Surveying the Campus Climate for Faculty: A comparison of the assessments of SEM and non-SEM Faculty

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Abstract

A fundamental assumption of programs like NSF ADVANCE and other initiatives intended to increase the numbers of women faculty in science, engineering and math (SEM) has been that women in these disciplines experience a uniquely hostile climate. While this focus on SEM faculty is necessary and important, we argue that it is too narrow. In this paper, we compare SEM to non-SEM faculty, drawing on a representative survey of university faculty in one institution (N=601) conducted in 2007. Our findings indicate that women and non-white men in the SEM disciplines are in fact significantly less satisfied than white men in these fields and less satisfied than their counterparts in non-SEM fields. These differences disappear once we control for attitudinal and contextual factors, however. With a few exceptions, we find that the factors which predict satisfaction are the same across groups of faculty. This implies that efforts to improve university and departmental climates would likely benefit all faculty, not just those in the SEM disciplines.

Introduction

A fundamental assumption of programs like National Science Foundation's (NSF) ADVANCE awards and other initiatives intended to increase the numbers of women faculty in science, engineering and math (SEM) has been that women in these disciplines experience a uniquely hostile climate, one deeply inflected by power structures in male-dominated departments and the gendered assumptions and practices that shape work in SEM disciplines.

While this focus on SEM faculty is necessary and important, we argue that it is too narrow for two reasons. First, programs and research that focus only on the SEM disciplines implicitly assume that women have achieved equality, or at least that their working conditions are far more tolerable, in other disciplines in which they are more highly represented. And second, this focus ignores the value of comparisons across disciplines in which women are more and less well represented. If one wishes to understand how to improve climates for women and increase their numbers, one would logically benefit from examining the climate and practices of disciplines in which this has already presumably been accomplished.

This explicit comparison has rarely been made in a systematic way, however. We do so in this paper, drawing on results from a representative survey of university faculty in one institution (N=601) conducted in 2007. Broadly speaking, we investigate whether faculty perceptions of satisfaction and success vary systematically between SEM and other disciplines, whether women in SEM disciplines in particular are less satisfied, and what factors predict perceptions of satisfaction and success for faculty in general.

Literature and Background

The policy-oriented literature on women in academic SEM offers two rationales for focusing resources on ameliorating gender inequities in these fields. The first is that physical and life scientists and engineers are more important, in the sense of national and social well being, than academics from other, "softer" disciplines. It is not our intention to test this assumption here, and indeed it would be difficult to do so.

The second assumption is that women in SEM disciplines face a more hostile climate and higher barriers to advancement than women in other disciplines, for example, in the social sciences. Indeed a number of studies have documented exclusionary cultures and biased policies and practices in SEM disciplines such as engineering (Callister 2006; Miller 2002), the physical sciences (Nelson and Rogers 2004; Rosser 2002), and the life sciences (Xie and Shauman 2003). Some women leave these fields entirely, while those who remain advance more slowly than their male peers (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006). The narrow focus of these studies makes it difficult to determine whether these conditions are unique to women in SEM disciplines or whether they are more dissatisfied than their counterparts in other fields. This assumption – that the climate is uniquely hostile for women in SEM fields - is empirically testable, and we offer a preliminary test in this paper.

We argue that the factors that produce gender inequities among faculty likely exist at all levels of the university – among institutions, within them among departments, and between individual faculty members based on their experiences and perceptions. The general theoretical model guiding our approach is the theory of gendered organizations (Acker 1990; Britton 2000; Britton and Logan 2008). This theory argues that policies, practices, and cultures in organizations and workplaces themselves are based on normative assumptions about gender and can work together to reproduce gender inequality.

Though we do not explore this in the present paper, a number of studies have found that university-level contextual factors are important in influencing the numbers of women faculty members (see for example Bach and Perucci 1984; Jacobs 1996; Konrad and Pfeffer 1991; Rajeswaren 2000; Kulis and Miller-Loessi 1992a; Kulis and Miller-Loessi 1992b).

