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The Gendered Division of Labor Among STEM Faculty and the Effects of Critical Mass

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This study explored whether there is a gendered division of labor for faculty in academic science, technology, engineering, and mathematics (STEM) at research universities and examined the connections between time allocation and satisfaction for STEM faculty within the context of a critical mass of women in the discipline. Using a weighted sample of 13,884 faculty from the 2004 National Study of Postsecondary Faculty (NSOPF:04), we found a gendered division of labor that is mitigated by a critical mass of women faculty in the discipline. Results lend empirical support to theories that argue critical-mass attainment positively impacts equity in resource distribution and time allocation.

Keywords: gender, faculty, STEM, critical mass

At every rank, women faculty are far outnumbered by men in science, technology, engineering, and mathematics (STEM) disciplines, especially at prestigious, research universities (Wilson, 2004; Long, 2001; Beutel & Nelson, 2005; Trower & Chait, 2002). Lack of collegiality, discriminatory practices, less money, slower promotions, and lower tenure rates as compared to men begin to explain the barriers to women's advancement in academic science and engineering (Valian, 1999). In recent years, a number of best practices have proven effective in advancing women in STEM, including training on discrimination and unconscious bias in

evaluation, increased work/life flexibility, improved mentoring, and peer-led advocacy on diversity issues (Moody, 2004; Stewart, Malley, & LaVaque-Manty, 2007; Williams, Alon, & Bornstein, 2006). However, gender disparities persist in academic science and engineering.

Research on the effects of "critical mass" (considered at a bare minimum to be a representation of 15% or greater of a population (Etzkowitz, Kemelgor, & Uzzi, 2000) of women in academia is especially promising and can help academic leaders prioritize the most effective solutions to the barriers women face in STEM disciplines. A critical mass of women in departments creates a more welcoming environment for women (Etzkowitz, Kemelgor, Neuschatz, Uzzi, & Alonzo, 1994). Women are more likely to be hired in academic departments that already have a relatively high percentage of women faculty (Marschke, Laursen, Nielsen, & Rankin, 2007). An influx of women faculty also has the potential to support and inspire female students, given that the most important predictor of undergraduate women's success is the percentage of women faculty (Trower & Chait, 2002).

To expedite the implementation of solutions required for the retention and advancement of women faculty in STEM, this study explores

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connections between faculty's time allocation, satisfaction, and the presence of a critical mass of women faculty in the discipline. Specifically, we explore differences in the time allocated to teaching, research, and service/unspecified activities, and the relationship between time allocation and three satisfaction measures—satisfaction with workload, salary, and career overall—for faculty in STEM, to determine if any differences correlate with a critical mass of women in the discipline.

Framework

Two primary frameworks guide this study. The first is feminist organizational theory, which posits that institutions are guided by unexamined masculine principles that work to exclude women and impede their success and advancement. For example, jobs within organizational structures are abstract categories meant to be filled by workers with little to no familial responsibilities or outside obligations, a framework that assumes a particular gendered organization of social reproduction (Acker, 1990; Williams, 2000). Hidden within this framework of the "ideal worker" is the labor required to maintain and reproduce the labor force, both on a day-to-day basis and generationally. Women in the United States continue to shoulder a majority of child-rearing and household responsibilities, despite working outside the home (Brines, 1994; Schiebinger, 1999; Shelton & John, 1996; Van Anders, 2004; Ward & Wolf-Wendel, 2004). Cultural socialization, which reinforces women's primary role as caregivers, requires women scientists to choose between successful academic careers and family (Xie & Shauman, 2003).

The gendered division of labor supersedes the public-private boundary (Duffy, 2005; McDowell, 1990). Therefore, women are often steered into performing "caretaking" tasks in the paid labor force, such as taking responsibility for providing refreshments at meetings, creating reports on women's status in the academy, and "nurturing" colleagues and students through mentoring and advising (Bird, Litt, & Wang, 2004). Organizational theories regarding the gendered nature of work call attention to the obfuscation of masculine principles guiding workplace organizations as well as the productivity of women's unpaid labor in the domestic

sphere. These social norms, based on sexism rather than any biological imperatives of women and men, govern organizational behaviors and role assignments (Acker, 2000). A gendered division of labor among faculty in STEM disciplines at doctoral/research universities may be a key determinant in the success of women faculty, both in terms of individual satisfaction and the achievement of critical mass (Collins, 1998; Donaldson & Emes, 2000).

The second theoretical framework used in this study is critical-mass theory. Critical mass is defined as 15% of a population and represents the tipping point, the threshold between the continuity of the status quo and the emergence of cultural change (Etzkowitz et al., 2000; Gladwell, 2002). When considering the top 100 departments in U.S. higher education (according to research expenditures), women faculty in STEM fields overall have yet to reach critical mass. In 2007, women comprised only 14% of the faculty in the top 100 departments in chemistry, 9% of the faculty in physics, 13% in civil engineering, and 9% in mechanical engineering (Nelson, 2007). When men dominate not only the high-ranking positions in an organization but also the majority of its general population, cultural norms tend to favor this dominant group, leaving women faculty to struggle with both structural and interpersonal inequities (Ropers-Huilman, 2000). For example, in the male-dominated STEM disciplines, women faculty tend to carry greater responsibility for undergraduate education and service; have access to fewer resources than men; experience heavier course loads; and be excluded from professional networks (Park, 1996; Mendoza & Johnson, 2000; Bird et al., 2004). Therefore, we used critical-mass theory to guide our interpretation of women faculty's role allocation and satisfaction as we examined how gender affects the faculty career (Etzkowitz et al., 2000).

Unequal divisions of both labor expectations and resource allocations in the academy position members of the majority (men) more favorably than their colleagues from underrepresented groups (including women) for promotions and leadership positions. Women in STEM thus advance more slowly than men and have higher rates of attrition (Stewart et al., 2007; Callister, 2006; Valian, 1999; Etzkowitz et al., 2000; Long, 2001; Ceci, Williams, & Barnett, 2009; August & Waltman, 2004). Until a critical mass

of women in a discipline is achieved, the significant challenges in recruiting and retaining women faculty will persist (Valian, 1999). A dearth of female faculty members, in turn, adversely affects female students' persistence, further draining the pipeline for future female faculty members in STEM (Blickenstaff, 2005). We examine whether critical-mass achievement offers a concrete, effective way to disrupt these gender inequities in higher education and increase women's opportunities in STEM disciplines. Within the structure provided by these two complementary frameworks, this study explores whether there is a gendered division of labor in academic STEM, as well as the connections between time allocation and satisfaction for faculty within the context of a critical mass of women in the discipline.

Relevant Literature

Many studies over the past 30 years have explored reasons for the dearth of women faculty in STEM, but time allocation and satisfaction have not been explored in the context of critical mass using a nationally representative data set. Park (1996) used organizational theory as a framework to critique the gendered division of labor in the academy, where "research is implicitly deemed as 'men's work' and is explicitly valued, whereas teaching and service are characterized as 'women's work' and explicitly devalued" (Park, 1996, p. 47). In other words, labor within the university and its reward structures are highly gendered based on socially constructed norms of feminine and masculine roles (Bird et al., 2004). Research on faculty role allocation found that women's heavier teaching and service loads have negative outcomes for their research productivity and that this is most pronounced at research universities where women are most underrepresented (Bellas & Toutkoushian, 1999; Bielby, 1991; Collins, 1998; Olsen, Maple, & Stage, 1995; Roberts & Ayre, 2002; Ropers-Huilman, 2000). Allen (1998) used 1993 National Study of Postsecondary Faculty (NSOPF:93) data to analyze faculty composition and time allocation across disciplines. He found that: a) gender is a strong predictor of the amount of time spent on research, b) women are concentrated in the least prestigiously ranked institutions and, c) women at all ranks devote greater amounts of time to

instruction than men do. Qualitative research supports these quantitative findings. Female faculty members report greater dissatisfaction than their male peers with how they spend their time, especially in the research aspect of academic labor (COACHE, 2007). Furthermore, women faculty report less equitable allocation of academic responsibilities than men, especially in teaching and service assignments (Roberts & Ayre, 2002; Aguirre, 2000).

The dynamics and outcomes of a critical mass of women faculty in STEM needs further study. Donaldson and Emes (2000), using the "United Nations recommended percentage necessary for political action" as the threshold for critical mass, argue that critical-mass theory "has been a useful analytical tool to assess core academic participation by women scholars" (p. 52). Evidence demonstrates that a critical mass of women faculty has positive outcomes, especially in regards to more equitable resource distribution between women and men faculty, but it is not without negative consequences (Etzkowitz et al., 2000). For example, interpersonal relationships in academic departments have been shown to deteriorate, and men's satisfaction with the workplace environment to decrease, as the proportion of women grows (Collins, 1998; Henwood, 1996; Etzkowitz et al., 2000). Therefore, critical mass can impact departmental climate negatively, suggesting that although achieving critical mass may begin to transform gender inequities in academia, it also may trigger resistance from dominant group members who may anticipate suffering subsequent losses (Acker, 1990; Callister, 2006; Etzkowitz et al., 2000).

Past research has demonstrated that female faculty members leave STEM fields at almost twice the rate of their male colleagues (Callister, 2006; Ceci et al., 2009; August & Waltman, 2004; Aguirre, 2000; Olsen et al., 1995; Seifert & Umbach, 2008; Trower & Chait, 2002). Job satisfaction can often foretell a faculty member's intentions to leave an academic position (Rosser, 2004; Seifert & Umbach, 2008). A recent study by the Higher Education Research Institute found that low levels of satisfaction among women faculty pose serious problems for the retention of women in academic departments (Hurtado & DeAngelo, 2009). Kallenberg (1977) proposes that job satisfaction is related to both the work itself as well as the

“extrinsic” characteristics of the position, including financial reward, opportunities, colleague relationships, commute and resources. In this paper, we expand this definition to include gendered divisions of labor as a disciplinary variable that can impact satisfaction. In addition to examining role allocation and percentage of women in a particular field, we also compared measurements of satisfaction with career overall, workload, and salary between women and men faculty and women in disciplines with a critical mass of women and women in disciplines without critical mass. As a potential solution to this issue, we explore whether critical-mass attainment has positive outcomes for women faculty members, and if these positive outcomes increase their levels of satisfaction and, thus by extension, their persistence in academia.

Other researchers have examined women faculty’s job satisfaction and role allocation broadly (Olsen et al., 1995), but our analysis focuses on research-intensive/extensive, doctoral-degree granting institutions (where women are the least represented in STEM fields), enabling us to compare the gendered division of labor among a relatively homogenous group of faculty with similar professional demands. Allen (1998) investigated the gendered nature of faculty workload using NSOPF:93 data, but was unable to account for social and organizational factors influencing the structure of labor in the academy. The use of the gender organizational literature as framework for this study is designed to lend a historical, sociocultural perspective in order to provide a useful interpretation of the barriers facing women faculty in STEM.

While much of the literature on critical mass draws conclusions in regards to organizational climate, there is a lack of national, empirical evidence examining factors that constitute favorable change overall for women academics, especially for women in science and engineering fields where women are least represented. This study uses NSOPF:04 data, restricted to STEM disciplines, to address this gap in the critical-mass literature, focusing specifically on the outcomes of role allocation. Though other research on women faculty has included issues on workload, satisfaction, and persistence (Clewell & Campbell, 2002; Pfeffer & Langston, 1993; Allen, 1998), no studies have simul-

taneously examined these issues using a national database and a critical mass framework to organize and interpret the data in order to better determine the political and cultural variables that advance women in STEM disciplines. Greater investigation on this subject is sorely needed because women faculty’s participation in these fields is stagnating, if not declining (Burack & Franks, 2004; Nelson, 2007; Mendoza & Johnson, 2000). A gendered division of labor, in which women are steered into the more caring and less valued duties of the faculty job, serves to justify the salary dispersion between female and male faculty and limits women’s opportunities to shape systems of knowledge.

Method

The research questions guiding this study are: 1) Is there a gendered division of labor in STEM disciplines at doctoral/research universities (i.e., do men and women faculty allocate different percentages of time to undergraduate instruction, graduate instruction, research, and service/unspecified activities)?; 2) Does women faculty’s time allocation differ depending on the presence of a critical mass of women in the discipline?; 3) Are there correlations between measures of time allocation, productivity, satisfaction, and the presence of a critical mass of women in the discipline for men or women faculty?; and, 4) What are the unique influences of the presence of a critical mass of women in the discipline and time allocation on the satisfaction measures for women faculty in STEM?

Data Source and Sample

The data analyzed for this study were drawn from the 2004 National Study of Post-Secondary Faculty (NSOPF:04), administered by the National Center for Education Statistics (NCES) of the U.S. Department of Education. The survey, intended to gather information on faculty and other instructional staff in U.S. institutions of higher education, is the most comprehensive study of faculty (Jacobs, 2008). For this preliminary study, the sample is restricted to full-time, instructional faculty with the rank of assistant, associate, or full professor in STEM disciplines at public and private doctoral/research universities according to Basic Carnegie Classification (2001). STEM disciplines were iden-

tified by matching the field of study classifications that the National Science Foundation (2008) considers “science and engineering,” for the purpose of reporting degree attainment, to the primary teaching fields in the NSOPF. Again, our goal for this preliminary study is to explore potential gender disparities in time allocation and the influence of critical mass for women faculty where women are the least represented (i.e., academic STEM in research universities). However, to ensure that subsamples were robust enough for analysis, the sample was restricted to subdisciplines within STEM that had at least 1,000 faculty members, after applying the sample weighting, as well as at least six unweighted women faculty respondents. None of the engineering subdisciplines could be examined because none had more than three unweighted women faculty respondents. The “computer science” subdiscipline that is included should not be confused with “computer engineering,” which was excluded. Table 1 lists the proportions of women faculty for each of the resulting subdisciplines that were included.

Due to the complex sampling strategy of the NSOPF, the data were weighted before analysis using the individual level study weight for all faculty provided by NCES. The study weight for all faculty adjusts for the sampling strategy to ensure the sample represents the national population (Heuer et al., 2006); the study weight reduced the proportion of female faculty, who were oversampled, and therefore a higher proportion of faculty is represented in the raw data than in the population. This yielded a weighted sample of 13,884 faculty. It must be noted that the unweighted sample represents 357 faculty, 66 of whom are women. While a

larger unweighted sample would have been preferable, the NSOPF represents the most extensive quantitative data set on faculty available at the time of this study and provides a useful first glimpse into the research questions despite the small size of women faculty at research universities in STEM fields. Further, a key benefit of using NSOPF data is that it yields a representative faculty sample when using the appropriate weights, which were provided with the dataset. Characteristics of the weighted sample are provided in Table 2.

Analysis

Independent samples *T* tests were used to explore differences between men and women faculty and between women in disciplines with 15% or higher women faculty (i.e., with critical mass) and women in disciplines without critical mass. Bivariate correlations were used to identify relationships between variables. Multiple regression was used to explore the unique influence of independent variables on the outcome measures for women faculty. The alpha level of .01 was used for all tests of significance.

Measures

The primary outcome variable in this study is the measure of faculty satisfaction with their “job at this institution, overall.” Two additional outcome variables measure faculty satisfaction with workload and salary; both are used as predictor variables in the regression for overall job satisfaction. All three variables are single-item measures from the NSOPF:04 that are scored on a four-point Likert scale of 1 (*very satisfied*), 2 (*somewhat satisfied*), 3 (*somewhat dissatisfied*), and 4 (*very dissatisfied*). Higher scores indicate greater levels of satisfaction. Bivariate correlations between the three outcome variables range from .494 to .599, well below the threshold for risk of multicollinearity, and collinearity diagnostics of the regression models indicate no collinearity issues between the predictor variables. Additional predictor variables include the percentage of time spent on a) undergraduate instruction, b) graduate/professional instruction, c) research activities, and d) “unspecified” activities including service and all faculty roles unrelated to teaching and research. Because a connection has been made

Table 1
Included Subdisciplines With Proportions of Female Faculty

Principal field of teaching-specific code (Q16CD4)	Proportion female
Chemistry	11%
Computer science	23%
Geological & earth sciences/geosciences	22%
Mathematics	10%
Physiology, pathology & related sciences	14%
Statistics	15%
Zoology/animal biology	22%
Total	15%

Table 2
Sample Characteristics

Gender		Tenure Status	
Female	15%	Tenured	80%
Male	85%	Pre-tenure	14%
		Off-track	5%
Critical Mass of Women in Discipline		Rank	
Yes	45%	Assistant Professor	17%
No	55%	Associate Professor	36%
		Full Professor	47%

Note. $N = 13,884$. Totals may not sum to 100% due to rounding.

between graduate-level instruction and research productivity (Park, 1996), we include instructional level in our analysis. A disciplinary-level variable is whether there is a critical mass of women in the discipline.

The primary demographic of interest is gender, but additional demographics are included as control variables because of possible interactions with both time allocation and satisfaction. These controls include marital status, parental status, age, rank, tenure status, the average yearly number of publications and presentations (measures of productivity), amount of total income from the institution, and funded scholarly activity. Family and marital demographics are controls for “nonwork” responsibilities that may influence the time available for work activities and therefore the allocation of time to different work activities. Rank and tenure status are controls for work-related factors that could potentially influence time allocation and faculty satisfaction. Because of the connection between productivity and the reward structure (including tenure attainment) in research universities (Park, 1996; Tierney & Bensimon, 1996), productivity measures are included to explore potential outcomes of differences in time allocation and to control for these differences when exploring the unique influences on the satisfaction measures. We include funded scholarly activity as a control when exploring the satisfaction of women faculty with workload, salary, and overall job because the success of STEM faculty in research universities is frequently connected with the ability to secure grant funding to conduct research (Goulden, Frasch, & Mason, 2009; O’Meara, Terosky, & Meumann, 2008). The NSOPF:04 faculty survey instru-

ment and additional details are available online at: <http://nces.ed.gov/surveys/nsopf/>

Findings

Time Allocation, Gender, and Critical Mass of Women in a Discipline

The percentage of time spent by men and women faculty differed significantly in each of the four categories, with women allocating a higher percentage of time than men to undergraduate instruction and men allocating higher percentages of time than women to graduate instruction, research, and service/unspecified activities. This evidence of a gendered division of labor in STEM disciplines at doctoral/research universities is consistent with feminist organizational theorists who argue that women in male-dominated fields and environments are assigned the less prestigious, less valued tasks—like teaching undergraduates (Acker, 1990; Kanter, 1977; Park, 1996; Bird et al., 2004). These findings fit within the broader social relations of power that govern the gendered division of labor in the workplace and provide a structural analysis of the barriers to women’s full participation in academic STEM disciplines.

Women in disciplines with a critical mass of women spend less time on undergraduate instruction and more time on graduate instruction, research, and other activities as compared to their counterparts in disciplines without a critical mass of women (see Table 3). For women faculty, the gendered division of labor in STEM disciplines at doctoral/research universities is mitigated by the presence of a critical mass of women scholars in the discipline. Interestingly, women in disciplines with a critical mass of women faculty differ from women in disciplines without critical mass in the same ways that men differed from women, overall. This positive outcome supports the predictions of the literature on critical mass; inequitable divisions that are part of the “status quo” are likely to change when a minority subpopulation achieves at least 15% of the population (Etzkowitz et al., 1994; Etzkowitz et al., 2000).

In disciplines with a critical mass of women faculty, the percentage of time spent on undergraduate instruction decreases for both men and women faculty (see Table 4). While impossible

Table 3
T-Tests for Time Allocation by Gender and for Women by Critical Mass

	ALL	By gender		Women By critical mass	
		Women	Men	No CM	CM
Percent time spent on:					
Instruction, undergraduate	37.9	42.9 ^c	37.0	50.9 ^c	38.1
Instruction, graduate	23.5	21.8	23.8 ^c	17.6	24.4 ^c
Research activities	26.1	23.6	26.5 ^c	20.5	25.5 ^c
Service and unspecified activities	12.6	11.6	12.7 ^c	11.0	12.0 ^a
Listwise <i>N</i>	13,884	2,148	11,736 ^c	810	1,338

^a Significantly higher at the .05 level. ^b Significantly higher at the .01 level. ^c Significantly higher at the .001 level.

to verify from the data, a potential explanation for this is that as the proportion of women in a discipline increases, the undergraduate teaching load is shared across a larger number of faculty (i.e., other women faculty) and the undergraduate teaching loads for individual faculty would therefore decrease. For men and women faculty, being in a discipline with a critical mass of women faculty relates to increased percentage of time spent on graduate instruction and research activities. The time “freed up” from undergraduate instruction would likely be available for application to research pursuits in disciplines with higher proportions of women. Critical mass therefore allows women to do more of the work that counts toward success in the current reward structure in the academy, with implications for retention, advancement, compensation, and peer recognition (Bellas & Toutkoushian, 1999). For women faculty, being in a discipline with a critical mass of women faculty also relates to increased time spent on service and unspecified activities. Because women faculty tend to spend higher percentages of their time on undergraduate education and being in a discipline with a critical mass of women faculty decreases the time allocated to undergraduate instruction by women more so than it does for men, women may have additional time available for service and unspecified activities.

Time Allocation and Productivity Measures

For both men and women faculty, increased percentage of time spent on undergraduate instruction relates to decreased average yearly publications and presentations, while increased

time spent on both graduate instruction and research activities relate to increased yearly publications and presentations (see Table 4). This outcome may be a result of the connections and synergies between graduate instruction (as compared to undergraduate instruction) and research, which lend themselves more readily to scholarly presentations and publications (Marsh & Hattie, 2002). Increased percentage of time spent on service and unspecified activities relates to decreased average yearly publications and increased average yearly presentations for men faculty. It cannot be verified from the data, but it is possible that the kind of service that men engage in increases their opportunities for presentations, while the service that women engage in does not do the same for them.

Productivity Measures and Critical Mass of Women in a Discipline

For men faculty, being in a discipline with a critical mass of women faculty relates to increased average yearly publications and presentations (see Table 4). However, the opposite is true for women faculty; being in a discipline with a critical mass of women faculty relates to decreased average yearly publications and presentations for women faculty. Given the relationships between time allocation and productivity, and between time allocation and the presence of a critical mass of women in a discipline, it is possible that men’s productivity benefits from the increased proportion of women in the discipline because of the shared burden of undergraduate instruction. However, it is not clear why women’s productivity would not benefit in the same manner.

