990; Golde & Pribbenow, 2000; Shapiro & Levine, 1999).

While much has been published about the ways in which *students* gain from contact with faculty, much less is known about the patterns and correlates of such contact for *faculty members*. Typically, studies suggest that faculty engagement in out-of-class activities is "low" (Dilley, 1967; Finkelstein, Seal, & Schuster, 1998; Gamson, 1967; Wilson, Woods, & Gaff, 1974), and it has become commonplace to suggest that normative or institutional factors – such as tenure and promotion systems which undervalue campus service – are to blame for the scarcity of informal interaction between faculty and students (Kuh, Schuh, & Thomas, 1985; Kuh et al., 1991). However, systematic evidence concerning the ways in which interaction with undergraduates outside the classroom varies within the professoriate is lacking. A handful of studies in the 1970s (Gaff, 1973; Snow, 1973; Wilson, Gaff, Dienst, Wood, & Bavry, 1975) examined the correlates of out-of-class contact among faculty, but this tradition of scholarship seems to have waned over the last three decades. We have located only one recently published study addressing the factors that promote or impede these types of interaction in the contemporary collegiate environment; Golde and Pribbenow (2000) interviewed a small sample of faculty involved in one residential learning community

and found that beliefs about undergraduate education, time constraints and apprehensions about effectively interacting with undergraduates were important in their own decisions to become involved. However, because non-participants did not participate in the study, it remains unknown if such factors are important in distinguishing participants from non-participants.

In this paper, we further explore the factors that promote or inhibit faculty members' engagement in out-of-class interactions with undergraduate students. Drawing upon prior research on student-faculty interaction and the broader literature on faculty work roles (e.g., Blackburn & Lawrence, 1995; Fairweather, 1996), we propose that faculty involvement in out-of-class interactions is shaped by a variety of individual, role, and institutional characteristics. Using data from a survey of faculty conducted at a large, highly selective, research-extensive university, we examine the relative influence of these factors on faculty engagement in different types of out-of-class interaction with undergraduate students.

Perspectives from the Literature

The literature on faculty-student interactions within and outside of the classroom suggests to us four broad and interrelated domains of influence on the level of faculty out-of-class interactions with undergraduates: intensity of competing time demands; institutional norms and practices; personal beliefs and attitudes; and interpersonal skills.

The argument behind competing time demands is straightforward, as social interactions outside of class take time and faculty report having little discretionary time at their disposal. Data from the 1998 NSOPF indicate that 63% of women and 72% of men faculty members report working 50 or more hours a week, and about a third report 60 hours or more; at research institutions, these numbers are even higher (Jacobs, 2004). Pressure to publish seems universal, and may be greater today as four-year institutions increasingly emphasize research productivity as a means of enhancing institutional stature (Fairweather, 1996). In addition to this, academic leaders continue to urge institutions to pay more attention to the quality of undergraduate teaching (Boyer Commission, 1998; Boyer, 1990; Wingspread Group on Higher

Education, 1993). Further encouragement to spend yet even more time and energy to extend students' intellectual experiences beyond the classroom (Chickering & Gamson, 1987; Kuh et al., 1991) may bump against the limits of faculty time availability. This time crunch may be especially pronounced for faculty members with young children (Jacobs, 2004). Faculty interviews conducted during the process of developing the survey instrument for our study suggested that parents of younger children perceived they had less time available to interact with students outside of class, while parents of college-age children were more motivated to interact with undergraduate students.

While time constraints seem a plausible explanation for lower engagement in non-obligatory interactions with students, there is surprisingly little evidence in direct support of the claim. Golde and Pribbenow (2000) reported that faculty participating in a residential learning community on one campus emphasized the importance of time constraints when asked about barriers to engaging more intensely in out-of-class interactions with students, but in a rare multi-institutional study on faculty-student interaction Wilson and colleagues (Wilson et al., 1974) found no relationship between the extent to which faculty members interacted with students outside of class and their own scholarly productivity, time spent on research or professional association activity. The lack of association may be an example of what Robinson and Godbey (1999) call the "more-more" phenomenon in their study of time-use, a recasting of the old cliché that if you want something done, you should ask a busy person to do it. Rather than some faculty roles detracting from others, it may more be the case that individual faculty members vary in the intensity of their commitment to the various aspects of their work, such that those who do more in one area tend to do more in other areas as well. Fairweather (2002) emphasizes the scarcity of the "complete faculty member"—one who is a highly productive researcher and a highly involved teacher—but activities involving out-of-class interactions with students may be complementary to specific aspects of the faculty role (Gaff, 1973; Snow, 1973; Wilson et al., 1974). For example, we might expect that professors with active research labs might be more likely to have interactions with undergraduates that involve research activities in a lab setting, while faculty who spend more time engaged in teaching

undergraduate courses may be more likely to have extended conversations with these students in the hallway or other casual settings. Thus, the relationship between time commitments and out-of-class interactions may be complex.

The role of norms and practices within the institutional context are even less well understood. Studies of *students'* experiences indicate that levels of out-of-class contact between faculty and students are lower at research institutions than at other kinds of four-year institutions (Kuh & Hu, 2001b; Kuh & Vesper, 1997). One explanation for this difference is that teaching colleges look favorably upon—and concretely reward—faculty members' out-of-class interactions with students more so than research institutions. However, there is consensus that out-of-class interactions generally play little role in contemporary tenure and promotion decisions (Bowen & Schuster, 1986; Clark, 1987; Gray, Diamond, & Adam, 1996; Gray, Froh, & Diamond, 1992) across institution types and disciplines (Fairweather, 1993). Further, even with respect to the major domains of research and teaching, scholars disagree as to the extent to which institutional reward structures effectively shape faculty role performance (compare Blackburn and Lawrence, 1995 and Fairweather, 2002). To the extent there are institutional pressures, they may be most effective among junior faculty, as they are more concerned than senior faculty with institutional role expectations (Rosch & Reich, 1996; Whitt, 1991). On the other hand, institutional emphases on research as the primary activity may override any encouragement towards out-of-class contact for junior faculty. Indeed, conventional wisdom suggests that untenured faculty should not be recruited for out-of-class roles, in part to protect time for research (Golde & Pribbenow, 2000; Kuh et al., 1985; Kuh et al., 1991).

Formal reward structures are not the only pathway of institutional influences; other local cultures, for example, may be important in providing a framework of expectations or norms. Academic departments can vary significantly in the extent to which certain role activities are valued or practiced (Austin, 1994; Massy & Zemsky, 1994; Rosch & Reich, 1996). Similarly, institutional structures may dictate the extent to which students' out-of-class experiences are seen as the sole province of student

affairs administrators (Kuh et al., 1991). Compared to student affairs professionals, faculty may not only be less familiar with campus-based opportunities for out-of-class interactions, but may differ in their views of the importance or appropriate goals of such interaction (Golde & Pribbenow, 2000).

Generally speaking, faculty members' core beliefs about the nature of their roles as professors are powerful predictors of the features of faculty-student interaction. Faculty attitudes and beliefs about the importance of teaching undergraduates are associated with the amount of time allocated to teaching (Blackburn & Lawrence, 1995) as well as the pedagogical methods used (Antony & Boatsman, 1994; Colbeck, Cabrera, & Marine, 2002; Singer, 1996). More to the point, Gaff (1973) finds that faculty who are more involved in out-of-class interactions with undergraduates also tend to be committed to undergraduate teaching, to prefer teaching over research, and to prefer teaching undergraduates to graduates. Similarly, faculty who believe that contact with students outside of class is an important part of the education process are more often engaged in those interactions themselves (Golde & Pribbenow, 2000; Wilson et al., 1974). Notably, faculty with more student-centered values are differentially distributed across disciplines (Austin, 1990; Becher, 1989; Clark, 1987): faculty in "soft" disciplines (humanities, social sciences, and professional fields) express greater preferences for teaching over research (Biglan, 1973), greater interest in student development (Singer, 1996; Stark, Lowther, Bentley, & Martens, 1990), and make greater use of teaching methods that encourage active student participation in the learning process (Einarson, 2001; Fairweather, 1997; Thielens, 1987) than do faculty in "hard" disciplines (physical and biological sciences, mathematics and engineering). Presumably, the selection of faculty into different kinds of institutions is also partly driven by the interplay of faculty values and institutional cultures; it may be this fact more than formal institutional reward systems that explains why some institutions have much higher levels of student-faculty contact than others.