Some of the same factors that operate among universities also operate within them at the departmental/disciplinary level – as much research on women in academic SEM has already shown. Departmental structures and practices matter. Assignments in departments may vary systematically for men and women faculty – women may be assigned more service roles, while men may have higher visibility roles in leadership and research (Acker 2007; Bird, Litt and Wang 2004). Women may be less likely to have access to mentors, and hence to have access to informal networks that communicate the norms and provide the connections necessary for success. Unclear expectations for tenure and promotion may also disproportionately disadvantage women. Some research indicates that they are also less likely to have access to leadership positions and assignments to powerful committees (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006). The organization of disciplines themselves may matter – some research is starting to show that flatter organizational

hierarchies, like those found in many biological research labs, favor women's success (Whittington and Smith-Doerr 2008). On the other hand, hierarchically rigid and hostile climates for women may produce lower levels of satisfaction (and perhaps ultimately lower retention) for women SEM faculty than those in other disciplines.

At the level of the individual, norms, perceptions and beliefs matter in shaping attitudes about one's work, regardless of the workplace. There is a long tradition of research on the determinants of job satisfaction among individual workers. Generally speaking, the nature of the work is the most important determinant of satisfaction - for example, a sense that one is challenged, has autonomy, does interesting work, is a valued member of an organization, and has good relationships with one's coworkers and supervisors (for a review, see Saari and Judge 2004). Similarly, the extent to which one feels stress, for example, work-related stress (Britton 1997), or strain due to the contradictory demands of work and family, also affects satisfaction with one's work (Hochschild 2001). There is no reason to think that the factors that produce satisfaction with work would differ for SEM and non-SEM faculty, but we explore that question in our analysis.

Gender and race also matter in shaping perceptions of one's work, though in complicated ways. Strictly speaking, very few researchers argue that gender or race, as discrete characteristics, influence job satisfaction. Neither women nor minority faculty are somehow inherently less satisfied with their work – instead their experiences and structural positions combine to create lower levels of satisfaction. Research on the experiences of faculty of color in SEM disciplines is far less plentiful than research on women, but Nelson et al. (2007) finds that that few of the top 100 science and engineering departments have more than one faculty member from an underrepresented minority group (defined as African-American, Hispanic, and Native American). The problems faculty members from these groups report are not specific to the SEM disciplines, and include isolation, being overloaded with service and advising obligations, and a hostile working environment (for a review, see Nelson et al. 2007). There is some evidence in the research literature that women (in particular, white women – see Britton 1997) report higher levels of satisfaction with work, even controlling for objective job characteristics and subjective perceptions of aspects of their work. Researchers are divided about why this might be, but some argue that women's reference group differs from men's in thinking about job satisfaction; men compare their current work to other work they have had or to some ideal job, women compare their paid work to the conditions of unpaid work at home and thus always report higher levels of satisfaction with paid work. We cannot test this assumption here, but it is worth remembering that tests of the differences in job satisfaction between men and women will always be conservative because of the background effect of women's generally higher levels of satisfaction.

In the analysis that follows, we examine the job and career satisfaction of a representative sample (N=601) of faculty at one university. We first ask whether SEM and non-SEM faculty differ in overall levels of satisfaction with work, and then we look at the factors that produce satisfaction for SEM and non-SEM faculty. Our analysis demonstrates that the problem of gender inequity in the university is more likely due to generalized policies, practices, and experiences than any constellation of factors unique to the SEM disciplines.

Hypotheses

The literature on women's experiences in academic SEM suggests the following hypotheses.

1. Women (both white and non-white) in SEM departments will be less satisfied with their jobs and career progression than women in non-SEM departments.
2. Non-white faculty (both men and women) in SEM departments will be less satisfied with their jobs and career progression than non-white faculty (both men and women) in non-SEM departments.
3. The effects of sex and race on job satisfaction and satisfaction with career progression will be mediated by attitudes about work and by the contexts of work.