Table 4
Correlations by Gender

	1	2	3	4	5	6	7	8	9	10
Women STEM Faculty										
1. Percent time spent on instruction, undergrad	1									
2. Percent time spent on instruction, graduate	-0.577 ^c	1								
3. Percent time spent on research activities	-0.632 ^c	-0.160 ^c	1							
4. Percent time spent on unspecified activities	-0.493 ^c	-0.014	0.205 ^c	1						
5. Average number of publications per year	-0.170 ^c	0.186 ^c	0.081 ^c	-0.034	1					
6. Average number of presentations per year	-0.263 ^c	0.231 ^c	0.147 ^c	0.016	0.430 ^c	1				
7. Satisfaction with workload	0.001	0.001	0.097 ^c	-0.181 ^c	-0.173 ^c	-0.200 ^c	1			
8. Satisfaction with salary	0.023	0.071 ^b	-0.097 ^c	-0.021	-0.079 ^c	-0.133 ^c	0.366 ^c	1		
9. Satisfaction with job overall	-0.079 ^c	0.220 ^c	-0.057 ^b	-0.093 ^c	-0.227 ^c	-0.058 ^b	0.476 ^c	0.561 ^c	1	
10. Critical mass of women in discipline	-0.222 ^c	0.172 ^c	0.130 ^c	0.046 ^a	-0.067 ^b	-0.088 ^c	0.033	0.080 ^c	0.083 ^c	1
Men STEM Faculty										
1. Percent time spent on instruction, undergrad	1									
2. Percent time spent on instruction, graduate	-0.724 ^c	1								
3. Percent time spent on research activities	-0.535 ^c	0.023	1							
4. Percent time spent on unspecified activities	-0.223 ^c	-0.076 ^c	-0.299 ^c	1						
5. Average number of publications per year	-0.255 ^c	0.148 ^c	0.269 ^c	-0.069 ^c	1					
6. Average number of presentations per year	-0.288 ^c	0.144 ^c	0.209 ^c	0.088 ^c	0.554 ^c	1				
7. Satisfaction with workload	-0.019 ^a	0.009	0.012	0.009	-0.099 ^c	0.008	1			
8. Satisfaction with salary	-0.025 ^b	0.087 ^c	-0.101 ^c	0.058 ^c	-0.025 ^c	0.042 ^c	0.516 ^c	1		
9. Satisfaction with job overall	-0.035 ^b	0.127 ^c	-0.100 ^c	0.014	0.063 ^c	0.062 ^c	0.578 ^c	0.608 ^c	1	
10. Critical mass of women in discipline	-0.104 ^c	0.094 ^c	0.053 ^c	-0.002	0.143 ^c	0.068 ^c	-0.128 ^c	-0.076 ^c	-0.019 ^a	1

Note. Listwise $N = 2,448$ and $N = 11,736$.

^a Correlation is significant at the 0.05 level (2-tailed).

^b Correlation is significant at the 0.01 level (2-tailed).

^c Correlation is significant at the .001 level (2-tailed).

Time Allocation and Satisfaction Measures

For men and women faculty, increased percentage of time spent on undergraduate instruction relates to decreased satisfaction with career overall (see Table 4). Additionally, increased percentage of time spent on undergraduate instruction relates to decreased satisfaction with both workload and salary for men faculty. Increased time spent on graduate instruction relates to increased satisfaction with salary and career overall for both men and women faculty. Increased time spent on research relates to increased satisfaction with workload for women faculty and decreased satisfaction with salary and career overall for both men and women faculty. Finally, increased percentage of time spent on service and unspecified activities relates to decreased satisfaction with workload and career overall for women faculty and increased satisfaction with salary for men faculty. These findings are consistent with Rosser's (2004) findings that women faculty tend to be less satisfied with their role assignments than are men, with considerable implications for women's intentions to leave academia. As long as women continue to shoulder more of the undergraduate teaching responsibilities in academe, especially in disciplines where they are most acutely underrepresented, their levels of satisfaction will remain depressed and the likelihood of their persistence will remain doubtful.

Satisfaction Measures and the Critical Mass of Women in a Discipline

For women faculty, being in a discipline with a critical mass of women faculty relates to increased satisfaction with salary and job overall (see Table 4). This finding supports the assertion of critical mass theorists that a proportion of women equaling 15% or higher in a discipline positively affects women faculty. For men, being in a discipline with a critical mass of women faculty relates to decreased satisfaction with workload and salary, which could be attributed to men's resistance to the redistribution of resources and shift in cultural norms within a more gender-balanced organization (Etzkowitz et al., 2000; Wharton & Baron, 1987).

Regression Models for Satisfaction Among Women Faculty

To explore the unique contributions of the time allocation measures and being in a discipline with a critical mass of women faculty, given the varied bivariate relationships discussed previously, we ran multiple regressions for women for each of the three outcome variables. We reviewed the bivariate relationships between variables for women faculty, finding that satisfaction with workload and with salary had the highest correlations with satisfaction overall ($r = .48$ and $r = .56$, respectively, see Table 4), but not so high as to cause multicollinearity issues. Table 5 provides the mean and standard deviation of variables in the regressions. Variables were entered "blockwise" into the models in this order: personal demographics, professional demographics, time allocation

Table 5
Mean and Standard Deviation of Variables in Regressions for Women Faculty

	Mean	Standard deviation
Age	47.8	12.08
Is married/in committed relationship	0.70	0.46
Is divorced, separated, widowed	0.12	0.33
Is single, never married	0.17	0.38
Supports a dependent child under 24	0.33	0.47
Is a full professor	0.22	0.41
Is an associate professor	0.41	0.49
Is an assistant professor	0.37	0.48
Average yearly publications	3.17	4.17
Average yearly presentations	3.61	3.20
Is off the tenure track	0.12	0.33
Is tenure track, pretenure	0.25	0.43
Is tenured	0.63	0.48
Percent time spent on instruction, undergraduate	43	28.03
Percent time spent on instruction, graduate	22	19.31
Percent time spent on research activities	24	18.71
Percent time spent on service and unspecified activities	12	10.25
Total income from the institution	71,941	27,888
Scholarly activity, any funded	0.52	0.50
Satisfaction with workload	2.8	0.77
Satisfaction with salary	2.5	1.08
Satisfaction with job, overall	3.1	0.80
Critical mass of women faculty in discipline	0.62	0.48

Note. Listwise $N = 2,148$.

measures, controls for income and funded scholarly activity, and critical mass. For the “overall job satisfaction” regression, the satisfaction measures for workload and salary were entered prior to critical mass. Entering the blocks in steps permits analysis of changes in the model as new controls are entered.

Satisfaction with workload (Table 6). Controlling only for the personal demographics of age, marital status, and parental status, age negatively influences workload satisfaction, being married or divorced both positively influence workload satisfaction (as compared to being single), and parental status has no significant influence. When the professional demographics rank, productivity, and tenure status are added, the significance of all personal demographics goes away, and being a full professor (as compared to an associate professor) and having greater productivity negatively influence satisfaction with workload. When the time allocation measures are entered into the model, being an assistant professor (as compared to an associate professor) positively influences workload satisfaction, and being off the tenure track (as compared to being tenured) negatively influences satisfaction. Additionally, increased percentages of time allocated to both graduate

instruction and research activities result in increased workload satisfaction, while increased percentage of time allocated to service and unspecified activities results in decreased satisfaction. When the controls for institutional income and funded scholarly activity are added, minor changes occur in the significance of the influence of the personal and professional demographics, the effect of time allocated to graduate instruction goes away, and increased institutional income positively influences workload satisfaction. Finally, adding in the control for being in a discipline with a critical mass of women faculty alters the significance of the prior models slightly, and, interestingly, results in decreased satisfaction with workload for women faculty. This surprising outcome may relate to women’s overall low satisfaction with their workload (Jacobs, 2008) and the fact that the minimal threshold used to measure critical mass in this study may not be enough to compensate for inequitable workloads (Bagihole & Goode, 2001).

Satisfaction with salary (see Table 7). Controlling only for the personal demographics, being older and supporting a dependent under age 24 both negatively influence satisfaction with salary, while being married or divorced (as com-

Table 6
Regression Models for Satisfaction With Workload for Women Faculty

	β				
	Model 1	Model 2	Model 3	Model 4	Model 5
Age	-0.09***	-0.05	-0.01	0.00	-0.01
Married/in committed relationship ^a	0.15***	0.04	0.04	0.02	0.06
Separated, divorced, widowed ^a	0.13***	0.04	0.07*	0.10***	0.11***
Supports a dependent child under age 24	-0.02	0.03	-0.04	0.01	-0.02
Professor ^b		-0.13***	-0.12***	-0.18***	-0.19***
Assistant professor ^b		0.03	0.24***	0.26***	0.34***
Average yearly publications		-0.07**	-0.12***	-0.12***	-0.13***
Average yearly presentations		-0.23***	-0.24***	-0.28***	-0.30***
Off the tenure track ^c		-0.06*	-0.12***	-0.06*	-0.09***
Tenure track, pretenure ^c		0.06	-0.05	0.05	-0.01
Percent time spent on instruction, graduate ^d			0.13***	-0.01	0.05
Percent time spent on research activities ^d			0.30***	0.24***	0.29***
Percent time spent on service and unspecified activities ^d			-0.20***	-0.28***	-0.27***
Total income from the institution				0.37***	0.36***
Scholarly activity, any funded				-0.05*	-0.04
Critical mass of women faculty in discipline					-0.12***
R^2	0.02	0.10	0.18	0.25	0.26

^a Reference category is Single, never married. ^b Reference category is Associate Professor. ^c Reference category is Tenured. ^d Reference category is Percent time spent on instruction, undergraduate.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 7
Regression Models for Satisfaction With Salary for Women Faculty

	β				
	Model 1	Model 2	Model 3	Model 4	Model 5
Age	-0.35***	-0.26***	-0.28***	-0.25***	-0.26***
Married/In committed relationship ^a	0.47***	0.29***	0.33***	0.29***	0.30***
Separated, divorced, widowed ^a	0.38***	0.26***	0.24***	0.15***	0.15***
Supports a dependent child under age 24	-0.28***	-0.26***	-0.34***	-0.27***	-0.28***
Professor ^b		0.04*	0.01	0.04*	0.04
Assistant professor ^b		-0.06	-0.03	-0.15***	-0.13***
Average yearly publications		0.09***	0.08***	0.08***	0.08***
Average yearly presentations		-0.32***	-0.34***	-0.26***	-0.27***
Off the tenure track ^c		-0.23***	-0.25***	-0.24***	-0.25***
Tenure track, pretenure ^c		0.34***	0.31***	0.42***	0.40***
Percent time spent on instruction, graduate ^d			0.10***	0.13***	0.14***
Percent time spent on research activities ^d			0.07**	0.08***	0.09***
Percent time spent on service and unspecified activities ^d			0.10***	0.13***	0.13***
Total income from the institution				0.00	0.00
Scholarly activity, any funded				-0.28***	-0.28***
Critical mass of women faculty in discipline					-0.03
R^2	0.17	0.32	0.33	0.38	0.38

^a Reference category is Single, never married. ^b Reference category is Associate Professor. ^c Reference category is Tenured. ^d Reference category is Percent time spent on instruction, undergraduate.
 * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

pared to being single) both positively influence satisfaction. Adding the professional demographics to the model does not alter the significance of the personal demographics. In Model 2, rank has no significant influence on satisfaction with salary, increased average yearly presentations and being off the tenure track both negatively influence satisfaction, and increased average yearly publications and being pretenure on the tenure track both positively influence satisfaction with salary. The addition of the time allocation measures (Model 3) does not change the influence of the personal or professional demographics; increased percentage of time allocated to graduate instruction, research, and unspecified activities (as compare to undergraduate instruction) all positively influence satisfaction with salary. In Model 4, the controls for institutional salary and funded scholarly activity are added. These controls change the prior model only slightly, with being an assistant professor (as compared to being an associate professor) and having funded scholarly activity both negatively influencing satisfaction with salary. The final step, adding the control for critical mass, does not alter the model significantly, and being in a discipline with a critical mass of women does not have a statistically significant influence on women faculty members' satisfaction with salary. The lack of

a significant relationship between being in a discipline with a critical mass of women and satisfaction with salary, when controlling for the other variables in the model, could be due to the wide variety of factors influencing faculty salaries and faculty satisfaction with salary.

Satisfaction with job overall (Table 8). Controlling only for the personal demographics, being older and supporting a dependent under age 24 both negatively influence overall job satisfaction for women faculty, while being married or divorced (as compared to being single) both positively influence satisfaction. Model 2 adds in the professional demographics, and being an assistant professor (as compared to an associate professor) and having higher average yearly publications both negatively influence overall job satisfaction. Model 3 adds in the time allocation measures, removing the effect of being an assistant professor and making the effect of being off the tenure track a significant negative influence on overall satisfaction. As compared to the percentage of time allocated to undergraduate instruction, increased percentage of time allocated to graduate instruction and research activities positively influence overall job satisfaction, and increased time spent on service and unspecified activities negatively influence overall job satisfaction. Model 4

Table 8
Regression Models for Satisfaction With Job Overall for Women Faculty

	β					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	−0.07***	−0.12***	−0.12***	−0.13***	0.03	0.03
Married/In committed relationship ^a	0.33***	0.25***	0.22***	0.22***	0.04	0.02
Separated, divorced, widowed ^a	0.38***	0.32***	0.26***	0.28***	0.15***	0.15***
Supports a dependent child under age 24	−0.13***	−0.17***	−0.20***	−0.21***	−0.05*	−0.03
Professor ^b		0.02	0.02	0.01	0.04*	0.05**
Assistant professor ^b		−0.13***	0.01	0.03	0.04	0.00
Average yearly publications		−0.19***	−0.24***	−0.24***	−0.26***	−0.25***
Average yearly presentations		0.04	0.00	−0.02	0.23***	0.24***
Off the tenure track ^c		0.01	−0.08**	−0.08**	0.09***	0.11***
Tenure track, pretenure ^c		0.08	−0.06	−0.07	−0.35***	−0.32***
Percent time spent on instruction, graduate ^d			0.26***	0.25***	0.17***	0.14***
Percent time spent on research activities ^d			0.10***	0.10***	−0.02	−0.05*
Percent time spent on service and unspecified activities ^d			−0.08***	−0.09***	−0.08***	−0.08***
Total income from the institution				0.02	−0.09***	−0.09***
Scholarly activity, any funded				0.05	0.24***	0.23***
Satisfaction with workload					0.30***	0.31***
Satisfaction with salary					0.62***	0.61***
Critical mass of women faculty in discipline						0.06***
R ²	0.09	0.13	0.18	0.18	0.59	0.59

^a Reference category is Single, never married. ^b Reference category is Associate Professor. ^c Reference category is Tenured. ^d Reference category is Percent time spent on instruction, undergraduate.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

adds in the institutional salary and funded scholarly activity controls, which do not change the model. Model 5 adds the satisfaction measures for workload and salary. Both satisfaction measures positively influence overall satisfaction. The addition of these two satisfaction measures also results in several changes to the significance of other variables in the model. Several effects go away, including the effects of age, being married, supporting a dependent under age 24, and increased time allocated to research. Two professional demographics become significant influences: higher average yearly presentations is a positive influence on overall job satisfaction while being pretenure on the tenure track is a negative influence. In the full model (Model 6), being in a discipline with a critical mass of women faculty positively influences overall job satisfaction for women in STEM and the influence of variables from Model 5 change only slightly: being a full professor (as compared to associate professor) positively influences overall satisfaction. Critical mass attainment in a discipline therefore plays a significant role in the increased satisfaction with overall career for women faculty in STEM. Given the evinced connection between women faculty’s sat-

isfaction levels and their persistence in the academy (Hurtado & DeAngelo, 2009; Seifert & Umbach, 2008; Rosser, 2004), this finding indicates that critical mass attainment is a significant factor in the retention of women faculty in STEM disciplines.

Implications

In previous studies, NSOPF data have been used to analyze faculty satisfaction in regards to workload (measured by hours worked per week), time with students, course load, and professional development opportunities (see for examples, Allen, 1998; Jacobs, 2008). This study augments this research with an analysis of the role critical mass plays in time allocation and satisfaction for women faculty in STEM. We found a gendered division of labor in STEM disciplines that is mitigated by a critical mass of women faculty, which supports the critical-mass literature that argues conditions improve for minority groups once they attain critical mass. Women in disciplines with a critical mass of women allocate their time in ways that are more equivalent to their male colleagues than

their counterparts in disciplines with fewer women, with implications for greater equity in productivity and advancement. Furthermore, for women faculty in STEM, being in a discipline with a critical mass of women significantly increases satisfaction with career overall, controlling for other personal and professional variables—with implications for refining national, institutional, and departmental efforts to increase the numbers of women faculty in STEM at all ranks.

These findings support theories that argue critical mass attainment positively impacts equity in resource distribution and time allocation (Acker, 1990; Callister, 2006; Etzkowitz et al., 2000). Our study demonstrates that even the minimum threshold for critical mass (i.e., 15%) of women faculty in STEM disciplines effects the gendered division of academic labor and the distribution of role assignments based on cultural sexism, with implications for greater satisfaction and persistence of women faculty. It also refutes critics of critical mass (see, e.g., Blum & Smith, 1988) who claim critical-mass theory is merely a numbers game with little empirical evidence supporting its effects. Indeed, given that we found change occurs at the lowest threshold of critical mass, our findings have implications for other underrepresented groups in STEM, who may never be able to reach 35%-40% of demographic proportion in a discipline, which other research suggests is required for a minority group to gain full acceptance by the dominant group (see Tolbert et al., 1995).

This study also buttresses gender organizational theories that claim increasing the proportion of women triggers “resistance from majority members who expect to suffer corresponding losses” (Etzkowitz et al., 2000, pp. 110; Burack & Franks, 2004; Pfeffer & Lang, 1993). We found that as the proportion of women in a discipline increases, male faculty take greater responsibility for undergraduate instruction (as evidenced by increased proportions of their time being devoted to these activities), spend less time on research, and have less satisfaction with their career overall. The alarmingly higher rates of dissatisfaction and attrition among academic women in STEM, as compared to their male colleagues (Roberts & Ayre, 2002; August & Waltman, 2004), may constitute a resistance against the constraints of a subordinated position within higher education. Though STEM disciplines with greater proportions of women

may have more egalitarian normative structures, conflict may still ensue, possibly negatively impacting women’s satisfaction levels and hence their intentions to stay at their institution (Hurtado & DeAngelo, 2009; August & Waltman, 2004). Therefore, recruiting women engineers and scientists to academic disciplines is only part of the solution to their low representation. Cultural change and fostering inclusive climates with STEM academic disciplines are also required to retain women faculty in STEM.

The positive outcomes that we found in regards to the impact of critical mass for women faculty in STEM fields suggest concrete steps academic leaders can take to further gender equity. A critical mass of women in the discipline interrupts the application of stereotypes regarding gendered role allocations in academic disciplines, thereby diminishing pronounced inequities between women and men faculty. Therefore, critical mass theory may have positive implications for cultural transformation in academic institutions. However, when we explored the unique influence of the presence of a critical mass of women in a discipline and time allocation on the satisfaction measures for women faculty, we found that a critical mass of women in the discipline negatively influences women faculty members’ satisfaction with workload. Further research is needed to determine how women’s greater representation in a discipline positively impacts career satisfaction overall and yet negatively influences women’s satisfaction with workload, especially when the findings of this study demonstrate that the workload between women and men faculty is more equitable in disciplines with critical mass.

Also, because of the low numbers of unweighted women faculty in the sample, the impacts of critical mass on workload distribution and satisfaction could only be measured at a national level (across disciplines) rather than at a local level (within a department). Interventions made at the local level can greatly impact the proportion of women in STEM departments. For example, since receiving a National Science Foundation ADVANCE Institutional Transformation grant in 2001, the University of Washington ADVANCE Center for Institutional Change has placed programmatic emphasis on eliminating bias against women in the faculty search process. By 2008, the number of women faculty in science

and engineering departments had increased by 38%. The potential influences of the local environment, with the unique organizational and cultural dynamics, will be more effectively addressed in a future qualitative study.

Other researchers have used group dynamic theories to explain the barriers to women's equality and full participation in academe (Collins, 1998; Burack & Franks, 2004; Etzkowitz et al., 2000). These theories move beyond quantitative data to demonstrate how cultural norms and gendered social relations impede women's advancement and engender conflict in organizations. Qualitative research is needed to study women in engineering disciplines because their numbers are too low to obtain robust enough subsamples for quantitative analysis. Analysis of the gendered division of labor and the effects of critical mass could also be further enhanced by the use of ethnographic methods in all STEM disciplines. Participant observation and interviews with women faculty in STEM could further elucidate the social dynamics of historically male-dominated disciplines, document women's collective response to hostile climates, and offer successful solutions for expanding upon the benefits of critical mass and improving the climate for all faculty.

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Generating Ethnic Minority Student Success (GEMS): A Qualitative Analysis of High-Performing Institutions

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Less than one-half of all underrepresented racial and ethnic minority students who begin college at a 4-year institution with aspirations to earn a bachelor's degree achieve that goal within 6 years. The aim of this study was to identify and analyze the institutional factors that contribute to racial and ethnic minority student success at three predominantly White institutions with high and equitable underrepresented racial and ethnic minority student retention and graduation rates. Sixty-five individual interviews were conducted, and documents were collected across these three high-performing colleges. From the analysis of those interviews and documents emerged four common and salient elements of the institutional cultures that promote success among students of color at the three campuses. Implications for research and practice are discussed.

Keywords: attainment, culture, environment, minority, student, persistence, retention, success

Among those who enroll in a 4-year college or university, approximately 59% of White students earn a bachelor's degree within 6 years, whereas that figure is only 47% and 40% for their Latino and Black peers, respectively (U.S. Department of Education, 2007). Although Asian American students are usually noted for their relatively high rates of persistence and degree completion, disaggregation of national data on this population reveals that some Asian American subgroups receiving college degrees at rates far lower than the national average (Hune, 2002; Museus, 2009; Museus & Kiang, 2009; Teranishi, 2007). For example, Cambodian (9.2%), Hmong (7.5%), and Laotian (7.7%) Americans hold 4-year degrees at less than half the rate of the national population (U.S. Census Bureau, 2004). Because racial and ethnic minorities will continue to comprise a growing proportion of the national population, if these racial and ethnic disparities persist, the projected result is a larger portion of the population failing to complete college and lower

levels of attainment across the country (Kelly, 2005). These lower levels of success will result in decreased average income levels, lower average tax contributions, and an increase in professional jobs that go unfilled.

Given the negative ramifications that are projected to result from persisting racial and ethnic disparities in educational attainment, it is critical to better understand how institutions of higher education can foster success among students of color. The current inquiry is focused on discovering and examining the institutional characteristics that foster success among students of color. Specifically, the study is aimed at understanding the characteristics of institutional culture that contribute to retention and degree completion among college students of color at three predominantly White institutions (PWIs) that have exhibited high and equitable retention and graduation rates among underrepresented racial and ethnic minority undergraduates.

Although there is a dearth of empirical evidence regarding how the cultures of PWIs promote racial and ethnic minority student success, a small body of literature does suggest that particular elements of the cultures of PWIs might influence the experiences and outcomes of students of color. In the following sections, the term "campus culture" is defined. Then, literature on how elements of the cultures of PWIs can shape the experiences of students of color is reviewed. The remainder of the article describes a case study of

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three PWIs with high and equitable racial and ethnic minority student retention and graduation rates.

Defining and Delineating the Elements of Campus Culture

It has been asserted that culture is the normative and social glue that holds an institution together (Smircich, 1983), and culture shapes just about everything that happens on a college campus (Kuh, 2001/2002). Specifically, campus culture has been defined as the “collective, mutually shaping patterns of norms, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in higher education and provide a frame of reference within which to interpret the meaning of events and actions” (Kuh & Whitt, 1988, pp. 12–13). This definition is useful as it highlights and delineates the core elements of campus culture.

