Gender and Uncertainty in Academia

Dongeun Shin
Department of Sociology
Indiana University Bloomington
shin59@iu.edu

Pei-Ying Chen
Department of Information and Library Science
Indiana University Bloomington
peiychen@iu.edu

Statement of Research Question

Universities place an emphasis on research outcomes for their faculty, requiring them to spend a lot of time on research despite their multiple roles. However, faculty often do not know if they are good enough in their research to satisfy evaluation for tenure and promotion. In many cases, faculty do not have a sense of whether they are currently doing enough. Moreover, time and patience are required for faculty to get evaluated and rewarded with their research. As a result, faculty are put in a situation where they have to compete intensely in a lack of established guidelines for tenure and promotion.

In particular, scholars have reported that women in traditionally male-dominant occupations are discriminated against (Kanter, 1977). There also exist strong hierarchical structures with male predominance that disadvantage women in academia. Known as the "academic leaky pipeline," women are less likely than men to hold tenure-track positions, receive tenure, and receive promotion to full professorship; even among those who succeed, they took longer for advancement than their male counterparts (Misra et al., 1999; Probert 2005).

In line with this argument, prior research has documented that gender becomes salient when it comes to evaluation (Ridgeway, 1997). Decision makers in organizations use gender as a framework for evaluating people, and, by incorporating gender stereotypes, generate beliefs that men are more competent and have higher status than women even though their structural positions are equivalent (Ridgeway, 1997). Building on the status characteristics theory, Correll (2001) also suggests that cultural beliefs about gender affect men and women, resulting in gendered perceptions of competence.

Past analyses have examined tenure and promotion only as outcomes, but not as processes that might lead women to self-select out of academia. For example, women may be more uncertain about their career prospects and chances of tenure, which could result in stress, dissatisfaction, and eventual opting out of career. Uncertainty embedded in work has been shown to increase gender discrimination in promotion for female lawyers (Gorman, 2006); however, little is currently known about uncertainty embedded within academia.

In this study, we examined what factors relate with faculty's clear senses of getting tenure and promoted by focusing on gender differences. Specifically, we assessed if formal practices and feedbacks in terms of tenure and promotion, satisfaction with time spent on teaching, research, and service, and interactions with untenured and tenured faculty have impacts on women's and men's senses of clarity in achieving tenure and promotion.

Data and Methods

Our sample came from the Faculty Job Satisfaction Survey administered by the Collaborative on Academic Careers in Higher Education (COACHE). The aggregated dataset comprised four cross-sectional surveys distributed between 2012 and 2015, with a total of 98,756 data records from 145 institutions, of which 31 were surveyed recurrently. To ensure the uniqueness of each observation, we kept only observations from the most recent survey in which these institutions participated. After removing observations with missing values on the outcome variables, the final sample included 7,101 pre-tenured assistant professors and 10,101 tenured associate professors, which we divided into two sub-samples. We examined two dependent variables: 1) pre-tenured faculty's sense of clarity of achieving tenure and 2) tenured faculty's sense of clarity of being promoted to full, respectively. The sense of clarity was measured on a five-point Likert-like scale from "very unclear" to "very clear". The independent variables included 1) the level of clarity of formal practices, 2) whether they received formal feedback, 3) the level of satisfaction with time spent on teaching, research, and service, and 4) the level of satisfaction with the amount of professional/personal interaction with untenured/tenured faculty in their department. We controlled for faculty's socio-demographic characteristics (e.g., race, marital status, and parenthood) as well as institutional characteristics (e.g., area of study, public/private, research-intensive or not, and size of student enrollment). Given that faculty are nested within colleges/universities, we used hierarchical linear model (HLM) to account for the variations both between faculty within institutions and between faculty across institutions.

Expected Findings

Our analyses showed that women were more likely than men to experience lower levels of clarity in getting tenure (β=-.161, p<.001) and promoted (β=-.170, p<.001) although these findings were not presented in this paper. Table 1 and Table 2 show results for random effects linear regression models on men's and women's senses of clarity in getting tenure and promoted, respectively. Model1 includes control variables; Model2 includes effects of formal practices and feedbacks in terms of tenure; Model3 includes effects of satisfaction with time spent on teaching, research, and service; Model4 includes effects of interactions with untenured and tenured faculty.