And though the literature does not explicitly suggest this, a fourth hypothesis is implied by a policy and research focus on SEM faculty to the exclusion of others:

4. The predictors of job satisfaction and satisfaction with career progression will differ for SEM versus non-SEM faculty.

Methodology

Sample

The data on which we draw in this paper come from a campus climate survey conducted at Kansas State University. K-State is a land-grant university in the Midwest with a total student enrollment of approximately 23,000. We offer a full array of the usual graduate and undergraduate offering in the science, liberal arts, and engineering, but because we are a land-grant institution we also have a College of Agriculture and a College of Veterinary Medicine. The university has a mission to provide support to rural communities, and a very large extension program with offices across Kansas.

A total of 612 KSU faculty responded to the 2007 K-State Community and Climate Survey, for a 48.5% response rate. Respondent demographics were similar to the KSU faculty population by sex, race, tenure status, and in the distribution by College. The distribution by race and sex is: white men, 55%, white women, 30%, non-white men, 9%, and non-white women, 4%. There were a small number of faculty with missing race/sex data. Because of the size of this final group, any findings about non-white women should be viewed with some caution.

The survey addressed a wide range of areas, from overall satisfaction with job and career, satisfaction with the tenure and hiring processes, workload, department climate, perceptions of discrimination and efforts to increase faculty diversity, and success in balancing work and family. The survey was administered to faculty online; they were given an anonymous access code and could complete it at a time and place of their convenience. 94% of those who began the survey ultimately completed it.

Measures

Dependent variables

Job and career progression satisfaction. The two measures of satisfaction are job and career progression satisfaction. Respondents are asked their agreement level with the statements "I am satisfied with my job at the university" and "I am satisfied with the way my career has progressed at the university." The response categories range from "strongly disagree" (coded 1) to "strongly agree" (coded 5).

Independent variables

Perceptions of work: The seven measures of attitudes are the following scales created from the data using factor analysis: experiencing satisfaction with the financial aspects of the hiring process, experiencing satisfaction with the qualitative aspects of the hiring process, feeling valued and respected in one's department, experiencing work spilling over into family life, experiencing family life spilling over into work, experiencing the department and university as supportive of work/family balance, and witnessing discrimination on the basis of race, ethnicity and gender. Items for each scale and univariate statistics are available on request. The response options for all of the items except feeling valued and respected in one's department and the perception of discrimination range from strongly agree (coded 1) to strongly disagree (coded 5) and include a neutral option as a middle value. The response options for feeling respected and witnessing discrimination range from never (coded 0) to always (coded 4).

Department Context. We measure four aspects of departmental context: whether one has had a mentor, teaching load, research load, and advising load. To measure mentoring, we use a dichotomous variable coded 1 if respondents answered "yes" when asked "Have you had or do you currently have individuals at this university who assist you in your career development?" The measures of teaching, research, and advising loads are relative to other members of respondents' departments. We created a dichotomous variable to capture whether respondents' feel that their loads in each of the respective areas are more than their colleagues'. The reference category is comprised of those who felt their loads in these areas were equal to or less than their colleagues. Respondents could also report that the respective loads aspect (teaching, research, service) did not apply to their appointment. We use this measure as a control variable in the analyses.

Socio-demographics. We created a series of three dichotomous variables to ease interpretation of sex and race interactions: white women, non-white men, and non-white women. The reference category is white men; all results for these variables should be interpreted as a comparison of the designated group to white men. A dichotomous variable is coded 1 if faculty are tenured to control for the likelihood that tenured faculty are more satisfied with their jobs and careers than untenured faculty. We also include a dichotomous variable coded 1 if the respondent is a department head to control for the likelihood that their job and career satisfaction are likely to be different from faculty members. Descriptive statistics for all of the variables used in the analysis are available on request.

Analysis

To test hypotheses 1 and 2, we regress job satisfaction and career satisfaction on socio-demographic variables using OLS regression. To test hypotheses 3 and 4, we add measures of attitudes and departmental context to the regression analyses.