In addition to the aforementioned elements, campus ethos is an important aspect of institutional culture. Campus ethos can be defined as the essential character or spirit of an institution’s culture and it functions to connect individuals within an organization together (Kezar, 2007). A campus’s ethos can significantly influence the experiences and outcomes of students (Kezar, 2007; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005) Kuh et al. (2005), for example, analyzed 20 colleges and universities with higher-than-predicted engagement and graduation rates and found that an improvement-oriented ethos—that is, a spirit of commitment to improving their ability to foster success among students—was a key factor in those institutions’ ability to foster success of among their students.

Connections to Campus Cultures

Evidence indicates that, when racial and ethnic minority students connect to the cultures of their campuses, they are more likely to succeed (Attinasi, 1989; Gonzalez, 2003; Guiffrida, 2006; Kuh & Love, 2000; Museus, 2008a, 2008c; Museus & Harris, 2010; Museus & Quaye, 2009; Rendón, Jalomo, & Nora, 2000; Tierney, 1992, 1999). Specifically, students of color can connect to the cultures of their campuses by connecting with both individual (e.g.,

faculty, staff, and peers) and collective (e.g., academic departments, student organizations, cultural centers) cultural agents at their institutions (Museus & Quaye, 2009). And, those connections are associated with increased engagement and success (Guiffrida, 2003, 2005; Harper & Nichols, 2008; Harper & Quaye, 2007; Kiang, 2002, 2009; Museus, 2008c; Museus, 2010; Museus & Neville, in press; Museus & Quaye, 2009; Museus & Ravello, 2010).

Unfortunately, many students of color experience difficulties connecting to the cultures of PWIs (Allen, 1992; Feagin, Vera & Imani, 1996; Lewis, Chesler, & Forman, 2000; Park, 2009; Kuh & Love, 2000; Museus & Quaye, 2009). Museus and Quaye (2009), for example, used existing literature and the voices of 30 students of color at a PWI to generate an intercultural perspective of racial and ethnic minority college student persistence. Their perspective suggests that students of color who originate from cultures that are incongruent with those on their campuses can experience cultural dissonance, which can be defined as the tension that occurs from incongruence between a student’s home and campus cultures (Museus, 2008a). This dissonance can make it difficult for students of color to connect to the cultures of their campus and inversely influence their likelihood of success. Indeed, a large body of evidence supports the notion that many students of color encounter challenges connecting to the cultures of PWIs, resulting in their feeling alienated, marginalized, and unwelcome in those cultures (Allen, 1992; Feagin, Vera & Imani, 1996; Lewis, Chesler, & Forman, 2000; Park, 2009). There is little empirical research, however, that examines which elements of the cultures of PWIs effectively facilitate racial and ethnic minority students’ connections to their campuses and subsequent success.

Collectivist Campus Cultural Values

One element of campus culture that scholars have asserted might be associated with the success of students of color is collectivist cultural values (Guiffrida, 2006; Museus & Harris, 2010). Whereas individualist cultures tend to value independence, competition, and emotional detachment, collectivist cultures typically value interdependence, group harmony, and emotional attachment among group members

(Phinney, 1996; Triandis, Chen, & Chan, 1998). Also, although research on whether racial and ethnic minorities are more likely to come from collectivist cultures is mixed (Asante, 1994; Gaines, 1994; Oyserman, Gant, & Ayer, 1995; Triandis, 1989; Xi, 1994), a review of this literature indicates that students of color may be *more likely* than their White peers to espouse collectivist values (Guiffrida, 2006). Thus, it can be hypothesized that racial and ethnic minority students might be more likely to connect to campuses that espouse more collective values and to succeed at those institutions.

There is some evidence supporting the hypothesis that more collectivist cultures might positively influence racial and ethnic minority students' success. For example, research indicates that individualistic and overly competitive values within academic departments can contribute to early departure among students of color (Seymour & Hewitt, 1997). Evidence also suggests that academic support programs with collectivist values can foster success among students of color (Fullilove & Treisman, 1990; Treisman, 1992). However, whether the extent to which a campus values collectivism influences racial and ethnic minority students' success is unclear. And much remains to be learned about how other campus values impact success among students of color.

Cultural Integrity and Cultures of Responsibility

Another aspect of campus cultures that might contribute to success among students of color is cultural integrity, which refers to culturally relevant institutional programs and practices that engage students' cultural backgrounds (Deyhle, 1995; Tierney, 1999; Tierney & Jun, 1999). Whereas early perspectives of college student departure were based on assumptions that students of color must sever ties with their cultures of origin to integrate into the cultures of their campuses and succeed (Tino, 1987, 1993), more recent perspectives emphasize the importance of racial and ethnic minority students' connections to their cultural heritages in facilitating their engagement and success (Deyhle, 1995; Museus, 2008c; O'Connor, 1997), as well as the importance of institutions engaging those heritages to facilitate positive outcomes among stu-

dents of color (Museus & Quaye, 2009; Tierney, 1999; Tierney & Jun, 1999).

Also relevant is the fact that, although earlier perspectives of student success contribute much to our understanding of how involvement and engagement influence racial and ethnic minority students' success (Astin, 1984, 1999; Tinto, 1987, 1993), researchers have argued that they can contribute to self-deterministic views that overemphasize individual students' abilities to become connected to their campus's cultures and succeed, while downplaying institutional responsibility for facilitating those students' success (Bensimon, 2007; Rendón et al., 2000). Moreover, self-deterministic views can place an especially unfair burden on students of color who originate from cultures that are very different from those at PWIs (Kuh & Love, 2000; Museus & Quaye, 2009). Alternatively, more recent student success perspectives emphasize the notion that institutions also have a responsibility to foster success among their students of color (Museus & Quaye, 2009; Rendón et al., 2000; Tierney, 1999). Much remains to be learned, however, regarding whether campuses that espouse an institutional responsibility for student outcomes actually do have an impact on success among students of color.

Purpose of the Study

The current inquiry is part of a larger collective case study designed to identify and understand the institutional factors (e.g., culture, climate, programs, and practices) perceived to help generate racial and ethnic minority student success at PWIs that have exhibited high and equitable retention and graduation rates among underrepresented college students of color (for description, see Museus & Liverman, 2010). The current analysis is focused on how the cultures of those institutions shape racial and ethnic minority student success. One overarching research question guided the examination: What elements of campus culture, if any, are perceived to affect success among racial and ethnic minority students at three institutions that have demonstrated effectiveness at Generating Ethnic Minority Success (GEMS)? Throughout the remainder of this manuscript, these three institutions are referred to as the GEMS Colleges or GEMS Institutions. Three additional research questions were developed and

utilized to guide the current analysis: (1) What, if any, cultural values are perceived to affect success among students of color at the GEMS Colleges? (2) What, if any, cultural assumptions are perceived to influence racial and ethnic minority student success at the three institutions? And, (3) what, if any, cultural beliefs are perceived to affect success among college students of color at the three GEMS Colleges?

Conceptual Framework

The “Campus Cultural Framework for Minority Student Success” was constructed using the aforementioned literature and provides the conceptual lens for the current examination, and it is comprised of four distinct components: campus culture, campus cultural agents, cultural connections, and racial and ethnic minority student success. First, the framework posits that various elements that comprise campuses’ cultures influence campus cultural agents’ practices, the extent to which students of color feel connected to the cultures of their campuses, and, ultimately, those students’ success. It also suggests that various aspects of the campuses’ cultures, as well as campus cultural agents, influence racial and ethnic minority students’ success via their impact on the level of connectedness that students of color feel to the campuses’ cultures.

This framework is particularly useful for examining how the cultures of a campus can influence racial and ethnic minority students’ connections to the campus and subsequent success. Thus, in the current investigation, this framework is used to focus on identifying the elements (e.g., values, beliefs, assumptions) of the cultures of the GEMS Institutions that foster racial and ethnic minority students’ connections to their campuses and eventual success. Of course, the framework is limited in that it focuses on elements of campus culture, but does not consider other factors that contribute to success among students of color, such as academic preparation, family influences, financial situations, employment, or living situations (e.g., on or off campus).

Methods

As previously mentioned, the current analysis is part of a larger collective case study (Stake, 1995; Yin, 2002). The larger inquiry generated

a comprehensive explanatory model to explain the influence of various institutional factors (i.e., campus culture, targeted support programs, opportunities for educationally purposeful engagement) on racial and ethnic minority students’ success at the GEMS Colleges (Museus & Liverman, 2010). From that larger inquiry have emerged more in-depth analyses of various components of the model, which include examinations of the influence of targeted support programs, academic advisors, and institutional agents (i.e., faculty, staff, counselors, and advisors) on success among students of color at the GEMS Colleges (Museus, 2010; Museus & Neville, in press; Museus & Ravello, 2010). The current study is an in-depth examination of the campus culture component of the explanatory model that emerged from the larger inquiry.

Institution Selection

Both institutions and participants were selected with the intention of achieving both intensity (i.e., information richness) and variation (i.e., diversity in the sample) (Patton, 2002). Accordingly, institutions that are most likely to offer insights into how campuses can and do effectively foster racial and ethnic minority student retention and degree completion and that represented a wide range of institutional characteristics were selected. Using data from the Integrated Postsecondary Education Data System (IPEDS), the College Results Online (CRO) database permit users to compare the 6-year graduation rates of 4-year colleges with the rates of their peer institutions, as well as compare the 6-year graduation rates of different racial groups across institutions and within the same institution. For this study, the CRO database was used to select 4-year institutions that exhibited (1) graduation rates among underrepresented racial and ethnic minority (i.e., Black, Latino, and Native American) students that were appreciably higher than the national average, and (2) graduation rates among underrepresented students of color that were close to or higher than their White peers. Finally, because this inquiry was focused on PWIs, the selection of institutions was limited to colleges at which approximately 50% or more of total enrollees were White. One relatively large private doctoral institution, referred to as Research Univer-

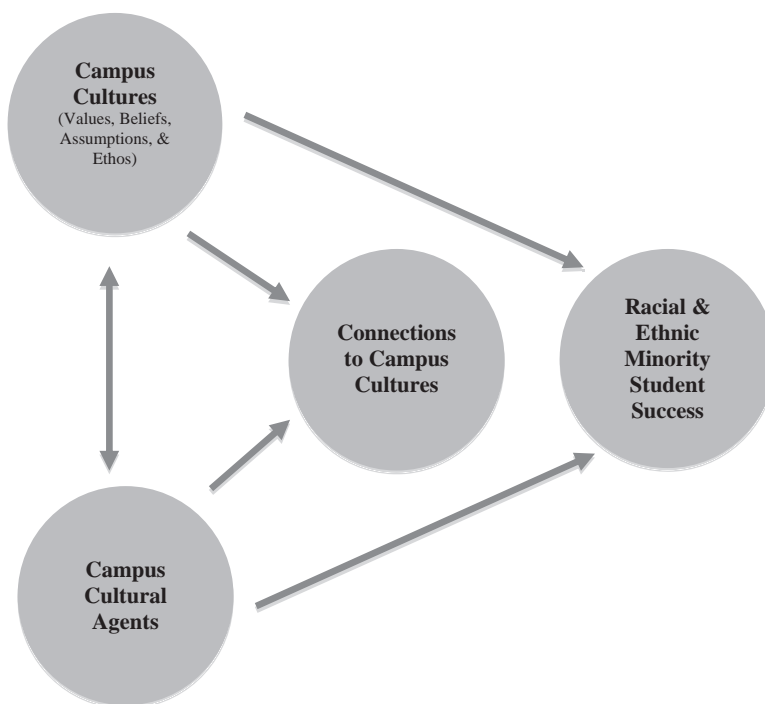


Figure 1. A campus cultural framework for minority student success.

sity (RU) in the remainder of this article, and one small public comprehensive state university, referred to as State University (SU), were selected using the CRO database.

An alternative method—IPEDS in conjunction with one state database—was used to identify the 2-year institution for inclusion in the study for two reasons. First, the CRO database only contains data on 4-year colleges. Second, whereas IPEDS can be used to select institutions with high 3-year associate's degree completion rates, degree attainment alone does not provide an adequate benchmark for success at 2-year colleges because many students at these institutions seek certificates or short-term training (Dougherty, 1994). First, IPEDS was used to identify 2-year colleges that exhibited relatively high racial and ethnic minority student associate's degree completion rates. Because the identified 2-year colleges were in California, the California Community Colleges Chancellor's Office Data Mart was used to compare those institutions' within-semester retention rates (i.e., within-semester course completion rates) with those of other California community

colleges. This allowed me to avoid relying on 3-year associate's degree completion rates and take into account course completion rates as well. One 2-year institution, which will be referred to as Community College (CC) was selected for this study because it exhibited (1) high retention rates among all racial groups compared to other California community college, and (2) virtually equal retention rates among all major racial groups (i.e., Asian American, Black, Latino, Native American, and White).

Participant Selection

As previously mentioned, purposeful sampling was utilized to achieve intensity and variation in the participant sample (Patton, 2002). Selecting participants based on a combination of these two purposes permitted the acquisition of a sample that both provides a wealth of insight into the phenomenon under investigation and a representation of the various individuals that function in a range of environments throughout the three campuses. Accordingly,

the faculty, administrators, staff, and racial and ethnic minority students who participated in the study were selected for their affiliation with various campus environments and knowledge of the experiences of racial and ethnic minority students on their campuses. To identify administrators and staff for participation in individual interviews, a thorough analysis of each institution's website was conducted. First, each institution's homepage was reviewed as a starting point and they led to websites of administrative offices and programs across their campuses. Then, websites linked to each homepage were reviewed until all of campuses' office and program websites that could be found were exhausted. This led to a participant population of all faculty, administrators, and staff who supervised or worked in academic advising offices, counseling offices, cultural and multicultural centers, targeted support programs, and student affairs offices across the three campuses.

Contact with persons at the top of the institution's organizational chart (i.e., campus presidents) was initiated via email and telephone. Then, administrators at the next level of the organizational chart, such as vice presidents of student affairs and provosts, were contacted. This process continued until a wide range of faculty, administrators, and staff members who oversee or work in offices and programs across the institutions agreed to participate in the inquiry. The final participant sample included faculty members, a campus provost, a vice president of student affairs, directors of student activities and student life, directors and assistant directors of cultural centers, directors of support programs, counselors, and academic advisors. Next, administrator and staff participants were asked to identify racial and ethnic minority students who were enrolled in first-year seminars and ethnic studies courses or participated in cultural centers, mentoring programs, and targeted support programs on their campuses for participation. Then, those students were contacted via email and asked to participate in individual interviews.

The final sample consisted of 65 faculty, administrators, staff, and students of color across the three colleges. The sample included 34 faculty, administrators, and staff members (i.e., 3 Asian American, 12 Black, 3 Latino, and 16 White) and 31 students of color (i.e., 9 Asian American, 9 Black, and 13 Latino students).

White students were excluded from the sample because research suggests that their assessments of the experiences of their racial and ethnic minority peers are different from those minority students' assessments of their own experiences (Harper & Hurtado, 2007). Native Americans were also excluded from the sample due to the difficulty in acquiring participants from this population, as they comprise only zero, one, and three percent of students at the GEMS Colleges. Although Asian American graduation rates were not considered in selecting the three focal institutions, they were included in the sample, given evidence that they share common struggles with their Black and Latino peers (Lewis et al., 2000) and that some Asian American subgroups also suffer from disparities in degree attainment (Museus, 2009; Museus & Kiang, 2009; Teranishi, 2007). It should be noted that, although the sample size is small compared to the size of the institutions, a point of saturation—a point at which no new findings emerged from the data—was achieved on each campus.

Data Collection and Analysis Procedures

Data collection consisted of two components—individual face-to-face interviews and the collection of documents. One- to 1.5-hr individual face-to-face interviews were conducted with faculty, administrators, staff, and racial and ethnic minority student participants. A semi-structured approach was used to ensure that the interview data provided information necessary to understand the phenomenon under study while providing flexibility to address emergent themes (Holstein & Gubrium, 1995). This approach included the specification of a set of issues and broad questions to be explored throughout the course of the interview (Patton, 2002). The semi-structured approach also allowed me to build conversation with the participants through establishing a conversation style and engaging in spontaneous questioning for clarification and deeper understanding of participants' responses. Thus, using an interview guide systematized the interviews and ensured that all relevant topics were covered, while also allowing for considerable flexibility in probing. Probes were not preplanned but emerged during the interviews in response to interviewees' answers to questions on the interview guide.

All interview participants were asked to describe the cultures of their respective campuses and explain how those cultures, as well as institutional policies, programs, and practices, shape racial and ethnic minority students' engagement and persistence at their respective institution. Examples of questions that were posed to faculty, administrators, and staff participants include the following: (1) Is there anything about the culture of [institution name] that contributes to its effectiveness at fostering success among students of color? (2) Is there anything about the culture of [institution name] that facilitates the engagement of racial and ethnic minority students here? (3) Are there specific institutional values that you would say contribute to racial and ethnic minority students' success here? What, if any, assumptions do faculty, administrators and staff make about students of color here? Examples of questions that racial and ethnic minority student participants were asked include (1) How would you describe the community here at [institution name]? (2) What do you think people here at [institution name] value the most? (3) Do you think that there is anything about the culture here at [institution name] that contributes to the success of students of color here? If so, what? Those interviews were digitally recorded and professionally transcribed. At the end of each individual interview, descriptive institutional and program documents were collected to further illuminate themes emerging during the interviews.

Data analysis consisted of elucidating the cultural characteristics that participants' per-

ceived to contribute to racial and ethnic minority students' success at their respective colleges. The NVivo[®] Qualitative Software Package and open- and axial-coding procedures (Strauss & Corbin, 1998) were used to code each individual interview transcript to identify and gain a more in-depth understanding of the most salient cultural characteristics that participants perceived to help foster racial and ethnic minority student success. During this process, 13 invariant constituents were identified (see Table 1). Then, those constituents were used to inductively generate themes that describe the most significant cultural factors that influence success among students of color at the GEMS Colleges. For example, the invariant constituent labeled "high levels of communication" and four other constituents were used to inductively generate the "strong networking values" theme. Finally, each theme was compared to the documents that were collected to verify or modify those themes.

Credibility and Transferability

In qualitative research, credibility refers to the congruence of the findings with reality, whereas transferability refers to the extent to which findings can be applied to situations outside of the cases being studied (Merriam, 1998). For the purposes of this study, credibility and transferability were maximized using three methods prescribed by Lincoln and Guba (1986). First, data from the following three sources were triangulated to cross-check, ver-

Table 1
Themes and Invariant Constituents

Themes	Invariant constituents
Networking values	High levels of communication
Networking values	High levels of collaboration
Networking values	Intentional maintenance of networks
Networking values	Formal networks across offices and programs
Networking values	Informal networking between agents and students
Commitment to targeted support	Commitment of resources for targeted support
Commitment to targeted support	Integration of targeted support programs into campus networks
Commitment to targeted support	Key cultural agents in targeted support programs
Belief in humanizing the educational experience	Care for and commitment to students
Belief in humanizing the educational experience	Meaningful relationships between agents and students
Ethos of institutional responsibility	Agents' philosophy of holding selves accountable
Ethos of institutional responsibility	Belief in the importance of proactively reaching out
Ethos of institutional responsibility	Intrusive institutional policies

ify, and modify emergent themes: (1) faculty, administrator, and staff interviews, (2) racial and ethnic minority student interviews, and (3) institutional and program documents. Second, discrepant data were sought and examined throughout the analysis to ensure the consideration of alternative hypotheses and questioning of underlying theoretical presuppositions. Finally, member-checks were conducted with three individuals at each of the three GEMS Institutions to ensure that researcher interpretations were congruent with participants' perceptions and realities.

Findings

Each of the three GEMS Colleges has a distinct campus culture and houses unique subcultures. Despite those differences, four common cultural characteristics that participants' perceived to facilitate racial and ethnic minority students' success at those institutions emerged from the data—they include strong networking values, a commitment to targeted support, a belief in humanizing the educational experience, and an ethos characterized by an institutional responsibility for student success. Those cultural elements manifested in different ways and to varying degrees on each campus, but they interacted to create a culture conducive to racial and ethnic minority college students' success at all three institutions.

Strong Networking Values

One salient and noticeable aspect of the cultures of the GEMS Colleges to which participants attributed racial and ethnic minority students' success is the strong valuing of networks on those campuses. For example, those networks are so salient at RU that faculty, administrators, staff, and racial and ethnic minority students use terms like "family network" when referring to their campus community. One Asian American student at RU, for example, utilized this term when he explained how the family network at RU was so discernible that he felt immediately connected, even before he enrolled at the institution:

Here at Research University, that family network is a very real thing. So, coming in, even at my first orientation, when I wasn't even a student here yet, I already felt that sense of connection. . . which is why people

find it so much easier to transition into whatever niche or whatever organization on campus they want.

Participants noted how those who work with large numbers of students of color at the GEMS Colleges appear to value networking a great deal and use it to their advantage in meeting those students' needs. This theme consists of two major components: (1) high levels of communication and collaboration (2) formal and informal everyday networking as a norm on campus.

First, the networking values at the GEMS Colleges appear to manifest in the high levels of communication and collaboration across the campuses. For instance, when one academic advisor at RU was asked what contributes to success among students of color at his institution, he highlighted the important role of networks of communication and collaboration:

I would definitely say it would be our connections. Many of us [academic advisors] serve on different committees, we're connected with the Center for Academic Support, and we're connected with the cultural centers and the offices under the Division of Student Affairs. I think it's these relationships that we formed that kind of make us stick out.

Both formal and informal networking was noted as critical in promoting success among students of color at the GEMS Colleges. One faculty member at SU, for example, underscored the importance of formal networks when she described how her academic department, the Career Resource Center, the Scholar's Mentorship Program (SMP), and the Educational Opportunity Program (EOP) collaborate to administer a first-year seminar for underrepresented students:

The EOP program counts on us to help sustain their student population too. If they come to us and ask us to create a particular kind of course, then we will do it. For example, the course called "Key Issues in the Education of Underrepresented College Students" is the one that they use as their first-year seminar and our program uses it as ours as well.

In addition to formal and structured collaboration and communication, networking values manifest in the informal everyday behaviors of educators at the GEMS Colleges. One academic advisor at RU underscored this reality as he explained the methods that he and his colleagues use to connect students with faculty, ranging from taking advantage of fortuitous en-

counters with faculty and students in the lobby to inviting faculty to students' social events. He explained that, "When we see students out in the lobby area, we introduce them to faculty members or, if they have certain events . . . we may invite faculty members to some of those events."

A Commitment to Targeted Support

Another important aspect of the cultures of the GEMS Institutions is their clear commitment to providing a wide range of targeted support programs that reach large numbers of students of color and are explicitly linked to other programs and services across campus. This theme consists of three components: (1) the dedication of substantial resources to help sustain essential targeted support programs for historically underrepresented students, (2) the presence of key administrators and staff who have a profound impact on students of color within those programs, and (3) the integration of those programs into larger support networks on campus.