In addition to time, rewards, and values, Golde and Pribbenow (2000) suggest a fourth and perhaps more concrete reason why some faculty avoid out-of-class interactions with undergraduates: they simply feel uncomfortable or unskilled in building interpersonal connections with students in

unstructured, out-of-class contexts. The annual effort of Beloit College, publisher of "The Mindset List," stands testimony to the need to bridge differences in life experiences and increase understanding between faculty members and the students with whom they seek to interact. And this divide may be particularly wide among senior faculty, who are more remote from students in age and life experience. Further evidence indicates that students, too, have some difficulties navigating the divide, as faculty efforts to connect outside the classroom do not always generate a receptive response (Schuh & Kuh, 1984).

Some research suggests that discomfort in these relationships may be proportional to the distance from narrow academic discourse. In the Golde and Pribbenow (2000) study, some faculty in the residential community expressed unease when students broached personal topics with them. This may explain the more general finding that faculty are more likely to engage in out-of-class contact with students that is academically- or intellectually-oriented, such as discussions of coursework, than they are to have non-academic types of interactions, such as informal socializing or discussions involving personal problems (Wilson et al., 1975). As there has been little research in this area, it is unclear whether the different types of interaction—academic and non-academic—are differentially related to other correlates of out-of-class involvement. It may be the case, for example, that the same factors that relate to disciplinary differences in teaching styles may also operate to create disciplinary differences in the propensity to go beyond narrow academic discourse with students.

In the remainder of this paper, we develop and discuss a multivariate model of faculty involvement in out-of-class activities with undergraduates. We include measures that we argue tap the generalized domains of influence outlined above: intensity of competing time demands; institutional norms and practices; personal beliefs and attitudes; and interpersonal skills. In addition, we make a distinction between research-based interactions—a narrowly academic form of interaction—and other types of activities that involve out-of-class interaction, and estimate separate models for these two measures of interaction.

Data, Variables and Method

We drew on data from a survey of faculty conducted at a large, highly selective, research-extensive university in spring 2004. The survey was explicitly designed to describe the nature and frequency of faculty members' out-of-class interactions with undergraduate students, the factors that promote or inhibit these interactions, and the impacts of these interactions on faculty. Items for the survey were initially derived from a review of the literature, refined on the basis of open-ended interviews with twelve faculty members selected from across the university, and finalized after a pilot test of the instrument with a random sample of 50 faculty members.

The research university at which this survey was administered enrolls over 20,000 students. Nearly 14,000 of those students are undergraduates enrolled in one of seven undergraduate colleges. The population frame for the survey included 1,850 faculty members, including those with professorial rank (full, assistant and associate professor), lecturers and instructors. Emeritus, visiting, and special appointment faculty were excluded. Completed surveys were received from 1,107 of 1,800 eligible faculty for a 62% response rate. For this analysis of interaction with undergraduates in the fall of 2003, we excluded faculty who were appointed in one of the two graduate colleges at the university and those who were not on campus that semester, resulting in 901 faculty respondents. Missing data on one of the key dependent variables in our analyses resulted further reduced the sample in those analyses to 859.

While the survey responses were strictly confidential, they were not anonymous. Thus, we were able to merge survey data with administrative records on sex, racial identification, title or rank, department and college, salary, and grant activity. This allowed us to couple a relatively brief and focused survey instrument with highly reliable information on other key aspects of respondents' characteristics.

Outcome Measures

To permit us to examine whether the correlates of out-of-class interaction vary with the type of interaction, we constructed two dependent variables, one tapping research-based activities with undergraduates, and the other capturing other kinds of informal out-of-class interaction. Both types of interaction are not typically obligatory, so involvement in either would presumably reflect the exercise of free choice on the part of the faculty member.

[insert Table 1 about here]

The first outcome measure, "Research with undergraduates," captured the frequency with which faculty had engaged in research activities with undergraduate students in the fall 2003 term. Our composite measure summed faculty members' responses to two adjacent items: "advise or supervise undergraduate students working on faculty research project" and "advise or supervise students working on student research project (e.g., Honors thesis or independent study)." For each of these items, the frequency of interaction was measured using a five-point scale coded from 0 ("not involved") to 4 ("several times a week or more"). The resulting measure of frequency ranged from 0 to 8, with a mean of 2.39 (see Table 1).

The second outcome measure, "Activities with undergraduates," tapped the frequency of faculty involvement in out-of-class activities with undergraduates in the fall 2003 term that were somewhat less directly linked with specific academic or intellectual issues or that, at a minimum, occurred outside the context of classrooms, research labs or faculty offices. Frequency of interaction was coded on the same 5-point scale as research activities. Our final, composite measure summed responses to eight out-of-class activities (shown in Table 1), including "had coffee or dined with undergraduate students in café or restaurant," "hosted students in your home (e.g., for a meal or social function)," and "accompanied undergraduate students to an athletic competition." The resulting variable ranged from 0 to 19 in our data, with a mean of 2.86 (see Table 1).

Independent Variables

We grouped our independent variables in five blocks, with four blocks reflecting the four domains of influence on faculty engagement as described above: time availability, institutional context; personal values and beliefs; and interpersonal knowledge and abilities. The final block included controls for demographic attributes, role characteristics, and academic discipline (see Table 2 for a listing and operational definitions of all independent variables).

[insert Table 2 about here]

Time constraints. As we expected that faculty with young children might have less time available for out-of-class activities with students, we included three measures of parental status: a dummy variable indicating that the respondent has no children of any age, and the numbers of minor children in each of two age groups: preschoolers (0-4 years) and school-aged (5-18 years). Preliminary models included more detailed measures of parental status but the results did not differ in meaningful ways from the more parsimonious specification presented here.

Broadly speaking, our review of the literature suggested that faculty role productivity might be negatively associated with faculty members' engagement in informal types of out-of-class activities because of competing claims on limited amounts of time. Within this constraint, however, we expected to see differential associations with research-based versus other kinds of out-of-class activities. Specifically, we expected that faculty with active research programs would have more opportunities to work with undergraduate students within a research context than those who were not active research scholars. Similarly, we expected that faculty who taught more undergraduate classes would have increased opportunities for initiating other kinds of out-of-class interactions with their students.

We used several measures of productivity. Following the practice of others (e.g., Blackburn & Lawrence, 1995; Fairweather, 2002) we used a composite measure of written publications, summing three

measures relating to the number of articles in professional journals, reviews or chapters, and books published during the previous two years. (This measure was not a simple count as response categories for each of the three items were coded 0 through 5 on an ordinal scale corresponding to "none", "1-2," "3-4," "5-10," "11-20," and "21+.") We also included a separate indicator of the number of presentations, performances, or exhibitions produced in the same time period. In the event of missing data on for any of these three measures of productivity, we imputed a value based on rank, salary, college, and year of their Ph.D. Administrative records were used to determine which faculty had research grants. As the distribution of total grant dollar amounts was skewed dramatically, we used a simple dichotomous indicator. Close to half of the faculty in our sample had a grant (see Table 2). Finally, survey respondents provided information on their teaching load as this information is not reliably centralized at this university. We included separate measures of the number of undergraduate and graduate courses taught during the fall 2003 semester (coded as 0, 1, 2 or 3 or more courses).

Tierney (1988; 1997) suggests that faculty members' perceptions of institutional events or experiences are of equal or greater importance in shaping their role-related behaviors as the objective events or experiences themselves. In addition to the more objective measures of potentially competing responsibilities listed above, our survey instrument asked faculty for their perceptions of the extent to which four domains of responsibility—teaching obligations, research obligations, family and/or personal responsibilities; travel and consulting responsibilities—"leave little or no time for out-of-class contact with students." Responses for each domain of responsibility were measured on a five-point scale from "completely disagree" to "completely agree." Extensive early analyses indicated that the four measures were strongly correlated (with an average inter-item covariance of 0.56), and thus the four were combined into a single scale of perceived competing time pressures (α=0.78). For the reasons reviewed above, we expected that faculty perceptions of a time crunch would be negatively associated with both measures of out-of-class contact with undergraduates. We also expected that they may be a stronger correlate of non-

research based activities as they are less directly tied to faculty members' reward structures at this research university.