Results

Hypothesis one predicts that women (both white and non-white) will be less satisfied with their jobs and their career progression in SEM fields than in non-SEM fields. The relevant tests of this hypothesis are found in the model 1 results in the first three columns of Tables 1 and 2. We find mixed support. In terms of job satisfaction, in SEM disciplines neither white women nor

non-white women are less satisfied than white men. However, the cross-disciplinary comparison reveals that white women in SEM are significantly less satisfied with their jobs than white women in non-SEM fields, a result that supports hypothesis one. We see a somewhat different pattern for career progression satisfaction (see Table 6). White women in SEM are less satisfied with the progression of their careers than white men (there is no significant difference for non-white women, but as this is a very small group; results should be interpreted with caution). The cross-disciplinary comparison indicates that white women in SEM are NOT significantly less satisfied with their career progress than white women in non-SEM disciplines, however. There are no significant differences among non-SEM faculty. For job satisfaction, this analysis supports hypothesis one, at least for white women.

Hypothesis two predicts that non-white faculty (both men and women) will be less satisfied with their jobs and their career progression in SEM fields than in non-SEM fields. The relevant tests of this hypothesis are found in the model 1 results in the first three columns of Tables 1 and 2, where we again find mixed support. Non-white men in SEM disciplines are less satisfied with their jobs than white men in SEM, and the cross- disciplinary comparison indicates that they are also less satisfied than their counterparts in non-SEM fields. Nonwhite men in SEM are less satisfied than white men with their career progression as well. The cross-disciplinary comparison is not significant, however. None of the results for non-white women are significant, but again, the size of this group means that we should interpret the results with caution. Hypothesis two finds support, but only for non-white men, and only for job satisfaction.

Tests of hypothesis three, which predicts that attitudinal and contextual variables will mediate the relationships between race, sex, and satisfaction with job and career progression, are found in the model 2 results in Tables 1 and 2. In a basic sense, if other factors mediate this relationship we should find significant relationships between the dependent variables and these factors, and any significant effects for race and sex should disappear or at least decrease in size. Hypothesis three is supported by the analysis. For job satisfaction, the previously significantly higher satisfaction of white women in non-SEM fields disappears, while the effect for non-white men in SEM decreases (but remains significant). In terms of career progression satisfaction, the significantly lower satisfaction of white women (versus white men) in SEM fields disappears, while the effect for non-white men in SEM decreases, but remains significant. In general terms, what this means is that the variables added to the model have largely accounted for differences in satisfaction for white women; they are less successful in accounting for those of non-white men.

There are a number of interesting relationships between the other variables in the models and job and career progression satisfaction. Because standardized coefficients are reported in the tables, one can compare the relative sizes of the effects of various factors. The most important single factor predicting job satisfaction for SEM and non-SEM faculty (net of race, sex, and other factors) is a feeling that one is valued and respected in one's department (SEM b= 0.28, non-SEM b= 0.39). Other important factors in creating satisfaction for SEM faculty members include inequalities in advising loads (b= -0.28, a negative effect), a sense that work spills over into family (b= -0.19, a negative effect), and a perception that departments and the university help in balancing work and family (b=0.18). For non-SEM faculty, the only factor beyond feeling valued in one's department that is a significant predictor of job satisfaction is being satisfied with qualitative aspects of the hiring process (b= 0.28).

For career progression satisfaction the most important predictor for both groups is again feeling that one is a valued and respected member of one's department (SEM b= 0.27, non-SEM b= 0.43). Other factors that predict career progression satisfaction for SEM faculty are perceiving that one does NOT advise more students than one's colleagues (b= -0.25), and perceiving that the department and university support work/family balance (b= 0.20) For non-SEM faculty, other factors predicting career progression satisfaction are NOT perceiving that one's research requirements are higher than one's colleagues (b= -0.18) and having a mentor (b= 0.15).

Hypothesis three is supported. Previously significant differences in levels of satisfaction for white women are non-white men are reduced or rendered non-significant when attitudinal and contextual variables are added to the models. Additionally, a number of contextual and attitudinal variables predict satisfaction with work and career.