Table 1 reveals that formal practices and feedbacks in terms of tenure were strongly associated with both men's and women's clear senses of getting tenure. The effects of clear formalization were strongly positive in all of the models. Both men and women were more likely to have clear senses in getting tenure when they had higher levels of satisfaction with time spent on research. The effects of interactions with faculty varied by gender, however. While male faculty were more likely to have clearer senses about getting tenure when they interacted with tenured faculty for personal reasons, female faculty were with untenured faculty for personal reasons.

Table 2 indicates that both men and women felt clearer about whether they would get promoted when formalization increases. Tenured men experienced higher levels of clarity with respect to promotion when they were satisfied with time spent on both research and service while tenured women did only when they were satisfied with time spent on research. Both tenured men and women became clearer about promotion as they interacted more with tenured faculty for personal reasons.

Of the control variables, marriage was positively significant on clear perceptions for both tenure and promotion throughout all models among men, but was significant only for Model 1 among women. In addition, working in private or R1 universities did not negatively affect women's senses of clarity when they already had tenure although it was negatively significant when women did not have tenure. As both tenured men and women worked longer in their institution, they felt less clear about whether they would get promoted to full professors.

This research suggests that men and women faculty might shape different networking paths that affect their senses of clarity in getting tenure. Whether faculty informally interact with their colleagues might play an important role in gendered different levels of clarity about getting tenure. Moreover, this research suggests that women faculty might have difficulties in managing time conflicts compared to men in that marriage and satisfaction with time spent on service can be positive for men, but not for women.

Table 1. Random Effects Linear Regression Models on Senses of Clarity in Getting Tenure for All Men and Women

	Men				Women			
	M1	**M2**	**M3**	**M4**	**M1**	**M2**	**M3**	**M4**
Nonwhite	.060	.032	.024	.036	-.067	-.029	-.039	-.023
	(.044)	(.034)	(.034)	(.034)	(.044)	(.033)	(.033)	(.033)
Married	.167**	.089*	.095*	.089*	.164**	.061	.056	.055
	(.058)	(.044)	(.044)	.044	(.049)	(.037)	(.036)	(.036)
Parent	.050	-.008	-.011	-.015	.048	.028	.027	.026
	(.048)	(.037)	(.036)	(.036)	(.044)	(.033)	(.033)	(.033)
Academic Area (Humanities omitted)								
Social Sciences	-.044	.011	.008	.003	-.012	-.011	-.029	-.025
	(.074)	(.057)	(.057)	(.057)	(.068)	(.051)	(.050)	(.050)
Physical Sciences	-.168	-.121	-.127	-.132	-.023	-.064	-.086	-.081
	(.092)	(.072)	(.071)	(.073)	(.109)	(.078)	(.077)	(.077)
Biological Sciences	-.124	-.074	.088	-.083	-.135	-.121	-.148	-.137
	(.105)	(0.081)	(.081)	(.081)	(.110)	(.078)	(.078)	(.077)
Visual/Performing Arts	-.378***	-.079	-.071	-.077	-.181	.090	.101	.103
	(.100)	(.075)	(.075)	(.075)	(.095)	(.072)	(.071)	(.071)
Engineering	-.203**	-.059	-.081	-.076	.017	.047	.019	.034
	(.076)	(.059)	(.059)	(.059)	(.097)	(.071)	(.070)	(.070)
Environmental Sciences	-.013	.127	.098	.103	.006	-.036	-.066	-.060
	(.124)	(.102)	(.101)	(.101)	(.106)	(.078)	(.078)	(.078)
Business	-.136	.045	.014	.017	-.166	-.028	-.068	-.054
	(.113)	(.087)	(.087)	(.087)	(.140)	(.097)	(.097)	(.097)
Education	-.265**	-.114	-.143*	-.145*	-.174	-.155*	-.213**	-.216**
	(.090)	(.070)	(.070)	(.071)	(.103)	(.075)	(.075)	(.074)
Health, Human Ecology	-.210	-.019	-.038	-.025	-.166	-.020	-.044	-.031
	(.117)	(.096)	(.096)	(.095)	(.085)	(.061)	(.061)	(.061)