Institutional context. The suggestion that institutional policies and incentive structures play a significant role in shaping faculty members' engagement with undergraduates led us to include six dummy variables indicative of the seven, separately- and distinctly-governed undergraduate colleges at this university (with the Liberal Arts college serving as the reference group). As we did not use college-level measures of these institutional features, we did not have specific expectations concerning the different colleges. Nonetheless, we felt that college-level differences would be consistent with the idea that institutional policy-makers played an important role in shaping faculty engagement in out-of-class interactions.

In addition to indicators for college, we also used three measures of faculty *perceptions* of social supports for out-of-class interaction. These items were "My department is not supportive of this type of involvement," "Faculty peers would assess my professional performance negatively if I spent too much time on out-of-class contact with undergraduates" and "[This institution] ignores or minimally rewards faculty efforts at out-of-class interaction with undergraduates." Responses were coded on a five-point scale from 1 (completely disagree) to 5 (completely agree). A majority of faculty (58%) reported some level of agreement with the latter statement regarding institutional level support. Much smaller percentages "generally" or "completely" agreed with the other two statements, with 16% and 28%, respectively, agreeing.

Personal values and beliefs. As other studies have emphasized the role of professors' personal values in shaping the nature of instructional relationships with students, we expected that faculty members' beliefs and values would be strong correlates of their involvement in out-of-class activities and, particularly, of their involvement in activities other than research. Thus, we included three items reflecting faculty members' beliefs or values concerning their role responsibilities as faculty members.

These included the extent of agreement (coded from "completely disagree" to "completely agree") to two statements: "I am primarily involved with graduate students" and "In my personal view, out-of-class contact with undergraduate students is a less important part of the faculty role than research or teaching." We also employed a measure of faculty members' preferences toward research, as captured through their responses to the question, "How would you characterize your interests at present – equally divided between research and teaching or inclining more toward one than the other?" Five response categories included "heavily toward teaching" (coded as 1) through "heavily toward research" (coded as 5). At this university, the mean response to this self-characterization was 3.27 (see Table 2), or slightly more towards research than the mid-point of "equally interested in teaching and research."

Interpersonal knowledge and abilities. Drawing primarily on Golde and Pribbenow's (2000) findings, we expected that a sense of unease concerning out-of-class interactions with undergraduates would be negatively associated with the frequency of faculty engagement in those interactions. Further, we expected that interpersonal knowledge and abilities would be stronger correlates of activities outside of research than of research, as research-based relationships tend to be more clearly structured and less socially ambiguous.

Three measures from the survey touched on aspects of faculty members' knowledge or abilities related to interactions with undergraduates. These included the extent of agreement with "I am not familiar with opportunities for out-of-class involvement," "I find it difficult to facilitate a meaningful informal exchange with students (e.g., contact that goes beyond 'small talk')," and "It is difficult to see students in person; they prefer to communicate via e-mail or the internet." Responses were measured on a five-point scale (from "completely disagree" to "completely agree"). The percentages of faculty respondents who "generally" or "completely" agreed with those statements were 14%, 14% and 23% respectively.

Controls. While not of central interest in the present analyses, sociodemographic characteristics, academic rank and salary, and discipline affiliation are important in shaping many aspects of faculty role behavior, and we expected the same to be the case here. In order to better distinguish the direct effects of the four domains of influence discussed above, we included several controls in our models of faculty interaction with undergraduates outside of the classroom.

Demographic information on sex and race was drawn from administrative records at the university. We used two indicators of race: "URM" and Asian American, with white serving as the reference category. The URM—or "under-represented minority"—group included African American and Hispanic faculty; numbers were too small to treat those identities separately.

Information on faculty rank and salary was drawn from administrative files. Indicator variables were used to account for faculty rank (assistant, associate, and full professor, as well as lecturer/instructor). Salary was transformed as the natural log of a nine-month contract.

Discipline was coded on the basis of academic department. After preliminary analyses using varying levels of details, we grouped departments into the following five disciplines: psychology and social sciences; math, physical sciences and engineering; biology; fine and applied arts; and humanities. In regression models, humanities served as the reference category.

Method

All of our analyses were essentially replicated for each of our two dependent variables: research with undergraduates and activities with undergraduates. We note that the two outcome measures were measured on different scales (since the former sums only two measures of frequency, and the latter sums eight), but that each measure was coded such that higher values signify greater levels of interaction.

For each outcome measure, we estimated zero-order correlations with each of our independent variables. We then estimated five OLS regression models for each outcome variable. To examine the

explanatory power of each of the four domains of influence on engagement in out-of-class interaction, we ran separate models for each associated block of independent variables – time availability, institutional context, personal values and beliefs, interpersonal knowledge and abilities – in models which included the block of control variables. Then we estimated a fifth and final model that included all five blocks of variables. Results from the regression models are presented for each of the outcome measures, research and activities, in Tables 3 and 4, respectively.

[insert Table 3 about here]

Results

Research with Undergraduates

Time constraints. Several of the measures of time-constraints were significantly related to the outcome variable of research-based activities in Model I of Table 3. Indeed, the R^2 for this model, 0.17, represents a substantial improvement over the 0.10 from a model (results not shown) with the control variables alone. What was surprising, however, was that the results in this model generally did not run in the expected direction. First, the only significant results associated with having children—see, for example, the zero-order correlations in Table 3—indicated that faculty with more young children and especially with more school-aged children reported engaging in *more* research-based activities with undergraduate students than those with older sons and daughters. Even in Model V, the full model, there is little to suggest that the presence of children in the home is an important barrier to building research-based relationships with undergraduate students.

Second, even while research-based interactions take time, we found no evidence that they detract from or are by constrained by faculty productivity (see Models I and V). To the contrary, our results indicate that faculty members who taught more—and specifically, those who taught more undergraduate courses—had more frequent interactions with undergraduates relating to research. In addition, there was

no evidence to suggest that faculty with active research-based relationships with undergraduates published or presented less than faculty without such relationships. And, finally, our indicator of having an outside research grant was also positively associated with the frequency of research-based interactions, indicating that faculty with support research projects were more likely to engage undergraduates in research than were other faculty.

The only evidence we found consistent with the time-constraints model of faculty involvement outside the classroom was with respect to our measure of *perceived* time constraints ("No time left for out-of-class contact"). In the zero-order correlations and in Model I, there was evidence of the expected negative association (such that faculty who reported that they have no time also reported fewer interactions). However, the coefficient associated with this variable became statistically insignificant—and even reversed signs—in the final multivariate model. We suggest that this is fairly weak evidence that faculty with competing demands on their time—either with regards to scholarly productivity or to a busy home life—are less likely to engage with undergraduates in research-based relationships outside of the classroom.

Institutional context. Model II in Table 3 is our "institutional" model of faculty engagement in research-based relationships with undergraduates. In terms of the total explanatory power, this model was the weakest of the five presented here, with an R^2 of 0.12—a slim improvement over the 0.10 of a model (not shown) with controls only.

Still, we did observe some college-level differences in the frequency of research-based interactions with undergraduates in Model II, consistent with the idea that institutional context is important. (Note that the college-level differences in Model II are net of discipline, as we included controls for discipline in each model.) Specifically, compared to their counterparts in the college of liberal arts, faculty in the college of family and policy studies had significantly more research-based interactions with undergraduate students while those in the business college had significantly fewer. These differences

were diminished, however, when we included all blocks of variables in Model V; only the business college remained significantly different from the college of liberal arts at the α=0.10 level.

Our institutional model (Model II) also included three measures related to faculty perceptions of social and institutional supports for these research-based interactions. Taken together, we found little evidence to support the idea that faculty do not engage in these interactions because they do not receive adequate support at their workplace. While the results in Model II were consistent with our expectation that perceiving one's department as unsupportive of out-of-class interactions with undergraduates was negatively associated with the frequency of these interactions, this relationship washed out in Model V when we included the other blocks of predictors. Further, the other two measures of perceived support did not show relationships in the expected direction in any model. Most notably, results across specifications indicate that faculty who perceived there was little institutional support for out-of-class contact with undergraduate students actually reported *more* research-based interactions than did other faculty. This was true even after including the other blocks of variables in Model V. An ad hoc explanation is that causation must flow from activity to attitudes, such that faculty who become involved in these relationships experience a heightened awareness that their activities are not adequately rewarded. It seems unlikely that the lack of institutional supports would somehow compel faculty to become more engaged. Still, we found very little evidence to support the idea that institutional supports are key in understanding faculty engagement in research-based relationships with undergraduates.