The results of the test of hypothesis four, which holds that the predictors of job and career satisfaction will differ for SEM versus non-SEM faculty, appears in the final column of Tables 1 and 2. This column reports the significance of differences in the values of coefficients between SEM and non-SEM faculty. On the whole, there are very few significant differences. For job satisfaction, qualitative aspects of the hiring process appear to matter more for non-SEM faculty (this is a scale that includes items such as "when I was hired I felt that this position would be a good fit for me"), and a perception that one is advising more students than one's colleagues appears to be particularly significant for SEM faculty. It is difficult to know what to make of these differences, though the latter may be due to the fact that advising duties in SEM fields fall most heavily on the most marginalized faculty (marginalized in a way not captured by other variables in the model). There is a significant difference between SEM and non-SEM faculty on the importance of the perception of teaching more, but as this variable is significant in neither model this result is essentially uninterpretable.

For career progression satisfaction, there are four significant differences. Feeling that one is a valued member of one's department is more important for non-SEM than for SEM faculty. It is possible that non-SEM faculty simply have higher expectations in this regard, but it is important to remember that this scale is the strongest predictor of satisfaction for both groups. A perception that the university/department supports work/family balance matters more for SEM faculty. It may be that the work requirements of the bench sciences, in particular, make institutional support for balancing work and family more crucial for SEM faculty – certainly this is a finding in line with the research literature on SEM fields. The perception that one is advising more students than one's colleagues matters more in SEM disciplines as it did in the case of job satisfaction. And finally, a perception that one's research requirements are higher than one's colleagues matters more in creating a perception of career progression satisfaction for faculty in non-SEM fields.

On balance, however, there are more similarities than differences in the predictors of job and career progression satisfaction for faculty in SEM and non-SEM fields. The same attitudinal and contextual variables matter. Importantly, the lack of any significant differences for race/sex groups of faculty in these models also indicate that the effects of being in any particular group do not differ significantly for SEM versus non-SEM faculty. Our results in these models

demonstrate that, net of other attitudinal and contextual factors, being a white woman (or a non-white man, or a non-white woman) is no better or worse in the SEM or the non-SEM disciplines.

Discussion And Conclusion

Overall, our analysis generates a relatively mixed set of findings bearing on the question of whether gender and race inequalities are concentrated only among SEM faculty. It is far clearer on the issue of the determinants of satisfaction with work and career, which are broadly similar across groups of faculty.

White women in particular are less satisfied with their jobs and careers in SEM disciplines, but this difference disappears once attitudinal and contextual variables are taken into account in our models. Similarly, non-white men in SEM are less satisfied (with their jobs, though not with the progress of their careers), though again this difference disappears once other variables are considered. A constellation of similar factors predict satisfaction for faculty across the university, from feeling like a valued member of one's department, to perceiving equity in research and advising loads, to perceiving that one's university and department support efforts to balance work and family.

These findings replicate many of those already in the literature. At the bivariate level, white women and non-white men in SEM departments do appear to be particularly unsatisfied relative to white men in the same fields (we can draw no firm conclusions about non-white women – this group is simply too small). Our comparative approach allows us to show that differences (at least in job satisfaction) exist between SEM and non-SEM faculty in this regard, validating the implicit assumption, perhaps, of those who argue for an exclusive focus on SEM faculty.

The very good news from this analysis derives from the lack (or reduction) of significant differences across race/sex groups of faculty once attitudinal and contextual factors are taken into account, however. This strongly supports efforts – like those promoted by NSF ADVANCE – to alter university climates in ways that support the recruitment and retention of a diverse faculty. Our analysis indicates that department climates in particular may be key elements in creating satisfaction for faculty, as are efforts to equalize faculty workloads and support work-life balance. Our analysis further suggests that strategies like these will pay dividends for all faculty, not just those in the SEM disciplines.