First, public policymakers and institutional leaders have committed a substantial amount of resources to create and sustain comprehensive targeted support programs for underrepresented student at the GEMS Colleges. At RU, for example, institutional leaders have established and sustained support for three very active cultural centers, a Scholar's Program for transfer students of color, a Center for Academic Success, a Center for Diversity in Engineering, and a federally funded Student Support Services program—all of which provide targeted support for underrepresented students. At SU, a federally funded TRIO Program, a state funded Educational Opportunity Program (EOP), a Scholar's Mentorship Program (SMP), and an AMP-CSTEP (AC2) Program are all designed to support students of color and other underserved populations. At CC, a state supported Extended Opportunity Programs and Services (EOPS) office provides academic, financial, and counseling services for many students of color. CC also has a federally funded TRIO Program and the Transfer Center's Targeting Resources for Underrepresented Students (TRUST) Program, both aimed at supporting underrepresented populations.

As one student affairs administrator at RU asserted, the collective network of targeted and mainstream support programs contribute to success among students of color on his campus:

What I would highlight is that it takes all of these things to make it work. It's not any one thing. As I say to parents and students, when you come to this campus, we're going to have lots of special things for you . . . you'll have lots of support around you. But the main thing that you get when you come to this institution is that our goal is to make sure that, no matter where you go, you're treated with respect and you're treated with care.

Moreover, large numbers of students of color are served by one or more targeted support programs at the GEMS Colleges. At RU, the Black cultural center alone regularly serves over 600 students, which is approximately 70% of all Black students on campus. At SU, over 650 students participate in the EOP, SMP, and AC2 programs, which is equivalent to 10% of all students on campus. At CC, approximately 1,700 students receive support from EOPS and TRIO alone, which is equivalent to approximately 13% of all undergraduates on campus. However, due to the targeted support programs' foci on supporting underrepresented populations, students of color are overrepresented in them. Thus, it is likely that these programs serve much larger proportions of students of color on their campuses. Moreover, these numbers do not include the many students of color served by other targeted support programs at the GEMS Colleges.

Second, participants who underscored the importance of targeted support programs in their institution's ability to foster success among students of color repeatedly highlighted the administrators and staff working within those programs and the ongoing support they provide for large numbers of undergraduates of color from matriculation to graduation. An Asian American student at RU, for example, described how two administrators in the Asian American cultural center were instrumental in his adjustment to campus and beyond:

The transition period, like I mentioned earlier about the Director and Assistant Director of the cultural center, I would always go in there and they were kind of like my unofficial mentors in a sense just because I would come in with a lot of questions about how to adjust from high school to college. They've been helping me throughout the process.

Finally, participants emphasized the importance of targeted support programs being integrated into the broader campus support networks. As a result, those programs serve as a conduit between students of color and campus support networks and function to cultivate stronger bonds between them. The Director of TRIO at CC highlighted how his program serves as a conduit and strengthens connections between students and support networks with this point:

Everybody here works really close with all the other student services, whether it is disability services, EOPS, financial aid, orientation . . . If I think somebody could use those services, I walk them over and make sure that they can get them. we all work together.

A Belief in Humanizing the Educational Experience

Participants also attributed the effectiveness of the GEMS Colleges, in part, to a belief in humanizing the educational experience that permeates the cultures of those institutions. They noted that the cultures of the GEMS Institutions are cultures in which faculty, administrators, and staff are seen as human beings, as well as educators. One academic advisor at RU discussed his belief in the importance of humanizing his work with students:

Humanizing the work. Sometimes, students will come in here stressed out and upset and you let them sit back and allow them to laugh at themselves. If you're serious with them all the time, they'll go away not having had that opportunity to see that maybe they were a little too hard on themselves or maybe they were a little too tightly wound to deal with issues at hand. I think humanizing the work is a great thing.

Similarly, when explaining how faculty on his campus approach their work with a belief in humanizing the educational experience, a Black CC student made the following comments:

Most of the teachers like to joke around. Before class starts, they start out with a joke, so, if anybody is having a bad day, they probably will laugh or something. But if they want us to wake up, they don't just come in and be like "Okay guys. Open the book." They always start with something like "How their day is going?" That's important.

The belief in incorporating a human element into the educational experience manifests in two ways: (1) the care and commitment with which faculty, administrators, and staff approach their

work and (2) the meaningful relationships that those educators cultivate with their students.

Participants described how the faculty, administrators, and staff who humanize the educational experience care about and are committed to their students' success. One student support services administrator at CC illustrated this when he asserted that the caring and committed faculty and staff are responsible for the success of students of color on their campus:

Our success is due mostly to the faculty and staff, because of how committed they are to their students and in making sure they get things done . . . We have a lot of faculty and staff mentors who are very committed to the students, who really are help them out.

The belief in humanizing the educational experience is also embodied in the meaningful relationships that faculty, administrators, and staff develop with their students. The Director of a Black cultural center at RU noted such relationships as the key to her center's success:

How I made this place successful is I go where the students are. If someone is having a barbecue, I'm going to go and hang out. Before I got married, I was at everything. I was here until 10:00 p.m. at night almost 7 days a week. The students wanted me there. They would ask, "Are you going to be there?"

An Ethos Characterized by Institutional Responsibility

Finally, the ethos of the GEMS Colleges is characterized by an institutional responsibility for the success of racial and ethnic minority and other underrepresented students. One senior administrator at RU underscored this ethos of institutional responsibility on his campus:

We're less laissez-faire than we used to be. So, now for example, if students have less than a 2.5 [GPA] we contact them. I don't care who you are. We get in touch with you and say . . . we want to offer you help . . . tutoring, counseling, whatever. And, I think it's harder to get lost . . . I think that is the biggest key . . . that you're reaching out and you're not saying "Well, sink or swim. You're on your own." There's help there, and we're not waiting for you to ask for it . . . Our motto is, "at RU a student has to run from help."

An administrator at CC explained how this philosophy is particularly important for students of color who may come from cultures in which seeking help is a sign of inadequacy:

The problem is that minority students are not usually going to come in unless they are walked over here. At

some level, it may be considered a public shaming. At another level, they don't like to ask for help. Culturally, they are not that extroverted in terms of seeking those types of services.

There are two major ways in which this ethos manifests at the GEMS Colleges: (1) institutional policies that force students to fulfill certain expectations and (2) faculty, administrators, and staff who assume responsibility for their students' success.

Institutional policies that force connections among faculty, staff, administrators, and students take on many forms. For example, at SU, the EOP has a system of intrusive advising, in which students are required to meet with their advisors before they register for classes, are evaluated each semester by their instructors, and meet with their academic advisors a minimum of three times per semester. These policies help perpetuate an institutional responsibility to monitor and ensure the success of racial and ethnic minority students. In the following comment, one Latina student at SU described how EOP's policy requiring academic advisors to closely monitor their students' grades drove her to improve her academic performance:

So, if you have somebody who is keeping track of how I'm doing it makes me want to do better, because I know she's going to have to see my grades. But, if you know your advisor and everybody else is going to see them then it makes you want to try harder.

Whereas all faculty, administrators, and staff at the GEMS Colleges may not assume responsibility for the success of their students of color, what *is* apparent is that the people at the GEMS Institutions who do identify with their institution's ethos espouse a sense of personal responsibility and help maintain a culture in which racial and ethnic minority students feel encouraged and sometimes pressured to engage and succeed. A Black CC student illustrated this as he described how his awareness of one administrator's investment in his success engendered pressure for him to be involved and utilize the resources available to him:

He just bugs you until you do something. He'll be like "Come to TRIO," and you'll be like "Oh yeah." So, he just shoves it in your face and you go, because otherwise the next time he sees you he'll say, "Hey, why didn't you come?" and you're going to feel all bad.

Limitations of the Study

A couple important limitations of the current study should be noted. First, this examination is context bound. Although the institutional sample includes public and private, 2- and 4-year, and urban and rural institutions, the sample only includes three campuses that exist within their own unique political, cultural, economic, and geographic contexts. Selection bias constitutes a second limitation. Faculty, administrators, and staff at the GEMS Colleges volunteered to participate and were asked to invite racial and ethnic minority students who could provide valuable insights to participate in this study. Thus, faculty, administrator, and staff participants might hold more positive perspectives of the cultures at the GEMS Colleges than those who did not volunteer to partake in interviews. And, students of color who were invited to participate were likely to be involved in campus activities or connected to the administration in some other way, and may hold very different views to students who are disengaged from those campuses. Finally, the current study does not confirm the actual causal connections between any particular cultural element and higher success rates among students of color; to make such claims those relationships must be empirically tested using appropriate quantitative procedures. Rather, I have detailed how the participants *perceive and report* that these cultural elements influence their institutions' effectiveness at fostering success among students of color.

Discussion

The current examination contributes to existing literature in at least four major ways. First, unlike extant research in this area, which highlights the negative impact that the cultures of PWIs can have on racial and ethnic minority students' experiences and outcomes (Feagin, 1992; Feagin et al., 1996; Gonzalez, 2003; Harper & Hurtado, 2007; Hurtado, 1992; Lewis et al., 2000; Museus, 2007, 2008b; Museus & Truong, 2009; Smedley, Myers, & Harrell, 1993), the findings of this inquiry shed light on how the cultures of some PWIs can contribute to success among students of color. Specifically, the findings provide an example of how certain cultural elements of high-performing

PWIs positively shape the experiences of racial and ethnic minority students. Of course, my intent is not to discount the challenges faced by students of color at PWIs. Even at the GEMS Institutions, which evidently foster success among students of color at higher rates than their peers, students of color encounter difficulties that they face as racial and ethnic minorities.

Second, the current investigation underscores the utility of studying high-performing colleges and universities to understand racial and ethnic minority student success. Although other researchers have examined high-performing institutions (e.g., Bailey et al., 2006; Carey, 2004; Kuh et al., 2005; Muraskin & Lee, 2004), the current study is the first inquiry that employs rigorous qualitative research methods to examine how institutions' cultural characteristics contribute to racial and ethnic minority student success across a diverse set of colleges and universities. The third contribution of this inquiry is that it reinforces the notion that institutional culture is a critical consideration in the study of racial and ethnic minority college students (Kuh, 2001/2002, 2005; Museus, 2007, 2008a, 2008b). Indeed, although several scholars have highlighted the importance of examining culture to understand the experiences of college students (Kuh & Love, 2000; Museus, 2007, 2008a, 2008b; Museus & Quaye, 2009), cultural frameworks are rarely used in examinations of college students of color. The underutilization of such frameworks limits our ability to understand how institutions can foster success among those individuals.

Implications for Educational Practice

The findings of this examination yield important implications. Before discussing those implications, it is important to note that efforts to change any institution's culture must be holistic. Indeed, efforts to change a campus's culture must go beyond implementing one policy, program, or practice. Moreover, some have questioned whether it is even possible to change an institution's culture (for discussion, see Kuh & Whitt, 1988). The implications discussed herein are based on the belief that campus cultures can be changed, and are offered as potential elements of more comprehensive plans to change

the cultures of institutions to better serve their student of color.

First and foremost, college and university leaders must consider and understand the role that the cultures of their campuses already play in promoting or hindering the success of racial and ethnic minority students. This might be more complicated than it sounds because characteristics of institutional cultures are often taken for granted by members of the college or university (Kuh & Whitt, 1988), making it difficult for those individuals to see or understand the very cultures that drive institutional policies, programs, and practices. Therefore, institutional leaders should make a concerted effort to utilize regular culture audits and assessments that "make the familiar strange" and make the taken-for-granted aspects of the campus culture apparent (Whitt, 1993), in order to understand which aspects of their cultures facilitate or impede success among racial and ethnic minority students on their respective campuses.

Institutional leaders should also consider the importance of cultivating a networking culture. This would require both developing strong networking values and creating structures to connect racial and ethnic minority students to those networks early in their college careers. Promoting and emphasizing communication and collaboration across campuses can help prevent the formation of silos, strengthen social networks, and increase racial and ethnic minority students' access to resources. Moreover, an important aspect of establishing a culture in which networking is highly valued and influences behavior may be immediately teaching new students, when they matriculate, that networking is an important component of the culture of their respective colleges and universities. Institutions could send this message by hosting networking events with explicit messages about the importance of networking to acculturate incoming first-year students.

Campus leaders should also allocate enough resources to ensure that targeted support programs reach a large proportion of students of color and that those programs are integrated into the larger networks of support programs and offices. Although targeted support programs exist on campuses across the nation, it is unclear how many of those programs are intentionally integrated into the broader institutional support networks at those institutions. This is an impor-

tant consideration because there is some indication that the effectiveness of targeted support programs could depend, in part, on the extent to which they are integrated into those larger networks (Museus, 2010).

In addition, institutional leaders should make efforts to cultivate cultures in which students see administrators, faculty, and staff as human beings. At institutions where it is normal for those institutional agents to send signals to students that they care about and are committed to the success of those undergraduates, racial and ethnic minority students might be more likely to perceive that the institution is invested in them and consequently be more motivated to succeed. Institutions could send such messages through the intentional organization of social events that allow faculty to interact with their students. Indeed, although such activity does occur at some institutions, many students can easily go through their entire undergraduate education without having any social interaction with faculty members on many campuses across the nation.

College and university leaders should also make concerted efforts to cultivate campus cultures in which faculty, administrators, and staff assume a responsibility to bring support services, opportunities, and information to racial and ethnic minority students, rather than expecting students to seek out, identify, and pursue those services on their own. Promoting an environment in which college personnel perceive it as normal not only to inform students of color about various academic, financial, and social support services, but also to pressure those undergraduates to utilize such services could be critical in efforts to increase success among racial and ethnic minority students. For example, institutional leaders could encourage support units across the university to develop plans—or expand existing ones—for intentionally reaching out to students who might not otherwise come seek their services.

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Correction to Cokley et al. (2010)

In the article “Predicting student attitudes about racial diversity and gender equity” by Kevin O. Cokley, Kimberly Tran, Brittany Hall-Clark, Collette Chapman, Luana Bessa, Angela Finley, and Michael Martinez (*Journal of Diversity in Higher Education*, Vol. 3, No. 3, pp. 187–199), there are two errors in Table 2. Under the RWA heading, the SDO row should have indicated a positive correlation of .266**, not $-.266^{**}$. Under the Cog-gender heading, the SDO row should have indicated a negative correlation of $-.438^{**}$, not $.438^{**}$.

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Teaching Workload and Satisfaction of Foreign-Born and U.S.-Born Faculty at Four-Year Postsecondary Institutions in the United States

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This study examined foreign-born faculty members' teaching workload, classroom assessment and instructional techniques, and satisfaction with instructional support and authority relative to their U.S.-born faculty peers at 4-year postsecondary institutions in the United States. The analysis of the data from the National Study of Postsecondary Faculty (NSOPF:04) survey revealed more similarities than differences between the two faculty groups. The study found that foreign-born faculty members, on average, devoted the same amount of time to teaching per week; however, they generated fewer total student contact and classroom credit hours per semester than U.S.-born peers. The results also indicated that foreign-born faculty members seemed slightly less satisfied with their authority to make decisions on curriculum, course content, and methods of instruction, but overall, their satisfaction with instructional support was comparable to the satisfaction level reported by their U.S.-born colleagues.

Keywords: foreign-born faculty, teaching, workload, satisfaction, United States

Concurrent with the dramatic shifts in the cultural, ethnic, and racial diversity of the population in the United States, there has been a significant expansion in the share of foreign-born faculty at U.S. higher education institutions (Marvasti, 2005; Schuster & Finkelstein, 2006). Schuster and Finkelstein (2006) reported that the number of foreign-born full-time faculty members in the U.S. had increased from 28,200 in 1969 to 74,200 in 1998. More than a decade ago, Manrique and Manrique (1999) noted that foreign-born academics were becoming "highly visible symbols of the changing face of the population in higher education" (p. 103). With the increased presence of foreign-born faculty members on U.S. college campuses, there has been a growing body of research that examines the work roles and ex-

periences of this segment of the professoriate (Corley & Sabharwal, 2007; Lin, Pearce, & Wang, 2009; Mamiseishvili, 2010; Mamiseishvili & Rosser, 2010; Marvasti, 2005; Skachkova, 2007; Thomas & Johnson, 2004; Wells, Seifert, Park, Reed, & Umbach, 2007). Much of this previous research has largely acknowledged that foreign-born faculty members excel in research and make valuable contributions to the research enterprise of U.S. higher education (Corley & Sabharwal, 2007; Levin & Stephen, 1999; Mamiseishvili, 2010; Mamiseishvili & Rosser, 2010; Marvasti, 2005). Although examining foreign-born faculty members' contributions to research is important, it only tells part of the story. It is through their teaching roles that foreign-born academics have the most immediate effects on students, affect curriculum content and delivery, and shape learning and classroom interactions. Hence, it is essential to better understand foreign-born faculty members' contributions to the teaching function of U.S. colleges and universities. The current study attempted to shed some light on this issue and examine foreign-born faculty members' involvement in teaching, classroom assessment and instructional techniques, and satisfaction with instructional support and authority in comparison with their U.S.-born peers

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at 4-year postsecondary institutions in the United States.

Review of the Literature

The strengths and successes of foreign-born faculty members as researchers have been recognized and well-documented in the previous research (Corley & Sabharwal, 2007; Levin & Stephen, 1999; Mamiseishvili & Rosser, 2010; Marvasti, 2005). However, the perceptions about their contributions and effectiveness as teachers have varied. Several recent studies, that have examined foreign-born faculty workload and productivity using the data from the National Study of Postsecondary Faculty (NSOPF) surveys, have suggested that they are less involved in teaching, particularly at the undergraduate level, than their U.S.-born peers (e.g., Mamiseishvili, 2010; Mamiseishvili & Rosser, 2010; Marvasti, 2005). In addition, there have been a number of qualitative studies that have provided insightful accounts of how foreign-born faculty members in the U.S. are perceived as teachers and how their cultural backgrounds are affecting their teaching experiences and interactions with students (Skachkova, 2007; Thomas & Johnson, 2004). For example, Thomas and Johnson's (2004) phenomenological study provided a thorough analysis of the challenges encountered by 14 pre-tenured foreign-born faculty members in the classroom. Their stories illustrated that foreign-born academics faced different classroom cultural norms and student expectations and had to make choices how to adapt their behaviors without compromising their cultural identity.

Another qualitative study by Skachkova (2007) analyzed the narratives of 34 foreign-born women academics who often experienced the questioning of their credibility and effectiveness as teachers. Skachkova (2007) demonstrated that foreign-born women in her study were seen as experts in the subject areas that had multicultural or international focus and that were related to their ethnic or national origins, but their expertise in American-based subject areas was constantly questioned. Similar sentiments were expressed in Manrique and Manrique's (1999) earlier mixed-methods study of immigrant faculty of non-European origin. Manrique and Manrique (1999) noted that colleagues were often predisposed to judge for-

eign-born faculty member's teaching and were quick to point to the perceived shortcomings of an immigrant academic's performance.

Previous research has thoroughly examined what role accent might play in forming the judgments and perceptions about foreign-born faculty members' teaching (Manrique & Manrique, 1999; Marvasti, 2005; Skachkova, 2007; Thomas, 1999). Marvasti (2005) indicated that judgments about foreign-born faculty members' teaching effectiveness were often influenced by the perceptions about their linguistic proficiency. The narratives of foreign-born women in Skachkova's (2007) study also suggested that accent was "the most problematic aspect of immigrant professors' teaching" (p. 707) that biased the evaluations of their teaching credibility. On the other hand, the survey results from 334 students who had taken classes with foreign-born faculty in Collins' (2008) study revealed that accent did not play a role in evaluating faculty member's teaching. On the contrary, students' responses indicated that being taught by a foreign-born faculty member was a positive experience whether English was the faculty member's first language or not. Some students even listed accent as a positive contributor to their learning because they had to listen more carefully and pay more attention to what the professor was saying. Students in Collins' (2008) study highlighted several benefits of having a foreign-born professor. Their responses indicated that students liked the exposure to different perspectives and alternative teaching styles in the classroom.

Marvasti (2005) notes that perceptions and judgments about foreign-born faculty members' teaching are also often formed based on the perceptions that students or other campus constituents have about foreign-born teaching assistants (TAs). Thus, it is important to briefly review the literature that has focused on foreign-born teaching assistants' perceived effectiveness as teachers. Research on the teaching effectiveness of foreign-born TAs has been extensive with mostly contradictory findings (Borjas, 2000; Fleisher, Hashimoto, & Weinberg, 2002; Fox & Gay, 1994; Jacobs & Friedman, 1988; Marvasti, 2007; Norris, 1991; Rubin, 1992; Thomas & Monoson, 1993). For example, based on a survey of undergraduate students in a microeconomics course at a single research university, Borjas (2000) suggested

that foreign-born teaching assistants had an adverse effect on students' scholastic achievement. However, when Marvasti (2007) explored this adverse effect hypothesis, he concluded that it was not uniform among students with different performance levels, was absent from more rigorous classes, and was not due to the lack of language proficiency. In another study of student performance over five semesters, Norris (1991) also found that students actually performed slightly better in courses taught by non-native teaching assistants. Likewise, Fleisher et al. (2002) found little evidence of any adverse effect; however, foreign-born teaching assistants in their study still received low ratings in students' evaluations. These findings were similar to Jacobs and Friedman's (1988) earlier study that found that students performed equally well on the final examinations whether the class was taught by a foreign-born or a native-born teaching assistant, but they expressed more dissatisfaction with foreign-born instructors.

Teaching is a fundamental part of faculty work. Teaching excellence might rarely bring the recognition outside of campus, but it is largely viewed as a commitment to the institution and the students (Blackburn & Lawrence, 1995; Boyer, 1990; Fairweather, 2002, 2005; Gappa, Austin, & Trice, 2007; Schuster & Finkelstein, 2006). Given that it is in their role as teachers that faculty members have the most immediate impact on the quality of students' educational experiences, the need to better understand foreign-born faculty members' engagement and satisfaction in their teaching roles becomes apparent. As indicated earlier, previous research has provided extensive evidence to support the notion that foreign-born faculty members excel in research and make significant contributions to higher education's research enterprise in the U.S. (Corley & Sabharwal, 2007). However, there has not been a comprehensive examination of the teaching functions of foreign-born academics in the U.S. at the national level. The study attempted to partially address this gap in the literature and examine the teaching workload, classroom assessment and instructional techniques, and satisfaction with instructional support and authority of foreign-born faculty members as compared to their U.S.-born peers at four-Year U.S. postsecondary institutions. Teaching workload was

examined not only in the aggregate but also separately at the undergraduate and graduate levels because previous research had indicated foreign-born members' involvement in undergraduate and graduate teaching functions varied (Mamiseishvili, 2010; Mamiseishvili & Rosser, 2010).

Three questions guided the investigation: (1) What differences exist between foreign-born and U.S.-born faculty members' teaching workload in the aggregate as well as separately at the undergraduate and graduate levels? (2) What differences exist in the classroom assessment and instructional techniques between foreign-born and U.S.-born faculty members who teach at the undergraduate level? (3) How satisfied are foreign-born faculty members with instructional support and authority relative to their U.S.-born peers at 4-year postsecondary institutions?

Method

Data Source and Sample

The study used the data from the 2004 National Study of Postsecondary Faculty (NSOPF:04) to examine the research questions. NSOPF:04 provided a nationally representative sample of faculty and instructional staff at public and private degree-granting institutions in the U.S. (NCES, 2010). NSOPF:04 consisted of a sample of 35,630 faculty and instructional staff across a sample of 1,080 institutions. The data were collected using a Web-based questionnaire that was either self-administered or conducted via telephone with a trained interviewer (Heuer et al., 2006). Completed surveys were obtained from about 26,100 faculty and instructional staff, for a weighted response rate of 76%.