Personal values and beliefs. Model III includes three measures of faculty members' personal values and beliefs. With an R^2 of 0.16, Model III has more explanatory power than the institutional model (Model II). Of these three predictors—and, indeed, among nearly all of the predictors included in Model V, our full model—the strongest correlate of faculty involvement in research-based relationships with undergraduates was respondents' reported agreement with the statement, "I am primarily involved with graduate students," with β = -0.20. Further, this perception was widespread, with 37% of the faculty in this sample stating agreement with it.

While the observed association between this measure and the outcome in Table 3 is strong, we caution that the direction of caution remains unclear: is this perception a cause or a consequence of lower levels of interaction with undergraduates? For some, it may be the nature of their position or specific role responsibilities that more graduate student involvement is required of them, in which case it may be accurate to think of perceived role assignment as a causal variable. Our post hoc analyses (not shown) give some credence to this point of view, as faculty who perceive they are primarily involved with graduate students do, in fact, have a greater proportion of graduate courses in their teaching load. On the other hand, for some faculty it may simply be the case that choosing to do little with undergraduates outside of class for other reasons tips the balance and leads them to conclude they are more oriented to graduate students as a consequence. In short, self-definition of job assignment appears to be important, but we are unsure from whence this self-definition arises.

In comparison with this measure of job assignment, the two other measures of personal values and beliefs – "Interests lean towards teaching" and the extent of agreement with "In my personal view, out-of-class contact with undergraduate students is a less important part of the faculty role than research or teaching"—showed weaker associations with the outcome in Model III. In both the zero-order correlations and in Model III, faculty who perceived themselves to be more oriented towards research than teaching were more often engaged in research-based relationships with undergraduates than were faculty who were oriented towards teaching. This suggests that some kinds of out-of-class relationships—that is, research-based relationships—can flourish among faculty who are not necessarily oriented towards the classroom. However, once the other blocks of variables were included in the model in Model V, orientation towards research had no longer showed a statistically significant association.

Zero-order correlations indicated that faculty who placed less value on out-of-class interaction had less frequent research-based interactions with undergraduates than other faculty, but here too the inclusion of the other blocks of variables reduced the association to statistical insignificance.

Interpersonal knowledge and abilities. Model IV includes our three measures of interpersonal knowledge and abilities. With an R^2 of 0.18, this model has the most explanatory power among the four reduced models presented in Table 3. In Model IV as well as in Model V, our full model, all three measures relating to social skills—"Not familiar with opportunities," "Difficult to go beyond small talk" and "Students prefer just to email"—were significantly associated with the extent of research-based interactions. Further, the signs of all the coefficients were in the expected direction. In short, faculty who reported having trouble navigating the social dynamics of student relationships were less involved than those who were aware of the opportunities for establishing those relationships and had the skills to feel confident partaking in those opportunities. These results suggest to us profound opportunities for influencing faculty participation in these kinds of relationships—a point we will return to in our discussion below.

Controls. There was some indication in three of the multivariate models (I, II and III) that Asian American professors had less frequent research-based interactions with undergraduates than did professors of other races, and especially as compared to under-represented minority faculty. In Models IV and V, which included measures of interpersonal knowledge and abilities, the comparison between Asian American and white faculty was no longer statistically significant.

Some faculty role characteristics were consistently associated with research involvement with undergraduates. In particular, assistant professors were more likely than full professors to be involved in a research activity with undergraduate students (with $\beta \geq .14$ across all models). While the zero-order correlation suggests that lecturers and instructors ("Non-tenure line") have less frequent research-based relationships, the coefficient associated with this indicator became insignificant when controls for discipline were included in the model. (In our sample, more than half of the non-tenure line instructors—but only 12% of professors of any rank—were teaching in disciplines related to languages, fine arts, or cultural studies.) Across models, it appears that faculty who were more frequently involved in undergraduate research projects were also paid more ($r=0.11$, and $\beta \geq .11$ across models). This suggests

that there may be concrete, institutional rewards for this kind of involvement, even while our respondents suggested that there are not (see discussion of the variables tapping perceived institutional supports, above).

Finally, in the models of research-based interactions in Table 3, we found substantial disciplinary differences. On one end of the spectrum was biology: faculty working in biology reported far more frequent research-based interactions with undergraduate students than did their counterparts in the humanities. In the full model, Model V, this single indicator for discipline had the largest standardized regression coefficient. The indicator associated with psychology and the social sciences was also statistically significant, suggesting faculty working in these fields were also more engaged in research-based relationships with undergraduates than were faculty in the humanities. The disciplinary differences we observed may simply reflect a reality where undergraduates are more useful in some labs, such as biology labs, than others, such as particle physics. By contrast, faculty in the humanities—whose research tends to be more library-based, solitary in nature, and may even require specialized language skills—are less likely to work with undergraduates in a research relationship. It may also be the case that cultural differences across disciplines explain some of the variation in the propensity to engage with undergraduates in research-based activities.

[insert Table 4 about here]

Out-of-Class Activities with Undergraduates

The models in Table 4 echo those in Table 3, but with a different outcome measure; in Table 4, we examine the correlations with the frequency of faculty engagement in other kinds of out-of-class activities—that is, those which are *not* explicitly research-based. In our discussion below, we pay particular attention to differences in the patterns of effects of our predictors for these other kinds of activities as compared to the analogous results discussed above for research-based activities.

Time constraints. Model I, the time availability model, had an R^2 of 0.15, which represents a substantial improvement of the 0.08 from a model (not shown) estimated with the block of control variables only. However, mirroring the findings above, the results were again not entirely consistent with our expectations regarding time constraints. For example, in the models with indicators of the number and ages of children (Models 1 and V in Table 4), there was little support for the idea that faculty with young children cannot participate in non-obligatory, out-of-class activities with undergraduates at the same rate as faculty with no children. However, the signs of the coefficients—even while insignificant at customary levels as operationalized—suggest that there may be differences in the activities levels of faculty with preschool aged children as compared to those with school-aged kids.

As was the case with research-based activities in Table 3, the results in Table 4 do not support the claim that spending time with undergraduates in out-of-class activities and other kinds of faculty productivity are incompatible. Faculty who taught more undergraduate courses and made more professional presentations were also significantly more involved in non-research-based out-of-class interactions with undergraduates (see Models I and V in Table 4). There were no significant differences in the level of engagement in these activities by the number of publications produced over the prior two years, or by whether or not the faculty member had an active research grant.

The results in Table 4 echo the earlier findings in suggesting that once controls are included, even faculty member's own perceptions of time-availability play little role in explaining the extent of their engagement with undergraduates outside of class. Though the coefficient was significant at the α=0.10 level in Model V, the effect size was modest. These results across both outcome measures examined in this paper were truly surprising, as extended discussions with faculty during instrument development as well as open-ended comments made on the survey itself suggested that time constraints were profound and deeply felt. It may be the case that our measures of time-constraints were inadequate in some way, though both our subjective measure and our "objective" measures—research productivity and teaching

load—fail to support the idea that "busy" faculty do less in the way of non-obligatory types of interactions with undergraduates.

Institutional context. Model II focused on institutional factors that may explain faculty engagement in out-of-class activities with undergraduates. Notably, the R^2 for this model, 0.09, represented only the most marginal improvement over a model with controls only (model not shown; R^2=0.08). Net of the disciplinary differences captured in the block of control variables, there was only one significant college-level contrast in Model II, with faculty in the college of agriculture engaging in significantly more out-of-class activities with undergraduate students than faculty in the liberal arts college. However, this relationship was reduced to statistical insignificance once the other blocks of variables were included (see Model V in Table 4).