This study has a number of limitations – we rely on cross-sectional data, which do not allow us to test whether the kinds of changes we suggest in climates and institutions will in fact increase satisfaction over time. The small number of non-white women faculty limit the conclusions we can draw about this group, and the small number of faculty of color within this group mean that we cannot separate under and over represented minorities groups, whose experiences and perceptions of work undoubtedly differ. The study also draws on data from only one institution, limiting its generalizability. The fact that the findings we report here closely mirror those in the literature tempers this critique somewhat, however.

Future research should allow the tracking of changes over time to investigate whether improved campus climates do indeed lead to higher levels of satisfaction (and more concrete outcomes, like retention) for white women and men and women non-white faculty (of over and

underrepresented groups). Qualitative work would also be useful in identifying the experiences underlying the broad measures of attitudes tested here. Such research would enhance our understanding of the kinds of changes in policies and practices that would be particularly effective. The findings of this study indicate that such changes would help to create satisfied and productive faculty not only in SEM, but in all areas of academic endeavor.

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Table 1. Regression Analyses of Job Satisfaction (Standardized Coefficients Reported); KSU Climate Survey, 2007

	Job Satisfaction					
Independent Variables	**SEM Model 1** n=196	**Not SEM Model 1** n=211	**SEM diff.** n=407	**SEM Model 2** n=196	**Not SEM Model2** n=211	**SEM diff.** n=407
Attitudinal Variables						
Hiring, financial				0.03	-0.06	
Hiring, qualitative				0.06	0.28 ***	*
Respected				0.28 ***	0.39 ***	
Work spillover				-0.19 ***	-0.08	
Family spillover				0.00	-0.02	
Dept. balance				0.18 **	0.04	
Discrimination				-0.01	0.07	
Contextual Variables						
Mentor				0.05	0.11	
Teaching, more				0.08	-0.08	*
Advising, more				-0.28 ***	0.07	*
Research, more				-0.05	-0.03	
Socio-demographics						
White women	-0.09	0.16 *	*	-0.02	0.08	
Non-white men	-0.33 ***	0.01	**	-0.20 ***	-0.03	
Non-white women	-0.10	-0.05		0.03	0.00	
Tenured	-0.08	0.00		-0.05	0.02	
Department head	0.07	0.09		-0.01	0.04	
Control Variables						
Teaching, na				0.04	-0.05	
Advising, na				-0.03	-0.06	
Research, na				-0.03	0.07	
R-Squared	0.09	0.01		0.43	0.38	
Change in R-Squared				0.38 ***	0.40 ***	

Notes: *** p< .001, ** p<.01, * p<.05

Table 2. Regression Analyses of Career Progression Satisfaction (Standardized Coefficients); KSU Climate Survey, 2007

	Career Satisfaction					
Independent Variables	**SEM Model 1** n=195	**Not SEM Model 1** n=209	**SEM diff.** n=404	**SEM Model 2** n=195	**Not SEM Model 2** n=209	**SEM diff.** n=404
Attitudinal Variables						
Hiring, financial				0.14	0.11	
Hiring, qualitative				-0.03	0.13	
Respected				0.27 ***	0.43 ***	*
Work spillover				-0.10	-0.11	
Family spillover				-0.12	0.00	
Dept. balance				0.20 **	0.00	*
Discrimination				0.12	0.07	
Contextual Variables						
Mentor				0.12	0.15 **	
Teaching, more				0.10	-0.04	
Advising, more				-0.25 ***	0.04	**
Research, more				0.04	-0.18 ***	**
Socio-demographics						
White women	-0.14 *	0.05		-0.10	-0.06	
Nonwhite men	-0.21 **	-0.07		-0.14 *	-0.10	
Nonwhite women	-0.09	-0.11		0.00	-0.06	
Tenured	0.03	0.02		0.09	0.06	
Department head	0.14 *	0.06		0.07	-0.02	
Control Variables						
Teaching, na				0.02	0.01	
Advising, na				0.00	-0.06	
Research, na				-0.02	0.02	
R-Squared	0.06	0.00		0.32	0.39	
Change in R-Squared				0.31 ***	0.42 ***	

Notes: *** p< .001, ** p<.01, * p<.05

References

Acker, Joan. 1990. Hierarchies, jobs, bodies: a theory of gendered organizations. *Gender & Society* 4(2):139-158.