Sample selection for this study was conducted in two stages. First, I selected a sample of 2,540 foreign-born faculty members from NSOPF:04 who were employed full-time with faculty status and had at least some instructional duties related to credit courses at 4-year colleges and universities. Foreign-born sample included both naturalized citizens and non-citizens of the U.S. on immigrant and permanent visas who were born outside of the United States. On the second stage of sample selection, I utilized a stratified random sampling to identify a matching control group of the equal num-

ber of U.S.-born faculty members from NSOPF:04. The matching sample of U.S.-born faculty members were randomly selected across two strata: institutional types (i.e., doctoral universities, Master's universities, Baccalaureate colleges, and other specialized institutions) and disciplinary categories (i.e., health, life, natural and physical sciences and engineering, on one hand, and humanities, social sciences, education, and occupational programs, on the other). Stratified random sampling ensured that there were the same number of foreign-born and U.S.-born faculty members within each institutional type and disciplinary category. Thus, the final total sample consisted of 2,540 foreign-born and 2,540 U.S.-born faculty members ($N = 5,080$). Within each faculty sample (i.e., foreign-born and U.S.-born), 1,690 (66.5%) faculty members were from doctoral universities, 490 (19.3%) were from Master's colleges and universities, 290 (11.4%) came from Baccalaureate colleges, and 70 (2.8%) came from other specialized 4-year institutions. Furthermore, within each of the foreign-born and U.S.-born faculty samples, 1,390 (54.7%) were in health, life, or natural sciences and engineering and 1,150 (45.3%) were in humanities, social sciences, education, and occupationally specific programs. More specifically, within each fac-

ulty sample, there were 1,100 (43.3%), 180 (7.1%), 90 (3.5%), and 20 (0.8%) faculty members in health, life, or natural sciences, and engineering and 590 (23.2%), 310 (12.2%), 200 (7.9%), and 50 (2.0%) faculty members in humanities, social sciences, education, and other occupationally specific programs from doctoral universities, Master's colleges and universities, Baccalaureate colleges, and other specialized institutions, respectively. Table 1 provides the characteristics of the sample on selected demographic and career profile variables (i.e., gender, race/ethnicity, academic rank, and tenure).

Variables and Measures

Teaching workload. Consistent with the literature (e.g., Blackburn & Lawrence, 1995; Fairweather, 2002, 2005; Meyer, 1998; Midaugh, 2001), four NSOPF:04 variables were used to measure the involvement in teaching in the aggregate, as well as separately at the undergraduate and graduate levels: (1) the number of classroom credit hours per week; (2) the amount of time spent on teaching per week; (3) the number of total student contact hours; and (4) the number of total student credit hours during the 2003 Fall term. NSOPF variable indicating the number of total student contact

Table 1
Demographic and Career Profiles of Foreign-Born and U.S.-Born Faculty at Four-Year Postsecondary Institutions in the U.S.

Variables	Foreign-born ($N = 2,540$)	U.S.-born ($N = 2,540$)	Total ($N = 5,080$)
Gender			
Male	1830 (72.0%)	1,660 (65.4%)	3,490 (68.7%)
Female	710 (28.0%)	880 (34.6%)	1,590 (31.3%)
Race/ethnicity			
White	1,200 (47.2%)	2,320 (91.3%)	3,520 (69.3%)
Asian	960 (37.8%)	50 (2.0%)	1,010 (19.9%)
Black	190 (7.5%)	120 (4.7%)	310 (6.1%)
Hispanic	190 (7.5%)	30 (1.2%)	220 (4.3%)
American Indian	0	20 (0.8%)	20 (0.4%)
Tenure status			
Tenured	1,200 (47.2%)	1,320 (52.0%)	2,520 (49.6%)
On tenure track	730 (28.8%)	530 (20.9%)	1,260 (24.8%)
Not on tenure track	510 (20.1%)	600 (23.6%)	1,110 (21.9%)
No tenure system	100 (3.9%)	90 (3.5%)	190 (3.7%)
Academic rank			
Full professor	750 (29.5%)	840 (33.1%)	1,590 (31.3%)
Associate professor	670 (26.4%)	680 (26.8%)	1,350 (26.6%)
Assistant professor	800 (31.5%)	650 (25.6%)	1,450 (28.5%)
Instructor & lecturer	320 (12.6%)	370 (14.6%)	690 (13.6%)

hours was derived by multiplying the average number of hours per week the respondent taught the class by the number of students enrolled in that class. The results were then added together to provide the total student contact hours per semester. Total student credit hours variable was calculated by multiplying the number of credit hours for each class taught by the number of students enrolled in that class. The results were then added together to obtain the total student credit hours during the 2003 Fall term.

Classroom assessment and instructional techniques. Three measures were used to indicate faculty members' use of various classroom assessment and instructional techniques in their undergraduate instruction: (1) exams, (2) writing assignments, and (3) active/collaborative learning techniques. These measures were available for only those faculty members who taught at least one undergraduate level course; hence, the sample size is different for these measures ($N = 3,220$). NSOPF included nine questions that asked faculty members to report how often they utilized various classroom assessment and learning techniques in their undergraduate classes (0 [*Not Used*]; 1 [*Used in Some Classes*]; 2 [*Used in All Classes*]). The composite measure for *exams* was computed as the sum of faculty responses on three of these nine NSOPF variables: multiple choice midterm or final exams; short-answer midterm or final exams; and essay midterm or final exams. The composite measure for *writing assignments* was a summed score derived from the following three NSOPF variables: term research papers and writing assignments; multiple drafts of written work; and student evaluations of each other's work. Finally, the composite measure indicating the use of *active and collaborative learning techniques* was computed by adding together faculty members' responses on the following three NSOPF variables: group and team projects producing a joint product; laboratory, shop, or studio assignments; and service learning and cooperative experiences or assignments requiring interactions with the community or business/industry.

Satisfaction with instructional support and authority. Satisfaction with instructional support and authority was measured by four NSOPF:04 variables: (1) satisfaction with authority to make decisions on curriculum, course content, and methods of instruction; (2) satis-

faction with institutional support for teaching improvement, including grants, release time, and professional development funds; (3) satisfaction with institutional support for implementing technology-based instructional activities; and (4) satisfaction with the quality of equipment and facilities available for classroom instruction. On each of the satisfaction variables, faculty members were asked to indicate the level of their satisfaction on a four-point scale. The responses were coded as 1 (*Very Dissatisfied*), 2 (*Somewhat Dissatisfied*), 3 (*Somewhat Satisfied*), and 4 (*Very Satisfied*).

Data Analysis

Data preparation was an important first step prior to data analysis. After drawing the sample from NSOPF:04, I first examined the descriptive statistics of the sample. SPSS version 15 statistical package was employed to prepare and analyze data. As noted by Thomas and Heck (2001), weighting becomes of crucial importance when SPSS statistical package is used to analyze such complex data sets as NSOPF because SPSS treats any data as simple random sample. Because NSOPF data sets relied on complex sampling design, which included stratified multistage sampling with unequal probabilities of sample selection, I utilized relative weights to correct for oversampling and make the data representative of the target population. More specifically, I computed relative weights by dividing the raw weights provided in the NSOPF data set by its mean and applied them in all data analysis procedures using WEIGHT BY command in SPSS (Thomas & Heck, 2001).

After data preparation was complete, I conducted two-group multivariate analyses of variance (MANOVAs) to address the research questions. MANOVA was an appropriate statistical procedure in this study because it is designed to examine the differences between two groups on a combination of several dependent or outcome variables (Field, 2005). Foreign-born versus U.S.-born status was used as an independent grouping variable. Separate MANOVAs were conducted on (1) teaching workload, (2) classroom assessment and instructional techniques, and (3) satisfaction measures as dependent variables. Interaction effects of discipline or field of teaching with foreign-born versus U.S.-born status were also tested.

Box's test was used to check the assumption of equal covariance matrices. However, Field (2005) indicates that box's test could be ignored when the group sample sizes are equal as was the case in this study. When the sample sizes are equal, Hotelling's and Pillai's statistics are generally robust to the violations of the homogeneity assumption (Field, 2005). Correlations between dependent variables were also examined to check for multicollinearity. Tabachnick and Fidell (2007) indicate that multicollinearity causes both logical and statistical problems, and when bivariate correlation between two variables is higher than .70, one of the variables is redundant and should not be included in the same analysis with the other (p. 90). Correlation coefficients between dependent variables in this study ranged from .176 to .483 for satisfaction items, from .049 to .169 for classroom assessment and learning techniques measures, and from .282 to .667 for workload measures.

Results

Teaching Workload

The first MANOVA test was conducted to observe whether foreign-born and U.S.-born

faculty groups differed along a combination of four teaching workload measures. As illustrated in Table 2, all four multivariate test statistics (i.e., Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) and their corresponding F -ratios were significant at $p < .001$, indicating that the two groups were significantly different. To further understand how the groups differed and which specific dependent variables contributed to the significant multivariate effect, univariate test statistics were examined. As illustrated in Table 2, foreign-born and U.S.-born faculty samples significantly differed on two dependent variables: total student contact hours, $F(1, 5080) = 19.995, p < .001$, and total student credit hours, $F(1, 5080) = 24.417, p < .001$. Univariate tests were followed up by a simple contrast procedure to further confirm that the true group differences existed. Significant contrast estimates ($p < .001$) for the same two dependent variables confirmed the results from univariate tests. The results suggested that foreign-born faculty members generated fewer total student credit hours ($M = 194.66, SD = 246.94$) and student contact hours ($M = 226.41, SD = 371.53$) than U.S.-born faculty

Table 2
Foreign-Born and U.S.-Born Faculty Members' Teaching Workload in the Aggregate and Separately at the Undergraduate and Graduate Levels

	Foreign-born <i>M (SD)</i>	U.S.-born <i>M (SD)</i>	<i>F</i> -ratios
Hours teaching credit classes	7.78 (8.58)	8.32 (8.14)	5.249
Classroom credit hours	6.62 (4.54)	6.84 (4.866)	2.964
Student credit hours	194.66 (246.94)	236.12 (343.87)	24.417***
Student contact hours	226.41 (371.53)	279.96 (476.60)	19.995***
Undergraduate teaching			
Hours teaching credit classes	5.33 (7.20)	5.65 (6.92)	2.556
Classroom credit hours	4.68 (4.76)	4.74 (4.87)	.214
Student credit hours	134.58 (176.62)	152.87 (216.58)	10.899***
Student contact hours	151.11 (270.18)	177.07 (290.00)	10.921***
Graduate teaching			
Hours teaching credit classes	2.45 (6.09)	2.67 (6.28)	1.615
Classroom credit hours	1.94 (3.12)	2.10 (3.85)	2.809
Student credit hours	60.08 (205.02)	83.26 (303.82)	10.179***
Student contact hours	75.30 (283.93)	102.90 (415.86)	7.647**

Note. Wilks' Lambda .994, $F(4, 5070) = 7.142, p < .001$. Pillai's Trace, Hotelling's Trace, and Roy's Largest Root .006, $F(4, 5070) = 7.142, p < .001$. For undergraduate teaching, Wilks' Lambda .996, $F(4, 5070) = 4.911, p < .001$, and Pillai's Trace, Hotelling's Trace, and Roy's Largest Root .004, $F(4, 5070) = 4.911, p < .001$. For graduate teaching, Wilks' Lambda .998, $F(4, 5070) = 2.706, p < .05$, and Pillai's Trace, Hotelling's Trace, and Roy's Largest Root .002, $F(4, 5070) = 2.706, p < .05$.

** $p < .01$. *** $p < .001$.

members ($M = 236.12$, $SD = 343.87$ and $M = 279.96$, $SD = 476.60$, respectively). However, when standardized-difference effect size statistics, such as Cohen's d , were calculated, the strength of the mean differences was rather small ($d = .14$ and $d = .13$, respectively) (Trusty, Thompson, & Petrocelli, 2004).

Similar MANOVAs were conducted to detect group differences in the teaching involvement separately at the undergraduate and graduate levels. The results were comparable to the previous MANOVA test. As illustrated in Table 2, at the undergraduate level, the multivariate test statistics were significant at $p < .001$. Univariate statistics indicated that there was a significant difference between foreign-born and U.S.-born faculty groups in terms of total undergraduate student contact hours, $F(1, 5080) = 10.921$, $p < .001$, and total undergraduate student credit hours, $F(1, 5080) = 10.899$, $p < .001$. The effect sizes indicated that the strength of the group differences were again very small ($d = .09$ and $d = .09$).

Similarly, at the graduate level, multivariate effect was significant at $p < .05$ (see Table 2). Follow-up univariate tests revealed that group differences existed on the same two variables: total number of graduate student contact hours, $F(1, 5080) = 7.647$, $p < .01$, and number of graduate student credit hours, $F(1, 5080) = 10.179$, $p < .001$, again with very small effect sizes ($d = .08$ and $d = .09$, respectively). In sum, in terms of teaching workload in the aggregate as well as at the undergraduate and graduate levels, there was a non-significant difference in the number of classroom credit hours and hours spent on teaching per week between foreign-born and U.S.-born faculty

members. On the other hand, slight differences were observed between the two faculty groups in the total number of student credit hours and student contact hours generated per semester in the aggregate as well as both at the undergraduate and graduate levels.

Classroom Assessment and Instructional Techniques

The next MANOVA test was conducted to determine whether foreign-born faculty members differed from U.S.-born faculty on their teaching and classroom assessment techniques at the undergraduate level. The results from the multivariate test statistics indicated that there was a significant multivariate effect. Table 3 illustrates that all four multivariate test statistics (i.e., Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) and their corresponding F -ratios were significant at $p < .01$. Univariate tests were further examined to understand how the two groups differed and to determine which dependent variables contributed significantly to the group differences. F -ratios for each univariate test and their significance levels in Table 3 illustrate that there was a non-significant difference in the use of writing assignments between foreign-born and U.S.-born faculty members. On the other hand, significant F -ratios indicated that group differences existed in their use of exams, $F(1, 3220) = 4.456$, $p < .05$, and active/collaborative learning techniques, $F(1, 3220) = 6.524$, $p < .01$. The results indicated that foreign-born faculty members used exams more often ($M = 2.79$, $SD = 1.71$) than their U.S.-born peers ($M = 2.66$, $SD = 1.69$). On the other

Table 3

Foreign-Born and U.S.-Born Faculty Members' Use of Classroom Assessment and Instructional Techniques at the Undergraduate Level at Four-Year Postsecondary Institutions in the U.S.

	Foreign-born ($N = 1,610$) M (SD)	U.S.-born ($N = 1,610$) M (SD)	F -ratio
	Range 0–6	Range 0–6	
Midterm/final exams	2.79 (1.71)	2.66 (1.69)	4.465*
Writing assignments	2.44 (1.76)	2.38 (1.75)	.948
Active/collaborative learning techniques	2.13 (1.99)	2.31 (2.00)	6.524**

Note. Total N equaled 3,220 for this analysis and included only those faculty members who taught at least one undergraduate class. Wilks' Lambda .996, $F(3, 3220) = 4.271$, $p < .01$. Pillai's Trace, Hotelling's Trace, and Roy's Largest Root .004, $F(3, 3220) = 4.271$, $p < .01$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

hand, U.S. born faculty members used active and collaborative learning techniques more frequently ($M = 2.31$, $SD = 2.00$) than foreign-born faculty members ($M = 2.13$, $SD = 1.99$). However, Cohen's d statistics showed that the mean differences although significant were quite trivial ($d = .08$ and $d = .09$, respectively) (Trusty et al., 2004).

I also tested interaction effects of discipline with foreign- versus U.S.-born status of faculty on their use of assessment and teaching techniques and found significant multivariate interaction effects at $p < .01$. The value for Wilks' Lambda equaled .996, $F(3, 3220) = 3.846$, $p < .01$. The values for Pillai's Trace, Hotelling's Trace, and Roy's Largest Root equaled .004, $F(3, 3220) = 3.846$, $p < .01$. It appears that foreign-born faculty in social sciences and humanities used exams more often ($M = 2.98$, $SD = 1.68$) than U.S.-born faculty members ($M = 2.75$, $SD = 1.71$), with $d = .14$, but the use of active and collaborative learning techniques between these two groups was very comparable ($M = 1.89$, $SD = 1.85$ and $M = 1.89$, $SD = 1.83$, respectively). On the other hand, foreign-born faculty in sciences and engineering used exams similarly ($M = 2.55$, $SD = 1.72$) as their U.S.-born peers ($M = 2.55$, $SD = 1.66$), but their use of active and collaborative techniques was slightly lower ($M = 2.44$, $SD = 2.12$) relative to U.S.-born faculty members ($M = 2.82$, $SD = 2.08$), with $d = .18$.

Satisfaction With Instructional Support and Authority

Finally, MANOVA was also conducted to examine the differences between foreign-born and U.S.-born faculty groups on four instruction-related satisfaction measures. The results from multivariate tests suggested that there was a significant multivariate effect, which indicated that overall the groups seemed different in their satisfaction. As illustrated in Table 4, all four multivariate test statistics (i.e., Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) and their corresponding F -ratios were significant at $p < .001$. To examine how the groups were different and which specific satisfaction measures contributed to the difference, univariate tests and contrast estimates were examined. F -ratios for each univariate test and their significance levels provided in Table 4 indicate that, foreign-born and U.S.-born faculty members differed in terms of their satisfaction with authority to make decisions, $F(1, 5080) = 41.766$, $p < .001$ and satisfaction with the quality of equipment and facilities for classroom instruction, $F(1, 5080) = 8.827$, $p < .01$. Significant contrast estimates for the latter two satisfaction measures further confirmed the univariate test results. Contrast estimate for the satisfaction with authority to make decisions variable equaled $-.111$ ($p < .001$) and for the satisfaction with equipment and facilities variable equaled $.070$ ($p < .05$). The results showed

Table 4
Foreign-Born and U.S.-Born Faculty Members' Satisfaction With Instructional Support and Authority at Four-Year Postsecondary Institutions in the U.S

	Foreign-born ($N = 2,540$) M (SD)	U.S.-born ($N = 2,540$) M (SD)	F -ratios
Satisfaction with authority to make decisions on curriculum, course content, and methods of instruction	3.63 (.67)	3.74 (.57)	41.766***
Satisfaction with institutional support for implementing technology-based instructional activities	3.23 (.78)	3.23 (.81)	.001
Satisfaction with the quality of equipment and facilities available for classroom instruction	3.11 (.83)	3.04 (.86)	8.827**
Satisfaction with institutional support for teaching improvement, including grants, release time, and professional development funds	2.83 (.92)	2.86 (.92)	1.620

Note. Wilks' Lambda .988, $F(4, 5070) = 15.354$, $p < .001$. Pillai's Trace, Hotelling's Trace, and Roy's Largest Root .012, $F(4, 5070) = 15.354$, $p < .001$.

** $p < .01$. *** $p < .001$.

that foreign-born faculty members were slightly less satisfied with their authority to make decisions about course content, curriculum, and methods of instruction ($M = 3.63$, $SD = .67$) but seemed to be more satisfied with equipment and facilities ($M = 3.11$, $SD = .83$) than their U.S.-born peers ($M = 3.74$, $SD = .57$ and $M = 3.04$, $SD = .86$, respectively). Standardized-difference effect size statistics revealed that the effect sizes indicating the strength of the mean differences between the two groups were rather small ($d = .18$ and $d = .08$, respectively) (Trusty et al., 2004). As indicated in Table 4, there was a non-significant difference between the two groups in terms of satisfaction with technology support and institutional support for teaching improvement.

Discussion

Results of the study revealed some similarities as well as slight differences between foreign-born and U.S.-born faculty members' involvement in teaching, classroom assessment and instructional techniques, and satisfaction with instructional support and authority at 4-year U.S. postsecondary institutions. The analysis of the data on four commonly used teaching workload measures indicated that overall, foreign-born faculty members were slightly less involved in teaching than their U.S.-born colleagues. However, it is important to note that the differences between foreign-born and U.S.-born faculty members seemed to be mostly attributed to the number of students taught in their classes. Closer examination of the data on each teaching workload measure revealed that, on average, foreign-born and U.S.-born faculty members spent roughly the same amount of time on teaching and generated the same number of classroom credit hours per week. More specifically, the data showed that both groups spent about seven hours per week on teaching credit classes and reported the total of approximately 8 classroom credit hours. Similar patterns were evident when the data were examined separately for undergraduate and graduate level teaching. Both groups spent roughly about 5 hours in the classroom at the undergraduate level and three hours at the graduate level, which equaled around 6 and 2 classroom credit hours at the undergraduate and graduate levels, respectively. Variables that

contributed to the statistically significant difference in teaching involvement between the two groups were total student credit hours and student contact hours generated per semester. Foreign-born faculty members generated fewer total number of student contact and student credit hours per semester than U.S.-born colleagues. Because NSOPF derived variables of total student contact and credit hours per semester took into consideration the student enrollment in courses, the findings might indicate that the difference in the teaching involvement between the two groups was due to the number of students taught by a faculty member.

The results of this study suggest that previously reported differences in the teaching workload between foreign-born and U.S.-born faculty members (e.g., Mamiseishvili, 2010; Mamiseishvili & Rosser, 2010; Marvasti, 2005) need to be interpreted with caution. The difference seems to be less about the assigned teaching responsibilities or number of classes taught, and more about the number of students enrolled in the classes taught by foreign-born and U.S.-born faculty members. Total student credit and contact hours generated by the faculty member are commonly reported teaching productivity measures across the institutions nationally. Hence, it is important to understand the extent of the differences between foreign-born and U.S.-born faculty members' teaching involvement as well as how the number of students enrolled in their classes contributes to these differences, because it might potentially be affecting the evaluations of their teaching productivity.

How many students would enroll in any given class would depend on a number of factors and might have nothing to do whether the instructor is foreign-born or U.S.-born. However, the types of classes foreign-born faculty members are assigned to teach might have some effect on how many students would enroll. Previous research on foreign-born academics provides some evidence on what types of courses might commonly be assigned to foreign-born faculty members (e.g., Manrique & Manrique, 1999; Skachkova, 2007). Manrique and Manrique (1999) found that non-European immigrant science and engineering faculty in their study were often channeled to teach the courses that were very technical in nature. As for foreign-born academics in social sciences, they

were often assigned courses that were related to their ethnic, cultural, or national backgrounds where they could draw on the knowledge related to “foreign” subject matter and context (Manrique & Manrique, 1999; Skachkova, 2007). The evidence from these studies suggests that foreign-born academics are seen as experts in the technical subjects or in the courses on “foreign” subject matter. One can suspect that subjects that are very technical in nature might not be very popular among students and subjects that have more international or foreign focus might very likely be outside the mainstream required coursework. Of course, it is difficult to assume beyond mere speculation that the types of courses foreign-born faculty members are assigned to teach might have an effect on the number of students enrolled in these courses. However, undoubtedly, this is the question that requires further exploration.