As was the case in Table 3, we found some evidence that perceptions of extrinsic support were related to out-of-class involvement with students, but the relationships were not in the direction we initially hypothesized. That is, faculty who were more involved with undergraduates in these kinds of informal activities were *more likely* to report inadequate levels of support from their department and to report that their faculty peers look down on high levels of involvement. Again, we suspect that the experience of being involved sensitizes faculty to the lack of institutional or peer support, rather than the lack of support somehow spurring faculty to become involved.

Personal values and beliefs. Model III includes three measures of values and beliefs relating to role responsibilities. All three of these measures were significant in Model III, and the R^2 for this model, 0.18, is more than double the R^2 for the model with controls only (not shown). This suggests that personal values and beliefs are important in understanding faculty engagement in non-research types of activities outside the classroom. In the full multivariate model (Model V), the indicator of faculty interests on the spectrum ranging from teaching to research weakened to statistical insignificance, but the other two indicators remained significant at the α=0.01 level. As in the case of research-based activities in Table 3,

our results in Table 4 indicated that faculty who agreed with the statement "I am primarily involved with graduate students" interacted significantly less frequently with undergraduates outside of class. In contrast with the results for research-based activities, faculty members' evaluation of the importance of out-of-class activities appeared to influence their engagement in non-research activities; the 37% of faculty who agreed with the statement, "In my personal view, out-of-class contact with undergraduates is a less important part of the faculty role than research or teaching" did significantly less with undergraduates than the 42% who disagreed (β=-0.17, $p < 0.01$).

Interpersonal knowledge and abilities. As was the case in Table 3, the results in Table 4 indicated that the strongest of the four reduced models was Model IV (R^2=0.21), the "interpersonal knowledge and skills" model. And in both that model as well as in Model V (the full model) of Table 4, the single most important predictor of the frequency of engagement in non-research-based activities outside of class was the extent of agreement with the statement, "I am not familiar with opportunities for out-of-class involvement." While this association is profound, we suggest that this coefficient should be interpreted cautiously. Specifically, causation may run from involvement itself to the attitude as much as the reverse; that is, involved faculty are almost necessarily "familiar with opportunities." Still, the other two measures relating to the social dynamics of interaction between faculty and students lend further support to the idea that social skills are important in navigating out-of-class relationships with undergraduates. Both the perceptions that "students prefer just to email" and that "it is difficult to go beyond small talk" with undergraduates were significantly associated with lower levels of faculty engagement in out-of-class activities.

Controls. Across models in Table 4, we found important differences in out-of-class activities by racial group such that under-represented minority faculty and, in models which included measures of interpersonal knowledge and skills, Asian American faculty reported significantly *more* out-of-class interactions with undergraduates than did white faculty. (The latter finding was in contrast to Table 3, in which these same controls weakened the contrast between white and Asian American faculty.) Though a

thorough exploration of the dynamics of race is beyond the scope of the paper, the differences we observe here appear to be consistent with the claim that minority faculty members tend to shoulder heavier mentoring responsibilities than do majority white faculty (Olsen, Maple, & Stage, 1995).

In contrast to our findings for research-based interactions, we found few significant distinctions between assistant, associate and full professors in their levels of other kinds of out-of-class activities with undergraduates in the multivariate models. Rather, in this domain of activities, it was the non-tenure line faculty who were exceptional. In Models I, II and IV, the standardized regression coefficient associated with non-tenure status was approximately 0.25, and this indicator variable was the second most important predictor in the full model. In short, non-tenure line faculty had more frequently engaged in non-research based out-of-class activities—such as sharing coffee or attending a concert with an undergraduate—than did professors of any rank. As was the case of the results reported in Table 3, the findings in Table 4 suggest that faculty who did more with undergraduates outside of class were also paid more, once controls for job title were included in the model.

Disciplinary differences were also important, but operated differently that they did in the case of research activities. While the results in Table 3 indicated that faculty in biology were more often engaged with students in research-based activities, the results in Table 4 suggest that faculty in the humanities and especially in the fine and applied arts were much more frequently engaged in more loosely structured, non-research based kinds of activities.

Limitations

Several limitations of our study must be acknowledged when interpreting the results obtained and considering future research. First, we emphasize that our data are from a single institution. While the large and diverse nature of this institution, encompassing seven colleges each governed by largely independent deans, made it possible to observe variation in institutional environments there is a broader sense in which all respondents to our survey were embedded in the same social context. Weak support for

the institutional explanation of faculty behavior in our results may in part reflect insufficient variation in those independent variables in our sample.

Further, the single institutional design of our study also lends caution to the idea of generalizing our findings, especially beyond the special environment of the elite research-extensive institution. This is not to suggest that the research-extensive university is a less important venue for studying the factors which influence faculty members' out-of-class interactions with undergraduates. Rather, because research universities have been the target of sharp criticism for their alleged neglect of undergraduate education in favor of their research mission (Boyer Commission, 1998; Education Commission of the States, 1995; Wingspread Group on Higher Education, 1993) and have been enjoined to do more to integrate students' in-class and out-of-class experiences (Boyer Commission, 1998; Chickering & Gamson, 1987; Kuh, Douglas, Lund, & Ramin-Gyurnek, 1994), we suggest that this is a particularly important setting in which to better understand faculty-student relationships. We hope that this study—coupled with others from and across research university settings—will contribute to a body of knowledge concerning out-of-class interactions for this segment of higher education institutions.

A second major concern derives from the fact that this research was cross-sectional and therefore correlational rather than demonstrative of causation. While there are occasions where causation might be logically inferred or could be strongly argued from firm theoretical grounds, we fear that cause and consequence cannot be definitively disentangled for many of the observed relationships of interest here. For example, to what extent does unfamiliarity with opportunities for out-of-class contact truly inhibit faculty engagement, and to what extent does the observed association reflect the fact that engagement in out-of-class contact implies at least some awareness of the opportunities for contact? For some of the more surprising findings here—such as the fact that perceived institutional supports are negatively associated with the frequency of faculty engagement—we lean toward the conclusion that causation runs contrary to our initial expectations as reflected in model specification. Further research using other

methods and approaches would help to disentangle these relationships and build a coherent story of causal flow.

Third, we note that while our overall response rate (62%) for our survey was reasonably high for this kind of research, non-response bias may have affected our findings. At a minimum, we know that survey participation rates varied significantly by gender (65% among women and 60% among men), and undergraduate college (56% in the professional, pre-business college versus 72% in family and policy studies). Given the focus of our study, we also expect that faculty who chose not to respond to the survey had less contact with undergraduate students than faculty who participated in the study. It's unclear whether or how an over-representation of involved faculty might have shaped the results we report here.

Finally, we note that with the exception of employment-related variables drawn from administrative files, our data consist of self-reported behavior. Our regression models account for, at best, 30% of the variance in our outcome measures. Clearly, there are forces beyond those included in our models that shape faculty members' decisions to interact with undergraduate students outside the classroom. Nonetheless, we suggest that this study contributes to the growing literature on the importance of faculty-student interactions outside of the classroom by identifying the factors that may shape faculty engagement in these activities in the current environment of the research university, and highlighting potential avenues for promoting faculty engagement in these interactions.

Discussion

The objective of our study was to examine the relationship between faculty engagement in out-of-class interactions with undergraduate students and four potential domains of influence – competing time demands, institutional norms and practices, personal beliefs and attributes, and interpersonal knowledge and abilities. Further, we distinguish between two theoretically distinct types of activities which occur outside of the classroom: research-based interactions, which may be especially important in the research-extensive university environment, and other kinds of activities which may stray further from narrow

academic discourse. Though not without significant caveats, our study results contradict some commonly suggested explanations for faculty members' apparent reluctance to interact more extensively with undergraduate students outside the classroom. Further, we find both similarities and differences in the correlates of faculty engagement in the two types of out-of-class interactions.

To our surprise, our results provide little support for the argument that competing demands on faculty members' time prevent their engagement in out-of-class interactions with undergraduate students. Indeed, to the extent that there is a relationship between other demands on faculty members' time and their involvement in out-of-class activities, our findings suggest the opposite relationship: faculty with younger children, and those with heavier undergraduate teaching loads and higher scholarly productivity are also more involved in research-based and other types of out-of-class activities. While empirical evidence concerning the influence of time constraints has been mixed (compare Fairweather, 2003 and Wilson et al., 1974), our results appear to stand in striking contrast to faculty members' own interpretations. Optional, open-ended comments made on our survey instrument echoed the prevalent belief that other kinds of responsibilities left "little or no time for out-of-class contact with students." For example, one faculty member wrote,

> I thoroughly enjoy my interactions with undergrads and if I were not so overcommitted with research, teaching, traveling and family obligations, I would engage in more out-of-class activities with them.