Acker, Sandra. 2007. Women 'learning to labour' in the 'male emporium':Exploring gendered work in teacher education. *Gender and Education* 19:297-316.

Bach, Rebecca L., and Carolyn C. Perrucci. 1984. Organizational influences on the sex composition of college and university faculty: A research note. *Sociology of Education* 57:193-198.

Bird, Sharon R., Jacqueline Litt, and Yong Wang. 2004. Creating a status of women report: Institutional housekeeping as women's work. *National Women's Studies Association Journal* 16:194-206.

Britton, Dana M. 2000. The epistemology of the gendered organization. *Gender & Society* 14(3): 418-435.

------. 2003. *At work in the iron cage: The prison as gendered organization*. New York: New York University Press.

-----. 1997. Perceptions of the work environment among correctional officers: do race and sex matter? *Criminology* 35(1):85-105.

Britton, Dana M., and Laura S. Logan. 2008. Gendered organizations: Progress and prospects. *Sociological Compass* 2(1): 107-121.

Callister, Ronda Roberts. 2006. The impact of gender and department climate on job satisfaction and intentions to quit for faculty in science and engineering fields. *Journal of Technology Transfer* (Issue on Women in Science) 31:367-375.

Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. 2006. *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press.

Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; National Research Council. 2009. *Gender differences at critical transitions in the careers of science, engineering and mathematics faculty*. Washington, D.C.: National Academies Press.

Hochschild, Arlie A. 2001. *The time bind: When work becomes home and home becomes work*. New York: Holt Paperbacks.

Jacobs, Jerry A. 1996. Gender inequality in higher education. *Annual Review of Sociology* 22:153-185.

Konrad, Alison, and Jeffrey Pfeffer. 1991. Understanding the hiring of women and minorities in educational institutions. *Sociology of Education* 64:141-157.

Kulis, Stephen, and Karen A. Miller-Loessi. 1992a. Organizational dynamics and gender equity: The case of sociology departments in the Pacific region. *Work and Occupations* 19(2):157-183.

------. 1992b. Organizations, labor markets, and gender integration in academic sociology. *Sociological Perspectives* 35(1):93-117.

Miller, Gloria E. 2002., The frontier, entrepreneurialism, and engineers: Women coping with a web of masculinities in an organizational culture. *Culture and Organization* 8:145-160.

Nelson, Donna J., and Diana C. Rogers. 2004. A national analysis of diversity in science and engineering faculties at research universities. University of Oklahoma, Norman, OK.

Nelson, Donna J., Christopher N. Brammer, and Heather Rhoads. 2007. A National Analysis of Minorities in Science and Engineering Faculties at Research Universities. Diversity in Science Association and University of Oklahoma, Norman, OK. http://chem.ou.edu/~djn/diversity/Faculty_Tables_F Y07/FinalReport07.html, retrieved on May 15, 2009.

Rajeswaren, Anita Nimi. 2000. "Determinants of faculty gender ratios across institutions and departments. Thesis, Cornell Higher Education Research Institute, Cornell University, Ithaca, NY.

Saari, Lise M., and Timothy A. Judge. 2004. Employee attitudes and job satisfaction. *Human Resource Management* 43(4): 395–407.

Rosser, Sue V. 2002. Key barriers for academic institutions seeking to retain female scientists and engineers: Family unfriendly policies, low numbers, stereotypes, and harassment. *Journal of Women and Minorities in Science and Engineering* 8:161-189.

Whittington, Kjersten Bunker, and Laurel Smith-Doerr. 2008. Women inventors in context: Disparities in patenting across academia and industry. *Gender & Society* 22: 194 - 218.

Xie, Yu, and Kimberlee A. Shauman. 2003. W*omen in science: career processes and outcomes*. Cambridge, MA: Harvard University Press.

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