In addition to the teaching workload, the study also examined classroom assessment and instructional techniques used by foreign-born and U.S.-born faculty members. Although the results from the multivariate tests revealed that the two faculty groups were significantly different, further examination of the effect sizes indicated that the differences between the groups were not strong and may not be meaningful. Thus, it is safe to assume that foreign-born and U.S.-born faculty members take similar approaches to teaching and assessment. However, it is still useful to point out some slight differences. The findings indicate that foreign-born faculty members might tend to use exams more often and active/collaborative learning techniques less frequently than their U.S.-born faculty peers. Interestingly, discipline seemed to moderate these findings. In social sciences and humanities, foreign-born faculty members relied more on exams than U.S.-born peers, but there was no difference in their use of writing assignments and active/collaborative learning techniques. On the other hand, in sciences and engineering, foreign-born faculty members relied less on active/collaborative learning techniques compared to their U.S.-born peers, but they displayed no difference in their use of writing assignments and exams. It should again be highlighted that because of small effect sizes, the reader must be cautious not to oversimplify these conclusions. Nonetheless, given the fact that active and collaborative learning tech-

niques, such as group work, laboratory or studio assignments, cooperative and service learning opportunities, help students apply classroom material to real-life experiences, become active participants in learning, and make coursework more meaningful, foreign-born faculty members should be supported and encouraged to integrate these types of assignments and experiences more often in their classrooms.

Finally, the study examined foreign-born faculty members’ satisfaction with instructional support and authority. The results of the study revealed that foreign-born faculty members seemed slightly more satisfied with the quality of equipment and facilities available for teaching than their U.S.-born colleagues. Foreign-born faculty members seemed to appreciate classroom facilities and equipment and tools available for classroom instruction on U.S. college campuses. On the other hand, foreign-born faculty members in this study were slightly less satisfied with their authority to make decisions on curriculum, course content, and methods of instruction. Despite the small effect size, the latter finding should be reviewed in the context of the previous research. The findings of this study seem to be consistent with the results from the earlier study by Wells et al. (2007) that also revealed that foreign-born faculty members, especially Middle-Easterners and Asians, were less satisfied with their job autonomy and authority to make decisions. Other studies have also indicated that foreign-born faculty members often felt isolated from the membership of American faculty “ingroup” (Seagren & Wang, 1994, p. 17) and thus, were excluded from important decision-making processes or administrative service work that limited their opportunities to have a say in the discussion of curricular or other key issues (Skachkova, 2007).

Despite small effect sizes, when reviewed in the context of previous research, the results of this study provide some evidence to suggest that foreign-born faculty members may be slightly less satisfied with the role they play in the decision-making process about curricular issues at the department or institutional level. It is essential that institutions create a climate of inclusiveness so that foreign-born faculty members feel less like “outsiders” (Skachkova, 2007, p. 705) and more like empowered academics who have the voice in the decision-making processes and the authority to make decisions about

the choice of courses, course content, and methods of instruction.

The study provided a comprehensive examination of the teaching workload, instructional techniques, and satisfaction with instructional support and authority of the nationally representative sample of foreign-born faculty members at U.S. 4-year postsecondary institutions. The study was one of the first attempts to provide a more systematic evaluation of foreign-born faculty members' teaching at the national level. However, as with all secondary data analyses, the study was limited in the choice of measures that were available in NSOPF data set to fully evaluate foreign-born faculty members' contributions in their teaching functions. The study included important process and input measures of teaching, such as time spent on teaching, types of instructional techniques used in the classroom, and the level of satisfaction with instructional support and authority; however, the study was limited in the choice of variables that measure the learning outcomes of teaching. It can only be assumed that hours spent with the students and in the classroom or the use of various instructional techniques will ensure students' learning (Blackburn & Lawrence, 1995; Fairweather, 2002). It will be worthwhile if future research focuses on the learning outcomes of teaching or examines students' perspectives and perceptions of foreign-born faculty members' teaching to more fully evaluate their teaching effectiveness.

It will also be useful to examine teaching preferences and experiences of foreign-born faculty across different demographic groups, such as gender, ethnicity, or language. Foreign-born professoriate is a very heterogeneous group with different cultural, language, and national backgrounds, and current study was unable to capture this heterogeneity. Due to the limited choice of variables in the NSOPF data set, I was not able to examine such important variables as the native language of foreign-born academics, their country of origin, or the length of their stay in the United States. It would have been useful to observe the differences related to language, ethnic origin, or time spent in the U.S., but these variables were not available in the NSOPF data set. Future research should address this limitation not to overlook the heterogeneity of the foreign-born professoriate.

It is essential that higher education institutions support foreign-born faculty members in their teaching roles. Luxon and Peelo (2009) point to

the inherent tension between global orientations of foreign-born scholars and the localism of their teaching, which lacks "a sense of the geographical and cultural dynamism inherent in the migration of highly qualified scholars" (p. 651). Although research takes place in the community of academics from around the country and even the world, and could be supported more by external networks (Baker & Zey-Ferrell, 1984), support for teaching at the institutional and departmental level is vital for foreign-born faculty members. Teaching is very contextual, situated, and local (Luxon & Peelo, 2009). Teaching takes place in the local community of learners and is embedded in the cultural norms, expectations, and practices of the local context, which might be unfamiliar to faculty from other cultures. Thus, institutions will be well-served if they continue to support foreign-born faculty members to excel in their teaching roles and derive personal satisfaction from the work they do. With their "different way of knowing the world" (Skachkova, 2007, p. 710), foreign-born academics can make valuable contributions to the decision-making processes on the curriculum and course content as well as to classroom instruction.

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Publication Productivity and Career Advancement by Female and Male Psychology Faculty: The Case of Italy

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In the United States, women tend to publish less than men do and to be overrepresented at the lower ranks of academia. This study examined the scientific productivity and career status of female and male psychology faculty in Italian universities. Psychology was selected as a discipline because for decades, it has had a female majority among its doctorates. Italy was the case study country because it has one of the highest representations of women among university faculty. This study's questions were: What is the representation of female psychology academics across faculty and high administration ranks? Is the publication productivity of female psychology academics different from that of their male peers? Finally, what institutional factors are associated with publication productivity among psychology academics? Our study focused on the 511 university psychology professors (250 women and 261 men) listed in 2004 in the Italian Ministry of Education University and Research website. We examined scientific productivity over 7 years, from 1998 to 2004, using PsycINFO. We found that women represented two thirds of assistant professors but only one third of full professors and department chairs. Overall, women published somewhat less (approximately one third less) than men, especially in international journals and as senior authors. However, consistent with prior evidence, when multiple predictors were considered together, both academic rank and institutional setting, but not sex-of-faculty, were associated with publication output. This study confirms prior observations that a strong female doctoral pipeline and scientific productivity are very slow at influencing the underrepresentation of women at the top ranks of academia.

Keywords: women, science, academic career, publications

Women in academia are overrepresented in the lower faculty ranks and are almost absent in the higher faculty and administrative positions. Across disciplines, as the amount of power and status associated with a position increases, the number of women holding such positions decreases (Ceci, Williams, & Barnett, 2009; European Commission, 2006; Massachusetts Insti-

tute of Technology, 1999). This phenomenon has been conceptualized as horizontal segregation (Rossiter, 1980). One explanation for women's horizontal segregation in academia is that women are less scientifically productive than men are. This theory is based on the assumption that advancement in academia is at least strongly influenced, if not determined, by sci-

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entific productivity (Merton, 1973; Rosenfeld & Jones, 1986).

A commonly used measure of scientific productivity is publication rate (e.g., Fox, 1989; Joy, 2006; Leahey, 2006). Early studies indicated that women published less than men, at rates around 1:2 (Cole, 1979; Cole & Zuckerman, 1984; Fish & Gibbons, 1989; Helmreich, Spence, Beane, Lucker & Matthews, 1980; Long, 1992; Reskin, 1978). The gender publication gap reinforced the perception that women's segregation in the lower academic ranks was a result of their inferior scientific productivity. More recent studies, however, have revealed variability in women's and men's publication productivities, with a majority of studies reporting small to no gender differences in publication rates (D'Amico & Di Giovanni, 2000; Gupta, Kumar, & Aggarwal, 1999; Joy, 2006; Lemoine, 1992; Long & Fox, 1995; Maass & Casotti, 2000; Li, Latib, Kwong, Zinzuwadia, & Cowan, 2007; Mathtech, 1999; Mauleón & Bordons, 2006; Sonnert & Holton, 1995; Ward & Grant, 1996; Xie & Shauman, 1998), especially when other factors (e.g., rank) affecting productivity are taken into account, with a few studies recording significant differences (Goel, 2002; Maske, Durden, & Gaynor, 2003; Prpić, 2002). For example, Sonnert and Holton (1995) found that women had only one-half fewer publications than men among former National Science Foundation postdoctoral fellows did. Similarly, a study of United States scientists and engineers reported that women published about 1.4 fewer articles than men when factors including experience, academic field, and marital status were controlled (Mathtech, 1999). Furthermore, a study of publication rates by members of the European Association of Social Psychology (EASP) found that men published more than women did, but also that men's per-year production weighted for journal prestige was only slightly higher than that of women. In this study, the publication gap was least pronounced in Southern European countries where the percentage of women in the field was highest (Maass & Casotti, 2000). By contrast, Maske and colleagues (2003) found that United States female economists published on average about seven fewer articles than male economists, with 59% of gender-specific differentials left unexplained by control variables, such type of university (teaching vs. research university).

The role of scientific productivity in women's and men's academic career advancement is difficult to assess. Studies have found that publication productivity is influenced by the same work conditions that also influence career advancement (Long, 1992; Maske et al., 2003; Xie & Shaumann, 1998). Conditions such as employment in a large research institution or holding a full-time tenure-track position create cumulative positive career effects, including the strong scientific productivity that promotes advancement. For example, according to a study by Long (2001), female doctoral-level scientists are less likely than their male counterparts to work full-time in the sciences (including social and behavioral sciences) and engineering, with negative implications for women's scientific productivity and career advancement. Other studies found that women are also more likely than men to work in smaller teaching institutions where research activities are less valued and supported (Nakhaie, 2002), and to be underrepresented at more prestigious research universities (Brennan, 1996) where scientific productivity is expected and supported. The importance of institution type is underscored by a study of faculty members 5 years before and 5 years after moving to a different-size university. This study found that the publication rate of individuals who moved to small universities decreased, while the publication rate of individuals who transferred to larger institutions increased (Allison & Long, 1990). Women's overrepresentation in the less publication-supportive institutions could be both the effect of past weak scientific productivity as well the cause of future reduced scientific productivity.

Rank is also an important factor in productivity. For both women and men, academic rank and scientific productivity are related. Full professors are more productive than associate professors who, in turn, usually publish more than assistant professors (Long, 2001; Noordenbos, 1992). Lee and Bozeman (2005) speculated that higher rank creates networks and resources, all of which favor scientific productivity, thus generating a cumulative positive effect. Accordingly, women's overrepresentation in the lower faculty ranks may be both the effect of past weak scientific productivity as well the cause of future reduced scientific productivity. One limitation of many early studies of women's and men's scientific productivity is the lack of con-

sideration for factors such as academic rank or institution type.

Recent studies documenting a publication productivity gap focused on either disciplines (i.e., emergency medicine, Li et al., 2007; economics, Maske & colleagues, 2003; material sciences, Mauleón & Bordons, 2006) or cohorts (i.e., American Economics Association members in 1989, Maske & colleagues, 2003) with a small proportion of female doctorates. Findings from such studies may not be generalizable to disciplines such as psychology, which for decades have produced a majority of female doctorates. Most studies of publication productivity have been conducted in English-language countries, like the United States and Canada, with similar cultural and academic structures. Given the well-documented role of cultural and institutional factors in women's participation and success in academia, it is critical to examine women's academic productivity and advancement across a wide range of cultural, social, and academic contexts.

The present study examined questions of female publication productivity and career advancement in academic psychology in Italy. We chose psychology because it is a discipline that has had for decades a female majority among its doctorates. In Italy, the first two departments of psychology opened in 1970. In 2004, 85% of Italian University psychology degrees went to women (Italian Institute of Statistics, 2004). In the same spirit, we selected Italy as a case study country because, in Europe, it ranks highly with regard to representation of women among university faculty, with women constituting 16% of the full professors and 31% of the associate professors in 2004 (European Commission, 2006). Italian women's employment success is supported by strong parental policies and national health care. For example, Italian women have 5 months of paid maternity leave. Either the mother or father may take a total of 10 months parental leave until the child's ninth birthday. In order to encourage fathers to apply for leave, fathers can be granted an extra month if they have applied for 3 months' leave. Incidentally, Italy's birthrate is among the lowest in the world. At the same time, Italy ranks low among industrialized countries with regard to female labor force participation, with only 52% of women in the labor force in 2010 (Hausmann, Tyson, & Zahidi, 2010). Italy's tenure

system is also different from the tenure system dominant in, for example, the United States or Canada. In Italy, faculty are tenured starting at the rank of assistant professor. A tenured position at each rank is achieved after an evaluation of the candidate's scientific publication record during the 3 years preceding the evaluation. In Italy, one can be a tenured assistant professor for the duration of one's career. This means that in Italy, the pressure to publish typically associated with being untenured is distributed across ranks from the predoctoral and immediate postdoctoral stage through the full professor stage. It also means that tenure pressure is less likely to coincide, for women, with their last decade of fertility years, as is the case in the United States. This is important considering some evidence that productivity and career advancement tend to be lower for women with children (Fox, 2005; Rothausen-Vange, Marler, & Wright, 2005; Stack, 2004; Xie & Shauman, 2003).

Building on theory and previous findings, the current study aimed to answer the following questions: What is the representation of Italian female psychology academics across faculty ranks, including high administrative posts? Is the scientific productivity of Italian female psychology academics different from that of their male peers with regard to outcomes such as number and kind of publications? Are rank, department size, and tenure associated with publication productivity?

Method

Participants

This study focused on the 250 (49%) women and 261 (51%) men who were psychology professors in Italian universities in 2004. Their distribution by rank was as follows: 171 assistant professors, 160 associate professors, and 180 full professors.

Procedure

University professors were identified based on their being listed in the Italian Ministry of Education, University and Research [*Ministero dell'Istruzione, dell'Università e della Ricerca* (MIUR)] website (www.miur.it). The MIUR website indicated their full name, rank, and department affiliation. To measure scientific

productivity, we consulted PsycINFO, a database of the American Psychological Association (APA). We chose PsycINFO because it indexes all major peer-reviewed journal articles, book chapters, and books from Italian and international departments of psychology and related-fields. The same APA database has been used by a prior European study (Maass & Casotti, 2000) as well as by a recent study of academic psychologists' scientific productivity in the United States (Joy, 2006).

We examined faculty publications dated between 1998 and 2004—a 7-year range. We recorded each individual's total number of publications. We also kept track of a) publication nationality (domestic/Italian vs. international); b) publication type (journal article, book, or book chapter; and c) publication authorship order (first author or not).

Department size was calculated based on the number of full-time faculty, excluding single-year, adjunct professors. When applied to faculty data for 2004, this criterion generated the following department size breakdown of the 11 Italian psychology departments: three large departments (Padova, Roma, and Torino) with a total of 275 faculty (54% of 511); four medium departments (Milano Bicocca, Firenze, Bologna, and Milano Sacro Cuore) with 155 faculty (30% of 511); and four small departments (Napoli, Chieti, Trieste, Milano S. Raffaele) with 81 faculty (16% of 511).

Results

Women's Advancement Within Academic Psychology

In 2004, women represented 67% of assistant professors, 49% of associate professors, and 37% of full professors in Italian Psychology Departments. As illustrated in Table 1, the distributions of women and men by rank were significantly different ($\chi^2 = 31.28, p = .001$), with the significant difference registered at both the assistant and the full-professor levels. With regard to tenure, there were 258 (138 women and 120 men) untenured and 253 (122 women and 131 men) tenured faculty in psychology departments. There were significantly fewer female tenured full professors than male tenured full professors (33 and 76, respectively); however, the reverse was true for tenured assistant professors (55 and 22, respectively) ($\chi^2 = 37.32, p = .001$). There was equal representation of women ($N = 34, 49\%$) and men ($N = 33, 51\%$) among the tenured associate professors. Of 11 department chairpersons, four were women. Women also represented about one-half ($N = 18$) of the 30 psychology program directors. As shown in Table 1, tenured women were less numerous than tenured men in both medium and large departments, whereas the reverse was true in small departments, although the difference was not statistically significant.

Table 1
Distribution of Female and Male Faculty by Rank and Department Size

Professor rank	Assistant (<i>n</i> = 171)		Associate (<i>n</i> = 160)		Full (<i>n</i> = 180)		Total (<i>n</i> = 511)	
	T	U	T	U	T	U	T	U
Small department								
Female	7	7	4	6	4	7	15	20
Male	1	6	0	20	10	8	11	34
Medium department								
Female	17	21	5	23	8	9	30	53
Male	9	11	7	15	20	11	36	37
Large department								
Female	31	31	25	16	21	18	77	65
Male	12	18	26	13	46	18	84	49
Total								
Female	55	59	34	45	33	34	122	138
Male	22	35	33	48	76	37	131	120

Note. T = Tenured; U = Untenured.

Women's and Men's Scientific Productivity

We first examined the number of publications produced between 1998 and 2004 by the 511 individuals who were university faculty in 2004. Women's and men's publication productivities were more similar than different when publication output was examined in clusters. An equal proportion (31%) of female and male faculty did not publish during the selected time. Among those who did publish ($N = 354$), 44% of women and 38% of men had between one and 10 publications, and 7% of female and 9% of male professors had 11 to 35 publications. However, more men than women (7 men and 1 woman) had more than 35 publications.

Overall, women had fewer publications than men (approximately 4 vs. 6, respectively), $F = 6.51$, $p = .01$ when a one-way ANOVA was performed. However, a 2×3 (Sex of Faculty by Rank) factorial ANOVA on total publications revealed no significant main effect of sex of faculty, whereas a main effect of rank was detected, $F(2, 510) = 8.66$, $p = .001$, $\eta^2 = .033$, with full professors having more publications than associate and assistant professors (see Table 2). Similarly, women were less likely to

publish than men when journals, $F = 5.41$, $p = .02$, and books, $F = 5.53$, $p = .02$, were considered separately, but sex of faculty was not significant when rank was included in a two-way ANOVA.

When we considered publication nationality (domestic/Italian or international), a one-way ANOVA showed that women and men were equally as likely to publish in domestic outlets. However, men had a significantly stronger presence in international venues, $F = 8.43$, $p = .004$. However, when a 2×3 (Sex of Faculty by Rank) factorial ANOVA was performed on each type of publication, we found that sex of faculty was not significant, whereas a main effect of academic rank for both domestic publication, $F(2, 510) = 4.46$, $p = .012$, $\eta^2 = .017$, and international publication, $F(2, 510) = 8.66$, $p = .001$, $\eta^2 = .033$, were detected. Using Bonferroni's adjusted alpha levels, full professors were shown to have published more than assistant professors but not more than associate professors in domestic outlets. Full professors also published more than both assistant and associate professors in international outlets. No significant interaction of academic rank with sex of faculty was found.

Table 2
Women's and Men's Publication Type by Rank

Professor rank	Assistant ($n = 171$) M (SD)	Associate ($n = 160$) M (SD)	Full ($n = 180$) M (SD)	Total ($n = 511$) M (SD)
Articles				
Female	2.83 (3.82)	3.05 (3.96)	6.11 (7.77)	3.70 (5.28)
Male	3.50 (5.40)	4.18 (6.05)	6.59 (10.13)	5.11 (8.14)
Total	3.06 (4.42)	3.60 (5.10)	6.41 (9.33)	4.39 (6.87)
Books				
Female	0.11 (0.37)	0.25 (0.64)	0.41 (0.97)	0.23 (0.76)
Male	0.58 (2.88)	0.23 (0.51)	0.63 (1.45)	0.50 (1.73)
Total	0.27 (1.72)	0.24 (0.58)	0.55 (1.30)	0.36 (1.31)
Domestic				
Female	0.97 (1.75)	1.02 (1.80)	1.87 (2.45)	1.17 (1.97)
Male	0.88 (1.30)	1.25 (2.03)	1.26 (2.21)	1.21 (1.99)
Total	0.94 (1.61)	1.13 (1.91)	1.48 (2.31)	1.19 (1.98)
International				
Female	1.96 (2.95)	2.27 (3.37)	4.64 (7.69)	2.72 (4.79)
Male	3.20 (7.45)	3.17 (5.39)	5.96 (9.85)	4.44 (8.23)
Total	2.39 (5.00)	2.71 (4.48)	5.48 (9.13)	3.56 (6.75)
Total				
Female	2.93 (3.93)	3.30 (1.19)	6.51 (8.00)	3.93 (5.48)
Male	4.08 (7.82)	4.41 (6.25)	7.22 (10.83)	5.61 (9.03)
Total	3.33 (5.58)	3.84 (5.31)	6.97 (9.88)	4.75 (7.48)

With regard to authorship, when rank was considered in a two-way factorial ANOVA, a main effect of sex of faculty was detected only in the case of international articles (women, $M = 1.08$; men, $M = 1.61$; $F(2, 510) = 4.36$, $p = .04$, $\eta^2 = .009$) with female faculty having, on average, fewer first-author international articles than male faculty, whereas women and men did not differ with regard to authorship in the other type of publications. On the contrary, when rank was considered, a statistically significant difference in authorship was detected only in the case of publications in English. Specifically, assistant professors published fewer international articles as first authors ($M = .96$) than full professors ($M = 1.83$), $F(2, 510) = 3.01$, $p = .05$, $\eta^2 = .012$. Full professors published more books in English as first authors ($M = .35$) than either associate professors ($M = .09$) or assistant professors ($M = .13$), $F(2, 510) = 4.25$, $p = .02$, $\eta^2 = .017$.

Finally, we found that department size was associated with faculty publication productivity. A one-way ANOVA revealed that professors in small departments had higher publication productivity than their colleagues in both medium and large departments, $F(5, 510) = 3.34$, $p = .04$. However, in a 2×3 (Sex of Faculty by Department Size) factorial ANOVA, the effect of department size was statistically significant only for international publications, $F(2, 510) = 4.35$, $p = .01$, $\eta^2 = .017$. Faculty in small departments had more international publications than faculty in medium and large departments but similar domestic publications. No significant interaction of department size by sex of faculty was found (see Table 3).

To follow up on these findings, we performed additional exploratory analyses. To explore whether untenured faculty had more publications than tenured faculty, given the importance of publications for tenure, a 2 (Sex of Faculty) $\times 3$ (Rank) $\times 2$ (Tenure) ANOVA was conducted. A main effect for tenure was found, $F(5, 510) = 5.81$, $p = .001$, $\eta^2 = .055$, with untenured faculty publishing more than tenured faculty across ranks. Bonferroni's post-hoc pairwise comparisons clarified this effect: non-tenured full professors had the highest publication output, relative to other faculty, excluding tenured full professors (See Table 4). No main effect of sex of faculty was detected.