Another faculty member emphasized the "zero-sum" aspect of time use: "Even meeting students in small groups beyond class time is a professional risk because *that time could be used writing*" (emphasis added).

In contrast to this zero-sum view of time-use, our results lend support to the idea that out-of-class interactions can be highly complementary to other aspects of the faculty role. Thus, for example, we find that faculty who work with undergraduates on research projects get more articles published and are more likely to have external funding for research; these research activities appear to bundle together. Similarly, teaching undergraduate classes is associated with increased interactions with undergraduates, if only

because teaching simply provides faculty with the context and opportunities for building those relationships. There may be a level at which time spent writing competes directly with time spent with students, but the larger relationship we observe seems to be that time spent with students can flow naturally out of certain kinds of professorial activities.

Of the four explanations tested in this study, the "institutional norms and values" model has the least explanatory power, despite the prevalence of calls for institutional policy reforms in the literature on higher education (Boyer Commission, 1998; Golde & Pribbenow, 2000; Gray et al., 1996). Faculty in our study clearly perceive that their faculty peers, department, and especially the institution as a whole offer little support for interacting with undergraduate students outside the classroom, yet we found no evidence that those perceptions reduced the level of interaction with undergraduates. Indeed, we observed a significant, *positive* association between perceived lack of support and engagement in out-of-class interaction—a relationship that appeared to be stronger for non-research based activities. This suggests to us that faculty who choose to be more actively involved with undergraduate students outside the classroom do so regardless of institutional rewards, perhaps motivated by internal processes rather than external incentive systems. This contrast between the intrinsic, personal motivations and extrinsic incentives is highlighted nicely in one faculty member's comment that, "although *I* enjoy student interactions, I would recommend to *other faculty members* that they limit out-of-class interaction in favor of other professional activities [as such interaction] doesn't appear to be rewarded" (emphasis added). This is not to say that institutions can play no role in promoting faculty-student interaction outside of class—a point we will return to below—but that the primary motivation to engage in these types of activities does not appear to arise from concrete "carrots" or "sticks" wielded by the university community.

Rather, the motivation appears to be more personal. Overall, our results indicate that faculty members' personal values and beliefs are strongly associated with their extent of engagement in out-of-class interactions with undergraduate students and, further, these values are especially strong correlates of

involvement in activities that are not research-based and therefore may deviate more from narrow academic discourse. In open-ended comments, several faculty emphasized a sense of duty associated with their role positions and/or with having been a beneficiary of such exchanges in the past. Typical of this theme, one wrote, "I spend a great deal of time with undergraduates and I do so because I feel a moral and professional obligation to be available to them." Another added, "I have given back as my professor did for me." A third respondent elaborated, "I do engage with undergrads outside of class but I do so because of my feminist politics; that is, because I am committed to mentoring and empowering young women. I certainly don't do it because it 'gets' me anything from the university."

The strongest of the three indicators of personal values and beliefs we used in our models was agreement with the statement "I am primarily involved with graduate students." Here, we feel acutely the limitations of our data, as we have little information concerning why 37% of responding faculty in one of the seven undergraduate colleges report agreement with this statement. We suspect that for some faculty, their responses reflect the nature of their teaching (e.g. the ratio of graduate to undergraduate courses) or administrative responsibilities (e.g. director of graduate studies). For others, however, agreement may reflect personal tastes or preferences more than their actual job responsibilities. Presumably, however, the dimensions can be related, with faculty oriented towards undergraduates being rarely denied the opportunity to teach them, for example.

Of the four domains of influence on out-of-class interactions we examined, the most powerful appeared to be the domain reflecting interpersonal knowledge and abilities. And, interestingly, the relationship between the variables tapping this domain and out-of-class activities was nearly twice as strong for activities that were not research-based than for those which were circumscribed as research. Clearly, not all faculty are comfortable engaging in out-of-class contact with undergraduates—and, again, this was a theme that permeated the optional open-ended comments we received on the survey instrument:

> I'm not good at small talk, and that leads to my own dissatisfaction at out-of-class interactions in groups (such as a student activity for which I'm the advisor).
>
> I taught a calculus class last year and was not very comfortable with the non-math interaction students tried to have with me during office hours. They were always telling me about their personal life and I am no psychiatrist but only a mathematician.

Further, many faculty felt that such awkwardness was reciprocal:

> As a young faculty member, I visited dorms to give presentations and on one occasion invited students to a Sunday get together at my home. None came. As a general observation, I would say most undergraduates are not interested in out-of-class interactions, unless they are directly relevant to their major.
>
> It is not clear to me that very many students really want more contact with their professors.
>
> Each semester, I send a personal email to all my advisees at least once to say, "Hello, how is your semester going?" I also remind them that one of my jobs is to be their personal advocate who is willing to do what ever I can to ensure that their experience at [this institution] is both positive and rewarding for them. I then invite them to contact me about anything, academic or otherwise, that may be of concern to them…It has disappointed me that only on rare occasions are my emails acknowledged and even less frequently do my advisees bother to stop by.

A narrow interpretation of our results might suggest that because the "institutions" model is the weakest of the models we examined, institutions can do little to better support faculty members' engagement in out-of-class interaction. However, highlighting the results from the "interpersonal knowledge and abilities" variables, we would instead argue that there may be very concrete opportunities for this institution—and perhaps others—to redress low levels of out-of-class interaction. That is, institutions may be able to play an important role in providing and otherwise brokering information flows concerning opportunities for engagement and the actual "how to's" of making it work. For example, a university might provide forums for faculty who have been successfully involved to serve as mentors or recruiters for other faculty—an idea promoted elsewhere (Golde & Pribbenow, 2000; Kuh et al., 1985). Informational programs might also work on the student side of the equation, highlighting to them the benefits and possibilities of building relationships with faculty. Further, our findings and those of others (Golde & Pribbenow, 2000; Wilson et al., 1974) suggest that possibilities for interaction are greatest when the activities are circumscribed as more narrowly academic—even if not class-related—so as to limit ambiguity concerning the goals of the interaction and the need for "small talk." So, for example,

social awkwardness and discomfort may be less when students and faculty are collaborating on a workshop that in some way relates to a field of shared interest than they would be when students and faculty are simply thrown together for an ill-defined "coffee hour."

At the outset of this paper, we justified treating research-based activities—that is, narrowly academic activities—and non-research based interactions separately, and estimated separate models for each. We believe that our results highlight the importance of making this distinction, and suggest that at least at this research-extensive university, there may be more likelihood of success for engaging faculty in research-based relationships than in other kinds of more open-ended interactions. However, our treatment of these two kinds of activities should not imply that they are entirely separate and distinct phenomena. To the contrary, it is clear that the two outcomes are integrally related; when we included each outcome among the predictors of the other outcome measure, it emerged as the most powerful single predictor in the regression equation. We expect that this reflects the actual nature of the association; that is, faculty who are engaged in research projects with undergraduate students are more likely to feel comfortable and to find occasions to host these students at home or to attend an extracurricular event together. Similarly, faculty who regularly socialize with undergraduate students outside of class may also be more likely to be asked by students to mentor an honor's thesis, or may be more likely to want to engage their students in their own research projects. One faculty member nicely described this process of relationship building in the open-ended comments to the survey:

> I had one student tell me that working in my lab (honors thesis her senior year) changed her perspective on [this institution] from just being here to feeling like she belonged and had a great university experience because being part of the lab made her feel like she was part of a family (we do things together like celebrate birthdays, have holiday parties, etc.).

Thus, we would venture that strong academic relationships outside the classroom could contribute in profound ways to building the university community more generally.

In closing, we again emphasize that our results are based on responding faculty from a single, research-extensive university. It is impossible for us to know to what extent our findings are shaped by

the peculiarities of this unique environment. However, at a minimum, we hope this paper will contribute to a renewed dialog on the factors that support and enhance faculty-student relationships that extend beyond the classroom.