Table 3
Women's and Men's Domestic and International Publications by Department Size

Publication type	Domestic <i>M (SD)</i>	International <i>M (SD)</i>	Total <i>M (SD)</i>
Small department			
Female	.57 (1.4)	4.0 (9.0)	4.5 (8.9)
Male	1.2 (2.1)	7.1 (10.2)	8.3 (10.5)
Total	.92 (1.8)	5.7 (9.8)	6.7 (10.0)
Medium department			
Female	1.5 (2.3)	2.5 (3.8)	4.0 (5.0)
Male	1.1 (2.24)	4.3 (9.9)	5.5 (11.2)
Total	1.3 (2.2)	3.4 (7.3)	4.7 (8.5)
Large department			
Female	1.2 (2.0)	2.5 (3.7)	3.7 (4.6)
Male	1.2 (1.8)	3.6 (6.1)	4.8 (6.7)
Total	1.2 (1.8)	3.0 (5.0)	4.2 (5.7)

Finally, we conducted a multiple regression (stepwise method) to identify the variables associated with publication productivity, among them sex of faculty, academic rank, and department size. We found that rank was the best predictor of productivity, accounting for 20% of the variance (R squared = 0.051; Adjusted R square = 0.047, $\beta = .201$, $t = 4.63$, $p = .001$). The second most important variable was department size, explaining 10% of the variance ($\beta = .100$, $t = 2.31$, $p = .02$, $F(2, 508) = 13.66$, $p = .001$). Sex of faculty was not a predictor of publication productivity.

Discussion

In this study, we focused on questions of scientific publication productivity and career advancement of women and men in academia. In the spirit of positive psychology, we targeted what appears a model case for women's career advancement, psychology faculty in Italy—psychology, because it is a discipline with a strong and consistent record of female doctoral graduates, and Italy because it is a country with one of the highest female faculty presence among European universities. We asked questions about female publication productivity because, for a long time, women's underrepresentation at the top ranks of academia has been assumed to be related to their weaker scientific performance.

Our findings about publication productivity are consistent with those of previous studies

Table 4
Women's and Men's Publications by Rank and Tenure

Professor rank	Assistant <i>M (SD)</i>	Associate <i>M (SD)</i>	Full <i>M (SD)</i>
Tenured			
Female	2.11 (3.04)	2.52 (3.34)	4.88 (5.19)
Male	4.59 (12.14)	2.57 (4.71)	6.64 (9.81)
Total	2.81 (6.97)	2.55 (4.04)	6.11 (8.69)
Untenured			
Female	3.73 (4.60)	3.71 (4.58)	8.00 (9.61)
Male	3.94 (4.06)	5.35 (6.59)	8.70 (12.79)
Total	3.80 (4.38)	4.55 (5.73)	8.36 (11.30)

(see Kite et al., 2001, for a review of United States' studies). For example, in line with past studies, we found that female faculty had lower (in this study, about one third lower) overall publication rates than their male peers, especially as senior authors. However, in this study as in previous ones, there was variability in women's and men's scientific productivity depending on the productivity index used. Specifically, in this study, women and men did not differ with regard to number of domestic publications, confirming a trend reported for India by Lemoine (1992), and for Italy by D'Amico and Di Giovanni (2000). Similarly, past studies have found that, although men tend to publish more articles overall, women publish higher citation articles (Long, 1992) and in higher-impact journals (Mauleón & Bordons, 2006).

In this study, female-male differences in scientific publications disappeared when academic rank was considered—a finding consistent with publication trends by United States' academic psychologists (Joy, 2006) as well as publication trends by Spanish material scientists (Mauleón & Bordons, 2006). Thus, it appears that rank is a most influential factor in publication productivity. In the current study, the absence of a significant interaction between rank and sex of faculty indicates that, at each rank, women published at the same rate as men—a trend confirmed also by the absence of an interaction effect between tenure status and sex of faculty. Among Italian academic psychologists, full professors produced the greatest number of publications, especially in international venues. The fact that in Italy tenure is not timed with promotion to associate professor, but may be achieved at any rank, including at the full-

professor rank, may add to the higher productivity of full professors. Untenured full professors in particular may keep up their publication record in order to be eligible for tenure. Prior studies have generated mixed findings on the productivity of full professors (e.g., Noordenbos, 1992; as compared to Lee & Bozeman, 2005; or Nakhaie, 2002), with variability also by sex of faculty (Joy, 2006). A recent study (Joy, 2006) of United States' academic psychologists found that men publish more than women during the pre-tenure stage but not thereafter, while women increase their publication rates once they attain senior status—something not true of men. In Joy's study (2006), a subset of highly productive junior men who were moving to more prestigious universities accounted for much of the gender difference in publication rate.

Our findings about institution type challenge prior observations on the advantage, for publication productivity, of being affiliated with larger, more prestigious universities. At the same time, our findings about institution confirm the importance of institutional context on productivity, with the type of effect of institutional context varying depending on nationality. Future studies are recommended to investigate the stability, generalizability, and meaning of this study's scientific productivity trends, both in Italy and elsewhere.

This study's findings about women's academic careers also indicate that, in psychology and in Italy, as is the case for other disciplines elsewhere (Kite et al., 2001), women have made important progress in academia. In Italy, women represent over two thirds of tenured psychology assistant professors and one half of tenured psychology associate professors. At the same time, women in Italy continue to be underrepresented at the higher academic ranks. This study found that only 30% of tenured psychology professors were women. In addition, about one third of department chairs were women whereas more than half of program directors were women. Considering that women have earned a majority of Italian psychology doctorates for several decades, reaching representation across all ranks of academia at levels commensurate with their degree-earnings ratio has been very slow for Italian women. Although women's presence in Italian academic psychology is undoubtedly strong, trends in female-

male psychology faculty are consistent with female-male trends for faculty in general, as noted in a recent report published by the European Commission (2006). The report noted that in the European Union (EU), there are fewer women as one moves up academic ranks. In the 23 EU countries examined in this report, only 6% of women were full professors, in comparison to 18% of men. Similarly, a review of studies tracking the representation of women in academia in the United States (Ceci et al., 2009) noted that women are not well represented in top academic positions in fields such as philosophy, medicine, law, and veterinary science, despite their being well represented among the doctorates in those fields.

This study's findings should be interpreted in light of its methodological features and limitations. We recorded publication productivity for a recent, 7-year period rather than over an individual's career. A recent, short-term perspective may be a better measure of women's productivity because women have become established in academia more recently than men, which translates to a lower total number of publications (Xie & Shauman, 1998). At the same time, a career perspective on female and male publication productivity would surely be informative, especially in fields where women have reached at least parity at the rank of tenured full professor.

We acknowledge that our short-term period focus on productivity likely did not prevent experience from influencing our outcome measures. Our female-male productivity gap was probably impacted by differences in female-male seniority status within ranks as well as the fact that women were a minority of tenured full professors. Full professors usually publish more. This is typically a result of full professors' greater involvement in networks known to promote publications, including national and international scientific academies. Full professors are also more likely to have resources, such as labs, research assistants, and collaborators, all of which contribute to making publishing easier and more efficient (Lee & Bozeman, 2005; Long, 1992). Finally, it is important to consider that, in Italy, full professors are more likely to be awarded external funding (Cornoldi et al., 1994). According to a recent study, grants are one of the best predictors of productivity (Lee & Bozeman, 2005). The fact that, in our study,

female full professors did not differ from male full professors in terms of publication productivity is a testimony to women's accomplishments as recent newcomers to the highest academic ranks. To conclude, interpretation of our findings is limited by the fact that we did not have access to information known to affect publications, including seniority, grant funding, number and kind of courses taught, and area of specialization. Given the variability of findings on female productivity depending on the measures used, future studies would benefit from a broader range of productivity outcomes, including journal impact and citation rates.

Finally, we wish to highlight a unique feature and strength of our study: its national sample. This feature brought breadth and comprehensiveness to our analysis. By contrast, as noted by Long and Fox (1995), many studies of productivity and academic advancement are based on non-representative, elite university samples.

To conclude, female and male patterns of scientific publication and academic advancement are still a puzzle (Cole & Zuckerman, 1984), both in terms of measurement and explanation issues. It is unclear what may be the best measures of productivity (Bell & Gordon, 1999; Ceci et al., 2009) as well as the best predictors of productivity (Long & Fox, 1995; Prpić, 2002). There is also debate on the relationship and the directionality of influence between productivity and academic advancement (Long & Fox, 1995; Schulze, Warning, & Wiermann, 2008; Winkler, 2000). Gender biases in the review processes associated with publishing as well as with academic advancement have been documented (Jiménez-Rodrigo, Martínez-Morante, García-Calvente, & Álvarez-Dardet, 2008; Wenneras & Wold, 2000; Wold & Wenneras, 1997). Against this background, our findings for academic psychology in Italy confirm trends observed among other disciplines and in other countries that women's scientific productivity is growing in parallel with women's representation in academia. At the same time, this study's findings, together with those of other studies (Kulis, Sicotte, & Collins, 2002), also suggest that it takes a long time for a strong and steady female doctoral pipeline and strong female scientific productivity to influence the representation of women in academia, especially at its top ranks.

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Faculty Diversity and Search Committee Training: Learning From a Critical Incident

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Many universities have experienced success at improving student, but not faculty, diversity. This paper examines how, over the past few years, a major U.S. research university made significant progress in recruiting faculty candidates from underrepresented groups. The paper situates this progress in the earlier context of a racial incident that disrupted the community's sense of order and civility. It was in the aftermath of this critical incident that a galvanized collective created positive conditions for change. We show that insiders' tacit knowledge can provide key clues to successful organizational change. In particular, we offer our experience of creating a university-wide, online tutorial on recruiting diverse faculty that every search committee member is required to take. Our case also demonstrates that organizational context and history are important factors to consider in understanding why specific faculty life initiatives succeed or flounder.

Keywords: faculty diversity, faculty recruitment, critical incident technique, search committee training, tacit knowledge

There is a shared anxiety that underlies the literature on change in higher education in the United States, one that goes beyond specific conceptual or empirical permutations; the concern is that despite extensive research—and many calls for reform—there is no consensus as to the capacity of institutions to effect meaningful organizational change. Hearn (1996) asserts that desire for change is as prevalent on university campuses as is resistance to it, yet attempts at reform often fail because administrators are often averse to change because they are unaware of the rich vein of scholarship on the theory and practice of change in higher education. Tierney (2000) warns that universities and colleges are often viewed as ineffective organizations precisely because they are seen as unable or unwilling to change: On the 15 campuses he studied, more reform initiatives failed than succeeded. Kezar and Eckel (2000, pp.

295–296) claim that sustained and transformative change “is unfamiliar to most higher educational institutions,” where most adjustments are additive, reactive, incremental, or growth based.

Drawing on the two authors' experience—both are academic administrators who designed and instituted the program discussed—the paper presents perspectives on diversity and organizational change that practitioners and scholars alike may find useful. It demonstrates how sustained, positive changes emerged from a racial incident that triggered institutional and community action. It offers an analytical method to assess the complex dynamics that can develop when a crisis occurs, and by focusing on the resultant changes made in the arena of faculty diversity, it also offers practical, best-practice advice about a specific intervention in faculty recruitment. This work also contributes to the dialogue among diversity scholars about the degree to which transformative change occurs when an organization experiences what Williams (2008) terms a “diversity crisis” or what Davidson and Proudford (2008) define as “external shocks . . . events and actions that upset the status quo . . . loosen long held assumptions and beliefs and open people to new data, to rethinking assumptions” (p. 266).

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The paper is organized into two parts. Part One offers a descriptive analysis of an incident at a research university that, for the purposes of this paper, we will call "Caliber." Among the analytical tools used is an adaptation of critical incident technique (Flanagan, 1954), which offers the well-grounded practitioner a systematic way to decode complex organizational conflicts, processes, or values (Angelides, 2001; Butterfield, Borgen, Amundson, & Maglio, 2005; Davis, 2006; Hettlage & Steinlin, 2006; Jaakson, 2006; MacFarlane, 2003; Radford, 2006; Urquhart et al., 2003). This method is especially salient because it has often been used to describe and understand the meanings that people attach to significant events in organizational life (Kain, 2004).

Having situated the campus crisis within its broader institutional context, Part Two examines an initiative that resulted from the critical incident. It begins with a description of the steps taken by the first author to improve Caliber's capacity to recruit diverse faculty. This work led to the development of a faculty search committee tutorial. We will then discuss what we learned and how the project fit within other transformational initiatives at Caliber. The literature on transformational organizational change (Eckel, Hill, & Green, 1998; Hearn, 1996; Kashner, 1990; Keup, Walker, Astin, & Lindholm, 2001; Kezar & Eckel, 2000, 2002; Lueddeke, 1999; Swenk, 1999) and on diversity change strategies (Barceló, Dickson, Fraser, & O'Rourke, 2007; Brown-Glaude, 2009; Davidson & Proudford, 2008; Maher & Tetreault, 2006; Smith, Turner, Osei-Kofi, & Richards, 2004; Sturm, 2006; Wasserman, Gallegos, & Ferdman, 2008; Williams, 2008; Williams & Clowney, 2007) provide guidance. Finally, we offer practical knowledge (Van de Ven, 2007) that may be useful to other universities that are engaged in faculty diversity initiatives, especially those focused on best practices for training search committees.

Part One

Critical Incident Technique

Critical Incident Technique (CIT) was developed by industrial psychologist John Flanagan in the 1940s (1954). In its original

formulation, a critical incident was a significant event, activity, or situation that could be systematically described, observed, or elicited retrospectively and through which performance-related behaviors could be categorized and interpreted. In his work with Air Force pilots, Flanagan argued that the critical nature of a performance-related error could be measured by whether it evoked behaviors that were oriented to solving a practical problem, such as technical malfunctions or resolving a conflict, resulting from deeper systemic issues. In this usage, CIT was a behaviorally driven task-analysis method with the critical incident as the unit of analysis. The focus on problem solving when there were surprising or non-routine events was a keen insight. It allowed researchers to map the content domains of effective and ineffective responses and outcomes, and produced a heightened awareness in participants of the tasks, routines, norms, and expectations inherent in their work (Butterfield et al., 2005; Chell, 1998; Clamp, Gough, & Land, 2004; Fivars & Fitzpatrick, 2001).

A review of the literature suggests that curriculum and learning are the topical areas in research on higher education where CIT has taken root, seemingly more so in Europe than the United States (Cain, 1981; Douglas, McClelland & Davies, 2008; Oaklief, 1976; Tigelaar, Dolmans, Wolfhagen, & van der Vleuten, 2004; Urquhart et al., 2003). CIT methodology has been used to understand how firms respond to and initiate change and to the related field of organizational learning (Chell, 2004; Cope & Watts, 2000; Davis, 2006; Easterby-Smith & Lyles, 2005; Kaulio, 2003; Lines, 2005; Mallak, Lyth, Olson, Ulshafer, & Sardone, 2003). It is surprising that CIT is not more broadly used in higher education to understand critical diversity incidents; one could argue that such incidents initiate the problem solving that leads to change (whether positive or negative), to learning at the individual or organizational levels, or to both. For our purposes, we adapted the technique to a narrative form based on the four CIT questions posed by Davis (2006): (1) What events led up to the critical incident? (2) Who were the focal agents and what were their actions? (3) What were the outcomes of the critical incident? and (4) What are possible future implications?

Caliber University

Until the 1960s and 1970s, most institutions in the southern United States—and many in the north—were segregated by race. Some, like Caliber, also excluded women. Most, including Caliber, now have a stated commitment to both student and faculty diversity (Brown, 1999; Smith et al., 2004; Williams & Clowney, 2007).

Caliber did not admit African-American men to the undergraduate program until the late 1950s, or women (except to the School of Nursing) until 1970. Although the racial and gender desegregation of the student body grew slowly—and initially with much resistance—today, Caliber has made significant strides with student diversity in general, and, when compared to its peers, to a remarkable degree with African-American students. Faculty racial and gender demographics, however, tell a different story.

Caliber's faculty desegregated in the early 1970s when a few African-American, Hispanic, and Asian-American faculty members were hired. But this shift, even accompanied by institutional and individual efforts over the next three decades, resulted in what can best be called a state of slow, almost stalled growth for African Americans and Hispanics, minimal growth for Asian Americans, and small gains for women. It is no great consolation that Caliber's pattern of being demographically mired when it comes to faculty does not differ significantly from that of other universities across the country (Maher & Tetreault, 2006; Moreno, Smith, Clayton-Pederson, Parker, & Teraguchi, 2006; Trower & Chiatt, 2002).

The Critical Incident

Just prior to Student Council elections in February 2003, an African-American candidate for president of the Student Council reported that she had been violently attacked on campus. According to a newspaper account, “[the student] was leaning into her car when someone grabbed her by the hair and slammed her head against the steering wheel.” The student reported that her assailant told her, “No one wants a nigger to be president.” She also reported having received several threatening phone calls before the night of the attack. Her attacker was never found.

Students galvanized in support and, joined by faculty and staff, called for the administration to

act decisively to deter discrimination and intolerance. Many said that Caliber had failed to create a community where ethnically and racially diverse group members could feel safe and welcome. Others felt that the overall racial climate was a good one and that the attack had been an isolated incident. They cautioned against adopting diversity requirements or creating an environment where debate was stymied by what they termed “political correctness.” Still others believed that the incident was triggered by the increasingly active and visible presence of African-American students in student leadership positions. They called for administrative action, claiming that in matters pertaining to diversity, there was an atmosphere of apathy and veiled racism. Externally, there was intense state and national media attention, and internally, there was concern that undergraduate applications from students of color would decline.

Students dispersed for Spring Break soon after the incident. They returned to an open letter from the president that acknowledged the need for individual and collective reflection and for significant organizational change.

Students are typically seen as catalysts for change, but not as contributors to sustained institutional action (Walters, 2007). At Caliber, however, students were a pivotal force both in the initial outrage over the attack and the ongoing push for change and accountability. Together with faculty and staff, they pressured the president, the Board of Trustees, and senior administrators to effect dramatic and far-reaching organizational change. This required strategies that would overcome cynicism, draw on the moral energy permeating the campus, and connect individual and organizational actions.

Analytical domains and the languages of diversity. In the aftermath of the critical incident, diversity became an omnibus term encompassing many issues; so, too, did ideas and proposals for how to create a more inclusive campus. Race and ethnicity were the primary categories discussed, but sexuality and gender also emerged in broader discussions. Parents, especially those of African-American students, raised safety concerns: They wanted assurances not only that their children were welcome and included in the full scope of university life, but also that the university had systems in place not

only to identify incidents of bias, but to mitigate or prevent them as well.

One of the primary topics for discussion was how the university could encourage students to learn about diversity and become self-aware in this area. In terms of faculty, discussion centered on current demographics and how a more diverse faculty could be recruited and retained. These improvements, it was argued, would not only enhance institutional excellence but also provide all students with role models from many points along the spectrum of race, gender, and sexuality. In the past, going from aspirations to practical and effective efforts to recruit diverse faculty had often been difficult at Caliber University. During these university-wide discussions, there was a sense of hope of new beginnings, as well as apprehension that nothing would change.

Immediate outcomes and implications. Shortly after the critical incident, Caliber's Board of Trustees created a Special Committee on Diversity and directed the president to appoint a university-wide commission on gender and race. Students, faculty, parents, alumni, staff, and members of the local community served on commission subcommittees. The commission interviewed stakeholders, collected institutional data, reviewed past reports, and conducted town hall meetings.

The most visible and immediate outcome of the commission's work was a document released in September 2004 (19 months after the critical incident) with a report on diversity at the university and a set of recommendations from each subcommittee. The president assigned each recommendation to the relevant vice president with timelines for completion. The full report and all timelines were posted on the university's website. The report highlighted the need for systemic, university-wide initiatives to improve the recruitment of underrepresented faculty. The Board of Trustees, the president, and the provost concurred with the commission's findings and identified faculty diversity and new recruitment methods as among the top priorities.

The report also incorporated faculty diversity as a critical function of the Provost's office. The Board of Trustees voted to allocate funding to implement the commission's recommendations, including major funding for faculty recruitment.

The trajectory from crisis to introspection to report and metric-driven outcomes was an in-

stance in the institution's history where "accidental and purposive change" coincided. As Dill and Friedman (1979) point out in a still instructive article on innovation and change in higher education, "typing a change process as purposive suggests that alterations in organizational relationships are both rationally planned and determined. Any process of organizational change can be either purposive or accidental, or can have components of both" (p. 413). Caliber's process mapped quite closely to the initial phases Williams (2008) delineates in his Diversity Crisis Model.

Based on their own observations and on the literature, Williams and Clowney (2007; Williams, 2008) laid out what they call the "well choreographed process" of the diversity crisis model, a common path that institutions take toward diversity—a process that, the authors argue, infrequently leads to permanent change. Typically, this process is triggered by some type attack or instance of discrimination linked to race, gender, or sexuality, followed by internal and external stakeholder response, protest, and demand; a declaration of support for diversity; a commission or planning group; and deliberation and discussion, which results in a diversity plan.

According to Williams (2008), institutions that follow this path tend to fall prey to hurried planning and largely symbolic implementation instead of deep rooted change. He also states, however, that if the plan includes accountability and capacity building that allows people and units to identify and gain the expertise needed to enact change, encourages vision and buy-in from all constituencies, and provides resources, it may indeed lead to transformative change. Caliber's diversity plan was in response to a critical racial incident and mapped similarly to Williams' model. Caliber, however, did not rush to produce a plan but instead sought constituent buy-in, built accountability into their diversity plan, and committed resources to ensure a more comprehensive and long-term solution to the issues brought to light by the critical incident.

Part Two

Working With a Change Mandate for Faculty Diversity

Hired in the immediate aftermath of the critical incident as the Faculty Affairs Administra-

tor (FA-Admin) within the provost's office, the first author's task was to identify faculty recruitment methods likely to attract underrepresented candidates. As outlined above, she arrived in an environment that was poised for change. Yet translating institutional aspirations into concrete initiatives is a complex undertaking, especially in an institution with Caliber's history, geography, and large number of stakeholders in different roles. On the one hand, there were resources, opportunity, high expectations, and individual and organizational commitment, and on the other skepticism, intense scrutiny, a history of stalled faculty diversity efforts, and Caliber's recent national reputation as a place where people of color were unwelcome.

During the first months of her appointment, the FA-Admin met with search committee members and department chairs and addressed faculty councils to discuss a new approach to search committee work. She also introduced the FA-Admin's office as a point of connection, services, and resources for the faculty recruitment process.

Veteran proponents of diversity in higher education (Moody, 2004, 2007; Smith et al., 2004; Sturm, 2006; Turner, 2000) agree that to improve faculty diversity, normal procedures and mindsets must be interrupted. For the most part, they offer "best practice advice" on how to conduct searches, but their work also assumes that practice oriented shifts are predicated on broader cultural agreements about why such changes matter. In the wake of the critical incident at Caliber, normative patterns of faculty recruitment were being questioned at the same time that organizational learning about diversity became a priority. We believe this created an opening for new conversations about faculty recruitment practice and knowledge and how they could be improved to attract and recruit underrepresented applicants. There was a strong sense of optimism within the FA-Admin's office that the diversity commission report, the words and actions of the Board of Trustees, president, faculty, students, and staff had engaged the community in crafting "new agreements" about institutional diversity and mission (Rendón, 2005a, 2005b) that would support Caliber's efforts to improve faculty diversity. At the same time, the new role of the FA-Admin provided a central office and individual who could "connect, coordinate, and convene peo-

ple, ideas and activities" at the "individual, group and system" levels (Freudenberger, Howard, Jauregui, & Sturm, 2009, p. 263). As Freudenberger et al. point out, effective institutional diversity initiatives often depend on individuals who are located centrally, yet able to work across the institution in the capacity of a trusted "organizational catalyst."