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Table 1. Definition and Descriptives for Outcome Measures, Faculty Survey

Variables	Definition (observed range)	Mean	SD
Research with undergraduates	Sum of following two measures of frequency of research activities with undergraduates (0-8)	2.39	2.72
Faculty-led research	"Advise or supervise undergraduate students working on faculty research project" (0-4)	1.12	1.55
Student-led research	"Advise or supervise undergraduate students working on student research project (e.g. Honors thesis or independent study)" (0-4)	1.29	1.53
Activities with undergraduates	Sum of following eight measures of frequency of out-of-class activities with undergraduates (0-19)	2.86	3.00
Had coffee	"Had coffee or dined with undergraduate students in cafe or restaurant" (0-4)	0.83	1.02
Chaperoned	"Chaperoned a student social function (e.g., party…)" (0-3)	0.09	0.32
Student clubs	"Participated in meetings of student clubs or organizations" (0-4)	0.49	0.83
Hosted at home	"Hosted students in your home (e.g., for a meal or social function)" (0-4)	0.42	0.61
Field Trip	"Organized or attended an extracurricular field trip with a student group or organization" (0-3)	0.25	0.54
Workshop	"Participated in an extracurricular presentation or workshop with undergraduate students (e.g., organized, spoke at or attended event)" (0-4)	0.25	0.54
Athletic event	"Accompanied undergraduate students to an athletic competition" (0-3)	0.09	0.37
Cultural event	"Attended an arts or cultural event with undergraduate students" (0-4)	0.27	0.54

Note: Each single variable is measured on the following scale, with reference to F'03: 0 = "Not involved," 1 = "Once or twice a term," 2 = "Once or twice a month," 3 = "Once a week," and 4 = "Several times a week or more"

Table 2. Definitions and Descriptives for Independent Variables, Faculty Survey (n=901)

Variables	Definition (observed range)	Mean	SD
Time Availability: Children			
No children	Indicator for no children at all (0-1)	0.25	0.43
Preschoolers	Number of children age 4 or younger (0-4)	0.36	0.79
School-age kids	Number of children aged 5-18 (0-8)	1.07	1.51
Time Availability: Productivity			
Number of undergraduate courses	Taught 0, 1, 2, or 3 or more courses in F'03 (0-3)	0.72	0.85
Number of graduate courses	"	0.36	0.57
Number of publications	Sum of three measures of publications [books, reviews, and articles] measured on an ordinal scale from 0 to 5 (0-11)	3.08	2.01
Number of presentations	Number of presentations, exhibitions or performances (0-5)	2.35	1.27
Has outside research grant	Institutional files show active grant (0-1)	0.47	0.50
Time Availability: Perceptions			
No time left for out-of-class contact	Scale (α=.78) capturing the extent of agreement that four areas (teaching obligations; research obligations; family and/or personal responsibilities; and travel and consulting responsibilities) "leave little or no time for out-of-class contact with students" (1-5)	2.60	0.86
Institutional Context: College			
Liberal Arts	Indicator for college (0-1)	0.40	0.17
Art	"	0.03	0.17
Agriculture	"	0.27	0.44
Engineering	"	0.16	0.36
Family and Policy Studies	"	0.08	0.27
Professional, pre-business	"	0.03	0.17
Professional, pre-law	"	0.03	0.18
Institutional Context: Perceptions of Support			
Department does not support it	Extent of agreement with "My department is not supportive of this type of involvement" (1-5)	2.49	1.08
Faculty peers would think poorly of it	Extent of agreement with "Faculty peers would assess my professional performance negatively if I spent too much time on out-of-class contact with undergraduates" (1-5)	2.72	1.16
Institution does not support it	Extent of agreement with "[This institution] ignores or minimally rewards faculty efforts at out-of-class interaction with undergraduates" (1-5)	3.62	1.01
Personal Values and Beliefs			
Primarily involved with graduate students	Extent of agreement with "I am primarily involved with graduate students" (1-5)	2.88	1.29
Interests lean towards research	Response to "How would you characterize your interests at present - equally divided between research and teaching or inclining more toward one than the other?" (1-5)	3.27	1.19
Out-of-class interaction is less important	Extent of agreement with "In my personal view, out-of-class contact with undergraduate students is a less important part of the faculty role than research or teaching" (1-5)	2.84	1.22

Table 2, *continued.* Definitions and Descriptives for Independent Variables, Faculty Survey (n=901)

Variables	Definition (observed range)	Mean	SD
Interpersonal Knowledge and Abilities			
Not familiar with opportunities	Extent of agreement with "I am not familiar with opportunities for out-of-class involvement" (1-5)	2.17	1.03
Difficult to go beyond small talk	Extent of agreement with "I find it difficult to facilitate a meaningful informal exchange with students (e.g., contact that goes beyond 'small talk')" (1-5)	2.15	1.07
Students prefer just to email	Extent of agreement with "It is difficult to see students in person; they prefer to communicate via e-mail or the Internet" (1-5)	2.60	1.04
Controls: Demographics			
Female	Indicator for sex (0-1)	0.30	0.46
URM	Black, Hispanic, and/or Native American (0-1)	0.06	0.24
Asian American	Asian American (0-1)	0.06	0.25
Controls: Role Characteristics			
Assistant Professor	Indicator for faculty rank (0-1)	0.18	0.39
Associate Professor	"	0.19	0.39
Full Professor	"	0.47	0.50
Non-tenure line	Instructor, Lecturer, or Senior Lecturer (0-1)	0.16	0.37
Salary (logged)	Natural log of 9-month salary (9.5-12.3)	11.30	0.42
Controls: Discipline			
Psychology & Social Sciences	Indicator for discipline (0-1)	0.19	0.39
Math, Physical Sciences & Engineering	"	0.29	0.45
Biology	"	0.22	0.41
Fine & Applied Arts	"	0.09	0.29
Humanities	„	0.18	0.38

Table 3. OLS Regression Results Predicting Frequency of Research with Undergraduates, Faculty Survey (n=859)

Variables	Zero-order correlation	Model I: Time b	Model I: Time β	Model II: Institutions b	Model II: Institutions β	Model III: Values b	Model III: Values β	Model IV: Skills b	Model IV: Skills β	Model V: Full b	Model V: Full β
Time Availability: Children											
No children	0.01	0.38	0.06							0.25	0.04
Preschoolers	0.07 *	0.22 †	0.06							0.16	0.05
School-age kids	0.08 **	0.13 *	0.07							0.11 †	0.06
Time Availability: Productivity											
Number of undergrad. courses	0.11 **	0.68 **	0.21							0.54 **	0.17
Number of graduate courses	0.01	-0.02	-0.01							0.15	0.03
Number of publications	0.16 **	0.05	0.04							0.07	0.05
Number of presentations	0.17 **	0.20 *	0.09							0.15 †	0.07
Has outside research grant	0.20 **	0.70 **	0.13							0.63 **	0.11
Time Availability: Perceptions											
No time for out-of-class contact	-0.06 †	-0.31 **	-0.10							0.07	0.02
Institutional Context: College											
Liberal Arts (reference)	-0.14 **			—	—					—	—
Art	-0.01			0.28	0.02					0.59	0.04
Agriculture	0.07 *			-0.36	-0.06					-0.36	-0.06
Engineering	0.06 †			0.57	0.07					0.35	0.05
Family and Policy Studies	0.12 **			0.86 *	0.08					0.51	0.05
Professional, pre-business	-0.04			-0.99 †	-0.06					-1.03 †	-0.07
Professional, pre-law	-0.03			-0.83	-0.05					-0.34	-0.02
Institutional Context: Perceptions											
Department does not support it	-0.02			-0.23 *	-0.09					-0.09	-0.04
Faculty peers would think poorly	0.08 *			0.06	0.02					0.13	0.06
Institution does not support it	0.07 *			0.21 *	0.08					0.19 *	0.07
Personal Values and Beliefs											
Primarily involved with grads	-0.14 *					-0.55 **	-0.26			-0.43 **	-0.20
Interests lean towards research	0.11 **					0.20 *	0.09			0.08	0.04
Interaction is less important	-0.11 **					-0.15 †	-0.06			0.01	0.00
Interpersonal Knowledge and Abilities											
Not familiar with opportunities	-0.20 **							-0.46 **	-0.17	-0.32 **	-0.12
Difficult to go beyond small talk	-0.18 **							-0.27 **	-0.11	-0.22 *	-0.09
Students prefer just to email	-0.19 **							-0.31 **	-0.12	-0.31 **	-0.12

† $0.05 < p < 0.10$; * $0.01 < p < 0.05$; ** $p < 0.01$

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Table 3, *continued.* OLS Regression Results Predicting Frequency of Research with Undergraduates, Faculty Survey (n=859)

Variables	Zero-order correlation	Model I: Time b	β	Model II: Institutions b	β	Model III: Values b	β	Model IV: Skills b	β	Model V: Full b	β
Controls: Demographics											
Female	0.01	0.44 *	0.07	0.25	0.04	0.31	0.05	0.20	0.03	0.18	0.03
URM	0.03	0.44	0.04	0.48	0.04	0.20	0.02	0.21	0.02	0.33	0.03
Asian American	-0.06	-0.89 *	-0.08	-0.80 *	-0.07	-0.74 *	-0.07	-0.45	-0.04	-0.44	-0.04
Controls: Role Characteristics											
Assistant Professor	0.13 **	1.18 **	0.16	1.06 **	0.15	1.15 **	0.16	1.43 **	0.20	1.03 **	0.14
Associate Professor	0.04	0.53 *	0.08	0.48 †	0.07	0.52 *	0.07	0.57 *	0.08	0.34	0.05
Full Professor (reference)	0.00	—	—	—	—	—	—	—	—	—	—
Non-tenure line	-0.18 **	-0.07	-0.01	-0.39	-0.05	-0.55	-0.07	-0.45	-0.06	-0.39	-0.05
Salary (logged)	0.11 **	0.93 **	0.14	0.76 *	0.11	0.96 **	0.14	0.80 *	0.12	0.71 *	0.11
Controls: Discipline											
Psychology & Social Sciences	0.03	0.71 *	0.11	0.91 **	0.14	0.73 *	0.11	0.67 *	0.10	0.84 *	0.13
Math, Phys. Sciences & Eng.	-0.01	0.70 *	0.11	0.50	0.08	0.94 **	0.16	0.93 **	0.15	0.82 *	0.14
Biology	0.17 **	1.69 **	0.26	1.94 **	0.30	1.96 **	0.30	1.72 **	0.26	2.13 **	0.33
Fine & Applied Arts	-0.03	0.66 †	0.07	0.27	0.03	0.61 †	0.06	0.30	0.03	0.22	0.02
Humanities (reference)	-0.17 **	—	—	—	—	—	—	—	—	—	—
Constant		-10.09 *		-7.51 †		-8.15 *		-5.31		-6.27	
Adjusted R^2		0.17		0.12		0.16		0.18		0.27	

† $0.05 < p < 0.10$; * $0.01 < p < 0.05$; ** $p < 0.01$

Table 4. OLS Regression Results Predicting Frequency of Other Activities with Undergraduates, Faculty Survey (n=901)

Variables	Zero-order correlation	Model I: Time b	Model I: Time β	Model II: Institutions b	Model II: Institutions β	Model III: Values b	Model III: Values β	Model IV: Skills b	Model IV: Skills β	Model V: Full b	Model V: Full β
Time Availability: Children											
No children	-0.01	-0.18	-0.02							-0.28	-0.03
Preschoolers	-0.06 *	-0.13	-0.02							-0.20	-0.04
School-age kids	0.04	0.16 †	0.06							0.10	0.04
Time Availability: Productivity											
Number of undergrad. courses	0.24 **	0.83 **	0.18							0.66 **	0.14
Number of graduate courses	0.00	0.09	0.01							0.26	0.04
Number of publications	-0.10 **	-0.06	-0.03							-0.03	-0.02
Number of presentations	-0.02	0.37 **	0.12							0.35 **	0.11
Has outside research grant	-0.12 **	-0.05	-0.01							0.00	0.00
Time Availability: Perceptions											
No time for out-of-class contact	-0.21 **	-0.96 **	-0.20							-0.26 †	-0.06
Institutional Context: College											
Liberal Arts (reference)	-0.06			—	—					—	—
Art	0.14 **			1.17	0.05					0.95	0.04
Agriculture	0.00			0.97 *	0.11					0.57	0.06
Engineering	-0.05			0.37	0.03					-0.07	-0.01
Family and Policy Studies	0.07			0.78	0.05					-0.07	0.00
Professional, pre-business	0.04			0.81	0.04					0.36	0.02
Professional, pre-law	-0.02			0.18	0.01					-0.07	0.00
Institutional Context: Perceptions											
Department does not support it	-0.03			-0.20	-0.05					0.21 †	0.06
Faculty peers would think poorly	0.04			0.32 *	0.09					0.49 **	0.14
Institution does not support it	0.05 †			0.13	0.03					0.10	0.03
Personal Values and Beliefs											
Primarily involved with grads	-0.31 **					-0.61 **	-0.20			-0.34 **	-0.11
Interests lean towards research	0.25 **					-0.26 *	-0.08			-0.18	-0.05
Interaction is less important	-0.29 **					-0.69 **	-0.21			-0.57 **	-0.17
Interpersonal Knowledge and Abilities											
Not familiar with opportunities	-0.34 **							-1.09 **	-0.28	-0.87 **	-0.22
Difficult to go beyond small talk	-0.27 **							-0.37 **	-0.10	-0.23 †	-0.06
Students prefer just to email	-0.24 **							-0.42 **	-0.11	-0.31 *	-0.08

† $0.05 < p < 0.10$; * $0.01 < p < 0.05$; ** $p < 0.01$

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Table 4, *continued.* OLS Regression Results Predicting Frequency of Other Activities with Undergraduates, Faculty Survey (n=901)

Variables	Zero-order correlation	Model I: Time b	β	Model II: Institutions b	β	Model III: Values b	β	Model IV: Skills b	β	Model V: Full b	β
Controls: Demographics											
Female	0.05 †	0.14	0.02	0.01	0.00	-0.19	-0.02	-0.34	-0.04	-0.20	-0.02
URM	0.10 **	1.41 **	0.08	1.56 **	0.09	1.07 *	0.06	1.30 *	0.08	0.83 †	0.05
Asian American	0.01	0.64	0.04	0.47	0.03	0.36	0.02	1.14 *	0.07	1.10 *	0.07
Controls: Role Characteristics											
Assistant Professor	-0.06 †	0.54	0.05	0.01	0.00	0.35	0.03	0.61	0.06	0.54	0.05
Associate Professor	0.01	0.77 *	0.08	0.38	0.04	0.54	0.05	0.70 *	0.07	0.45	0.04
Full Professor (reference)	-0.09 **	—	—	—	—	—	—	—	—	—	—
Non-tenure line	0.17 **	2.66 **	0.24	2.71 **	0.25	1.64 **	0.15	2.56 **	0.24	2.08 **	0.19
Salary (logged)	-0.04	1.57 **	0.16	1.63 **	0.17	1.71 **	0.18	1.22 **	0.13	1.66 **	0.17
Controls: Discipline											
Psychology & Social Sciences	0.01	-0.01	0.00	-0.77	-0.08	-0.20	-0.02	-0.21	-0.02	-0.59	-0.06
Math, Phys. Sciences & Eng.	-0.11 **	-0.16	-0.02	-1.06 *	-0.12	-0.37	-0.04	-0.25	-0.03	-0.09	-0.01
Biology	-0.05 †	0.07	0.01	-1.16 *	-0.12	-0.21	-0.02	-0.25	-0.03	-0.58	-0.06
Fine & Applied Arts	0.21 **	2.45 **	0.18	1.97 **	0.14	2.28 **	0.16	2.06 **	0.15	1.69 **	0.12
Humanities (reference)	0.02	—	—	—	—	—	—	—	—	—	—
Constant		-13.50 *		-15.63 *		-11.04 *		-6.16		-11.73 *	
Adjusted R^2		0.15		0.09		0.18		0.21		0.30	

† $0.05 < p < 0.10$; * $0.01 < p < 0.05$; ** $p < 0.01$