The search committee as locus of change.

There are many reasons why a focus on search committees is central to institutional efforts to diversify the faculty. Search committees shape the faculty—and therefore the university—for years to come. A recent paper by Burgan (2005), former General Secretary of the American Association of University Professors, revealed the close correlation between faculty hiring and promotion and tenure procedures; they share the normative framework of peer review, in which faculty who are experts in their discipline are seen as the primary arbiters of who gains entry. Disciplinary knowledge is not sufficient to the task of cultivating and recruiting a diverse applicant pool and as Smith et al. suggest, normative search processes may reproduce practices that prematurely focus on excluding and filtering out applicants (2004, p. 136). Working with rather than supplanting peer review necessitates finding ways to infuse diversity and recruitment best practices into the search process. For example, the University of Michigan's success at recruiting more women faculty in the sciences resulted from a coordinated set of strategies centered on "conceptual and practical support" to those involved in the recruitment process, including faculty search committees (Sturm, 2006).

Another important reason to focus change initiatives at the faculty search committee level derives from the work of Tuitt, Sagaria, & Turner (2007) on signaling theory in the faculty hiring process. They theorize that variables in the hiring environment send signals to the candidate about whether an organization is a "right fit for them." Change initiatives to improve the diversity expertise of faculty recruitment processes multiply the signaling effect, because they:

not only reflect the larger institutional commitment to diversity but also serve as important signals to current and future job applicants. Institutional core values are projected by such processes. In other words, the way searches are conducted conveys institutional values and signals the institution's commitments and interests

... This extends far beyond a single search and is not confined to those candidates interviewed (Tuitt et al., 2007, p. 525).

Signaling the university's intention to improve access and inclusion requires rigorous assessment of the recruitment process. We would further suggest that the process of not only informing and supporting, but learning from faculty involved in the search process broadcasts the institution's intention to increase diversity, to both internal and external audiences. Finally, diversity is a common theme in the recent emphasis, in practitioner and scholarly literature, on overall best practices for the faculty search process (Hochel & Wilson, 2007; Moody, 2004, 2007; Smith et al., 2004; Sturm, 2006; Turner, 2000).

At Caliber, the FA-Admin sought to invest in the recruitment process through knowledge exchange initiatives at the candidate cultivation stage, throughout the search committee process, and during the "getting to agreement stage," when offers are proffered. These initiatives relied on three insights: (1) that faculty are continuously engaged in learning, and it would be valuable to build on that; (2) that search committee work involves a set of skills that could be strengthened through training (especially the skills required to actively cultivate and recruit underrepresented candidates), and that these skills are somewhat different from discipline based competencies; and (3) that there was already faculty expertise at Caliber in how to compete for and attract diverse faculty, and that the challenge would be to identify modes of sharing, reflecting on, making explicit, putting into practice, and valuing that knowledge (Hochel & Wilson, 2007; Moody, 2004, 2007; Smith et al., 2004; Sturm, 2006; Turner, 2000; van der Velden, 2002).

Knowledge exchange initiatives focused on sharing information about diversity recruitment at different levels of the system. For instance, questions from a first-time committee chair about how best to conduct a confidential and equitable search when there were internal candidates from underrepresented groups would be handled by a one-on-one consultation. Information about potential candidates who might be either recruited in current searches or cultivated for future openings would be passed on in a peer-to-peer exchange of information. Discussions about the challenges of and possible so-

lutions for attracting diverse candidates were well suited to full-day workshops, where participants worked on mock cases in groups that could include deans, senior administrators, staff, and/or faculty. At other times, the FA-Admin and her Equal Opportunity Office colleagues jointly addressed search committees both prior to and during searches. Workshops and presentations to departments and deans shifted the collective conversation away from institutional limitations to one that spotlighted best practices and the processes that would raise Caliber's profile in the marketplace, reduce bias in evaluation of candidates, actively encourage candidates from underrepresented groups to apply for positions, and create a welcoming environment during campus visits. Presentations to the Board of Trustees and the president on faculty recruitment data and discussion of the initiative's progress and challenges also brought these issues to the forefront of the university's leadership agenda.

Between 2005 and 2008, an average of approximately 110 new faculty were hired each year at Caliber, with 500–700 faculty members serving on search committees annually. It was impossible, therefore, for one or two people to meet with every search committee. An assignment from the provost seemed to provide the answer to this dilemma—and so the FA-Admin made the development of the online faculty search tutorial suggested by the provost an early priority among her initiatives.

The provost had categorized errors or breakdowns in the conduct of searches as avoidable and detrimental to the university's ability to recruit diverse candidates. Indeed, in the FA-Admin's conversations with faculty, some recalled instances when an inappropriate comment, or the failure to keep search deliberations confidential, derailed a search or negotiations with a highly sought-after candidate. Such errors could be particularly damaging to recruitment efforts if candidates from underrepresented groups received negative signals that discouraged them from applying for or accepting positions. Additionally, misinformation about the legal impact on faculty hiring of the U.S. Supreme Court Grutter-Gratz student admissions case had begun to surface (Selingo, 2005). Some faculty members were under the mistaken impression that they were legally prohibited from actively recruiting ethnically and racially

diverse faculty candidates. Such misconceptions could stifle those inclined to cultivate these candidates; they could also justify inaction on the part of search committee members for whom diversity was a low or nonexistent priority. Whatever the specific concern, the view that Caliber could get better at recruiting underrepresented faculty by improving the search process struck an important chord for the provost and faculty. This is what we would refer to as the signification or criticality dimension of the critical incident: the aspects of the event that have a high level of salience for participants.

An online tutorial would create a common foundation of knowledge across the institution, serve as a baseline introduction to best practices for recruiting diverse faculty, and reference the literature; it would also allow for easy access to and dissemination and exchange of information throughout the university.

As Smith, Wolf, and Busenberg (1996) and Maher and Tetreault (2006) have pointed out, there is an enduring myth within academia that the slow progress in faculty diversity is largely due to factors inherent in the candidates themselves. The virtue of the tutorial, beyond the objective of improving search procedures, is that it focuses attention on developing excellence internally throughout the recruitment and search process—that is, signaling change from within the institution rather than enumerating deficits in the talent pool. This was a subtle but important shift.

Drawing on local expertise. Rather than present off-the-shelf solutions, we assumed a stance of learning and problem solving specific to faculty recruitment concerns at Caliber that would determine the tutorial's scope and content. An early cue about the culture at Caliber provided insight into the wisdom of this approach: Whether a particular practice had proved effective at institutions such as UCLA or Duke seemed to carry little weight at Caliber; such comparisons, we realized, could impede our progress. This perspective has been described as the “not invented here” phenomenon in studies of why people in organizations may resist adopting new ideas, processes, or techniques (Hayes & Clark, 1985).

A similar situation occurred at the University of Michigan, where project leaders on the National Science Foundation ADVANCE grant (to advance the status of women academics in sci-

ence, math, information technology, and engineering) discovered that information about gender bias was more readily received when scholars from within the institution addressed their colleagues; *who* delivered knowledge was as important as its content or validity (Sturm, 2006, p. 289). Whether this bias represents a preference for locally derived knowledge or simply its delivery by esteemed insiders, it is important to recognize the situated nature of knowledge and its production, and how the institution prefers that it be disseminated. We decided, therefore, to use interviews to discern the best practices for recruitment of underrepresented faculty currently or recently in use at Caliber (Glaser & Strauss, 1967).

We identified local experts and, using “snowball sampling” (Miles & Huberman, 1994), asked them what had helped them recruit underrepresented faculty. With snowball sampling, an internal expert provides information and is then asked to generate a list of others who participate in or have knowledge on the subject. The individuals so identified are interviewed and also asked to name other experts. This process works well when little is known about the population being studied or about a specific feature of the relevant social environment (Bernard, 2000; Browne, 2005; Miles & Huberman, 1994). Of those identified, 15 campus faculty “experts” who had served on a total of about 150 search committees were interviewed by either the FA-Admin or a graduate intern.

Against the backdrop of the critical incident and commission recommendations, we asked interviewees to reflect on the reasons for their success and solicited their advice as to the tutorial's content. This format allowed other issues, whether deemed important by the interviewees or not, to emerge. Content analysis of these interviews yielded a series of overlapping themes that provided guideposts for developing the tutorial.

Somewhat surprisingly, interviewees rarely referred to themselves as experts or what they knew as constituting expertise. This was not so much a marker of modesty, we concluded, as evidence that some aspects of expertise in recruiting may well be experienced as implicit, rather than explicit, skills and practices. Such elements as sound judgment, knowledge based on previous experience in hiring underrepresented faculty, savvy, personal beliefs, intro-

spection, intuition, and perseverance fit the concept of tacit knowledge variously described in a range of disciplines (Gerholm, 1990; Lam, 2000; Lave & Wenger, 1991; Schön, 1983, 1987; Sternberg et al., 2000). When asked to elaborate on what they meant by “knowing how,” interviewees reflected on specific skills, actions, and problem-solving approaches that they used and offered advice on what the university could do better organizationally and what the FA-Admin needed to implement. In this sense, to use Schön’s terminology (1983), they reflected on practice even as they described the broader gestalt that had led to their successful efforts in recruiting diverse faculty.

We determined that the “know-how” ability of these experts helped them hire underrepresented faculty even when, in their view, the university’s level of support or recognition for their efforts was less than optimal and the odds were stacked against success. They were able to uncover organizational possibilities, while keeping a clear eye on the challenges and limitations—in other words—these experts believed in the art of the possible.

Interviewees described Caliber’s culture as an informal, entrepreneurial, flying-under-the-radar environment where individuals could launch relatively successful work without being blocked by formal rules or structures, although some regretted the absence of institutional support. Caliber’s organizational style, they believed, allowed faculty to use their expertise to identify and encourage underrepresented faculty to apply for positions and to present them as strong, viable candidates to their colleagues. On the negative side, although these experts worked on behalf of institutional diversity, their expertise and know-how received only lackluster support from the institution; there was seemingly little desire to disseminate (or even acknowledge) that information. Some seemed to prefer working independently and may even have considered this necessary for success given Caliber’s culture. Others said that the way forward would require heightened institutional attention to faculty diversity at all organizational levels. As one woman from the humanities noted, Caliber’s leadership had to begin to “walk the talk,” and from the sciences, one male faculty member said, “One has to make a decision that this issue of diversity matters and pay attention.”

Those interviewees who were most successful in hiring diverse faculty engaged in long term cultivation of likely candidates and encouraged them to apply for open faculty positions. By far the most commonly held belief was that the successful hire of underrepresented candidates depends largely on a good committee chair who has excellent skills in decision making and collaboration, possesses political acumen, and is able to sustain the interest of desirable candidates throughout the search process. Such a chair models good judgment and unbiased evaluation by subjecting unsupported claims about candidates to scrutiny and discussion. A good chair was also able to draw on expertise outside the committee to ensure that diverse candidates were recruited.

We envisaged the online tutorial as one of many channels that would explain these elements of successful recruitment and search practices to search committee members. It would be a repository for successful strategies at Caliber, and would synthesize the research and practice literature on the subject. We borrowed the toolkit metaphor from the University of Washington’s *Faculty Recruitment Toolkit* (Lange & Yen, 2005) to demonstrate that when done well, search committee work requires a heterogeneity of skills, strategies, resources, competencies, and people; the tutorial, therefore, was but a single tool.

Tutorial implementation. The main goals of the tutorial were to (1) highlight the necessity for and various ways of recruiting underrepresented candidates before, during, and after the search process; (2) dispel misunderstandings about legalities of recruiting these candidates; (3) encourage individual and committee discussion of the negative effects of evaluation that is based on gender, race, or ethnicity and provide strategies to counter it; and (4) demonstrate that successful searches require skills and competencies, but also attention to procedural matters that extend beyond discipline-specific knowledge. The tutorial would not only refer to “what the literature says” but also to “what colleagues at Caliber say and do,” thus contravening the “not invented here” response. It would draw on evidence based best practices from scholarly literature and organizational practice. The tutorial would have to be concise, yet designed for a faculty audience. Finally, due to costs and feasibility factors, we decided on a technologi-

cally straightforward design that used a mixed format of case vignettes and forced choice questions. Each question included an introduction, a multiple-choice test, a rationale for the correct answer, and resources and references keyed to each question's topic to encourage further study.

We tested the beta version of the online tutorial with faculty members who had served on search committees and a group of administrators. In addition we met with the Provost's Leadership Team, as well as deans and associate deans (the school administrators who generally have responsibility for faculty recruitment) to elicit their comments and suggestions, and shared the tutorial with several other key leaders as well as seeking legal review and advice from the university's General Counsel.

Although it originated in the FA-Admin's office, the tutorial became a team effort that included Information Technology, Human Resources, and the Equal Opportunity Office. The second author, who was hired as a writer, researcher, and tutorial project manager, played the main role in assembling this team. The sense of joint commitment removed many of the barriers often inherent in working across institutional sectors, functional areas, and roles, and the president, who was enthusiastic about both the tutorial's concept and content, urged an aggressive implementation strategy. Furthermore, the tutorial promoted the idea that each search committee member would be expected to share responsibility for candidate outreach and an equitable search process. At this point in the process, the president mandated that all members of search committees seeking tenured or tenure-track faculty must take the tutorial prior to the beginning of the search.

A foundation of cooperation and transparency had been established during beta testing, and we stepped up our efforts by making presentations to the Faculty Senate and to faculty in individual schools in which we marketed the tutorial as, among other things, a launching pad for discussion at the first search committee meeting. Although there were some criticisms, questions, and pockets of skepticism, for the most part faculty seemed to accept it. In the majority of literature on change initiatives, the importance of leadership support and buy-in is emphasized (Keup, Walker, Astin, & Lindholm, 2001; Kezar & Eckel, 2000, 2002; Lueddeke, 1999; Williams

& Clowney, 2007); the explicit endorsement by the president and provost proved that leadership were committed to this initiative. Among its other benefits, the tutorial served as evidence of leadership and organizational engagement.

Our administrative assistant provided us with a crucial understanding of the way things often worked at Caliber, saying that administrative assistants (the vast majority of whom are women) were often pivotal in the faculty search process yet were almost never included in discussions of how to improve the process. She proposed a training session on the mechanics and content of the tutorial for those assistants, which proved to be critical to the tutorial's success. To use Thaler and Sunstein's (2008) language, staff members became "choice architects" who helped increase faculty participation. They explained the procedures, encouraged faculty to take the tutorial prior to serving on a search committee, and actively sought to include the tutorial in early planning for searches.

To date, more than 1,400 people have taken the tutorial. Although most are faculty members preparing to serve on tenure track searches, a number of other units have encouraged their members to take the tutorial for non-tenure track and staff searches. In the voluntary and anonymous evaluation at the end of the tutorial, some faculty members have criticized its tone and point of view. One person stated, "I deeply resent the patronizing tone of these tutorials/tests. The effort is premised on the assumption that all faculty/staff are uninformed about and insensitive to the world's complexities and that they are ethical simpletons," and another characterized the tutorial as "mindless dribble [*sic*]." The preponderance of the feedback, however, has been positive: "I am a department chair and was pleasantly surprised that I did NOT know all the answers! I will be better prepared now to conduct and participate in future department searches." Another said, "Very nicely done—and thank you for letting us reason our way to the correct answers rather than perfunctorily looking for matching text!"

Improvements in Faculty Diversity: What We Have Learned

Has long term change—or, as Kezar and Eckel (2000) phrase it, "culture-based" transformative change—occurred at Caliber in the area

of faculty recruitment? There are indications that there has been a cultural shift, but we would not claim that it is institution wide. What we have learned from our experience with the search committee tutorial is that the engine for change is located in people and what they know. We need to respect that and take the time to see what in their tacit knowledge leads to success in cultivating and recruiting more diverse faculty. Our task as administrators is to do what we can on an organizational level to nurture these individuals and their work by using our creativity to magnify, improve on, and transmit their expertise to a steadily wider circle of colleagues.

Recently, in an offhand remark, a colleague asked the first author if she had a sense of when the university would complete the work of increasing diversity—when, so to speak, the job would be done. The question was startling because it seems obvious that it will require ongoing efforts to integrate diversity into the university's values and mission. Yet the question was a fair one, in that there needs to be a way to quantify improvement.

There are complex variables at play here. That is part of the difficulty in measuring which specific factors lead to transformative changes in recruiting diverse faculty—it is hard to pin down one-to-one correlations between interventions, even those generally accepted in the literature as best practices, and specific recruitment outcomes. The field is still in its infancy. Critical incidents can open the path to institutional inquiry, and to problem solving, around which questions are important regarding the relationship between recruitment outcomes and practice interventions.

One way to assess the impact of efforts to diversify faculty could be to look at national availability data by discipline for members of underrepresented groups (e.g., using the Survey

of Earned Doctorates) for the periods before and after a critical incident or an intervention aimed at increasing faculty diversity. One could then look at increased availability by discipline to see if that offered another plausible explanation for the observed changes in recruitment numbers at a specific institution.

However, up until this point, Caliber has collected recruitment numbers by school rather than by discipline. Given data available at Caliber, one measure that can be utilized is percent change (see Table 1). Compared to the 6-year period prior to the critical incident and resulting demands for change (1998–2003), in the 4 years that followed (2004–2008), Caliber experienced a noteworthy increase in several categories of underrepresented faculty. Although the percentages were small, the largest increase was in Hispanic faculty, whose numbers had declined in the earlier period but increased by almost 86% in the later period. Growth was less dramatic for African-American faculty, but still striking; the number had increased only slightly during the earlier period, but grew by close to 40% from 2004 to 2008. The percentage of women also increased. The percentage of Asian faculty grew more or less steadily throughout the entire 10 years.

From an organizational culture perspective, recent successes in recruiting diverse faculty have challenged a commonplace assumption at Caliber that African Americans, Hispanics, or women candidates would not want to apply due to geography or the segregated history of the university. This awareness has helped bring about a shift away from a passive “there is nothing we can do” stance to a more proactive focus on efforts that work; it is an important part of Caliber's change narrative.

Freudenberger et al., (2009) propose a rubric for strategies likely to produce institutional

Table 1
Percent and Percent Change of Underrepresented Groups, Tenured/Tenure Track (TTT) Faculty

Under-represented group	Percent of total	Percent of total	Percent change 1998–2003	Percent of total	Percent of total	Percent change 2004–2008
	TTT faculty 1998	TTT faculty 2003		TTT faculty 2004	TTT faculty 2008	
Asian	4.5%	5.8%	31.7%	6.0%	7.4%	32.2%
Black	3.3%	3.4%	2.1%	3.2%	4.1%	39.1%
Hispanic	1.3%	1.1%	–11.1%	1.0%	1.7%	85.7%
Women	21.2%	22.2%	6.4%	23.5%	25.9%	17.6%

change on matters of diversity, all of which have been or will be adopted at Caliber. The first strategy promotes the idea of “organizational catalysts who can bring stakeholders together across hierarchical and functional positions . . . to help figure out what to do . . . and maintain the [change] momentum” (pp. 266–267). Caliber’s new FA-Admin position and the online tutorial are examples of this type of cross-domain problem solving. Other positions have since been created at Caliber, including a Vice President for Diversity, a university-wide Director of Graduate Diversity, and associate deans for diversity in a number of schools. In addition, acting independently, students organized a Student Council diversity committee charged with holding senior administrators accountable for implementing the diversity commission’s recommendations and keeping these issues visible to the community. Finally, the Board of Trustee’s Special Committee on Diversity continues to meet on a regular basis and plays an important role in sustaining the university’s commitment to diversity.

The second strategy in Freudenberger et al.’s rubric is knowledge mobilization to: (1) shed light on systemic institutional data and the qualitative experience of insiders; (2) identify areas in need of improvement; and (3) employ best practices in a relevant manner through the influence of “key decision-makers” (2009, p. 270). The information exchange initiatives in the FA-Admin’s office are premised on this strategy. The FA-Admin has incorporated new tracking and assessment tools into university routines in addition to the tutorial; these include the collection of data on annual recruitment from each school for presentation to the president and Board of Trustees and as a part of each dean’s report to the provost; annual exit surveys to understand how and why faculty leave the university; and a questionnaire for candidates who were offered employment but declined.

It is important to note that the problem-solving process, which included a highly structured commission and an appeal to the community for greater civility and respect, drew on conventions of rationality and goal oriented change strategies. However, appeals to moral values and the desire to do what was right also spurred change. Without both, the result could have been even more distrust, given the racial context of the assault and the perception that

previous plans for change had been allowed to languish.

In our search for a way to categorize the overall change process in Caliber’s engagement with issues of race, ethnicity, bias inclusion, access, and equity, we found Harshbarger’s discussion of organizational commitment to be valuable: Even in the presence of other goals and interests, there was a shift toward considering diversity vital to the university’s goals and mission. This commitment to diversity had the essential components identified in Harshbarger’s research, “belief in the organization’s goals and values” and “willingness to exert considerable effort on behalf of the organization” (1989, p. 30).

To summarize, the critical incident triggered a commitment to diversity, engaged senior leadership, linked issues of values to specific priorities for improvement—including faculty diversity—allocated resources, and identified the personnel responsible for developing and implementing change initiatives.

Critical Incident Technique does not “automatically provide solutions to problems” (Flanagan, 1954), but it does provide a lens through which organizations can view critical incidents as well as the immediate and longer term repercussions. Davis (2006) recommends monitoring intervention strategies and evaluating input from relevant parties as the final stage of CIT.

Memories of the actual incident and the immediate aftermath faded as students graduated and new issues arose. However, the incident spurred self-examination, commitment, and action that has transformed the landscape and created momentum to recruit diverse faculty and thereby enrich the entire university.

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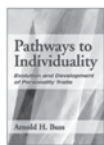
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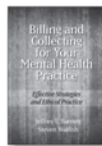
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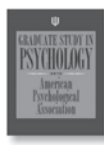
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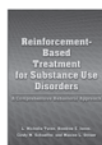
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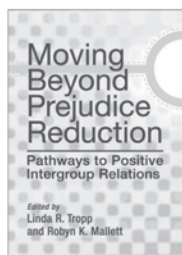
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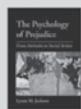
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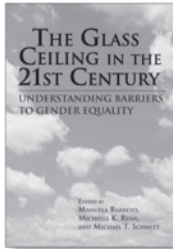
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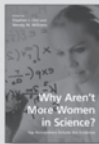
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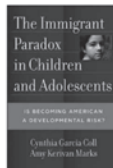
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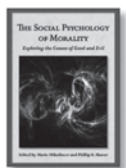
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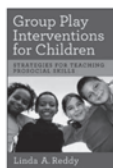
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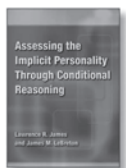
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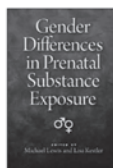
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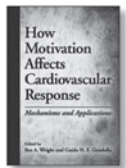
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