	Men				Women			
	M1	**M2**	**M3**	**M4**	**M1**	**M2**	**M3**	**M4**
Medical Sciences	-.529***	-.251**	-.258**	-.259**	-.266**	-.139*	-.180**	-.178**
	(.094)	(.073)	(.073)	(.073)	(.077)	(.056)	(.056)	(.057)
Other	-.256*	-.015	-.030	-.029	-.064	.077	.059	.064
	(.111)	(.087)	(.087)	(.086)	(.110)	(.080)	(.080)	(.079)
Private (Public omitted)	-.092	-.152***	-.170***	-.174***	-.123	-.089*	-.098*	-.114**
	(.071)	(.042)	(.042)	(.043)	(.076)	(.042)	(.043)	(.042)
R1 University [a]	-.005	-.055	-.081*	-.082	-.120	-.187***	-.212***	-.204***
	(.069)	(.044)	(.044)	(.044)	(.079)	(.043)	(.044)	(.043)
Enrollment [b]	.013	.008	-.006	-.139	.064	.074***	.057**	.058**
	(.033)	(.225)	(.225)	(.225)	(.292)	(.204)	(.204)	(.203)
Length	.001	.002	.003	.004	-.004	.000	.000	.002
	(.009)	(.006)	(.006)	(.006)	(.007)	(.005)	(.005)	(.005)
Formalization								
Formal Practices		.657***	.636***	.607***		.686***	.657***	.631***
		(.014)	(.015)	(.016)		(.014)	(.014)	(.015)
Formal Feedbacks		.146***	.149***	.144***		.114**	.110**	.102**
		(.039)	(.039)	(.039)		(.038)	(.038)	(.038)
Satisfaction in Time Spent								
Teaching			-.008	-.020			-.003	-.012
			(.019)	(.019)			(.017)	(.017)
Research			.085***	.081***			.109***	.103***
			(.016)	(.016)			(.015)	(.015)
Service			-.000	-.011			.016	.009
			(.018)	(.018)			(.016)	(.016)
Interactions with faculty								
Professional/Untenured				.036				-.032
				(.027)				(.026)
Personal/Untenured				-.024				.059*
				(.027)				(.026)
Professional/Tenured				.005				.017
				(.025)				(.025)
Personal/Tenured				.083**				.049
				(.025)				(.025)
Constant	3.574***	1.136***	1.029***	.961***	3.215***	.694***	.529***	.342**
	(.315)	(.236)	(.243)	(.244)	(.297)	(.212)	(.220)	(.221)
Number of Observations			3,454				3,647	
Number of Groups			142				143	

Table 2. Random Effects Linear Regression Models on Senses of Clarity in Getting Promoted for All Men and Women

	Men				Women			
	M1	**M2**	**M3**	**M4**	**M1**	**M2**	**M3**	**M4**
Nonwhite	-.146**	-.057	-.084*	-.067	-.132**	.004	-.008	.015
	(.045)	(.035)	(.035)	(.035)	(.050)	(.040)	(.039)	(.040)
Married	.127*	.110*	.107*	.102*	.093*	.036	.028	.023
	(.061)	(.045)	(.045)	(.045)	(.047)	(.038)	(.038)	(.037)
Parent	.004	-.041	-.040	-.040	.074	.006	.005	.004
	(.042)	(.033)	(.032)	(.032)	(.043)	(.035)	(.035)	(.037)
Academic Area (Humanities omitted)								
Social Sciences	-.058	-.005	-.013	-.015	-.041	.052	.046	.042
	(.066)	(.052)	(.052)	(.051)	(.063)	(.051)	(.051)	(.050)
Physical Sciences	.059	.014	-.001	-.007	-.087	.038	.020	.030
	(.082)	(.067)	(.067)	(.067)	(.117)	(.093)	(.093)	(.093)
Biological Sciences	.018	-.010	-.015	-.013	-.125	-.036	-.055	-.047
	(.093)	(.072)	(.071)	(.071)	(.101)	(.082)	(.082)	(.081)
Visual/Performing Arts	-.338***	-.104	-.109	-.119	-.287**	-.007	-.008	-.001
	(.085)	(.072)	(.070)	(.070)	(.086)	(.069)	(.069)	(.069)
Engineering	-.037	.088	.063	.069	-.127	-.039	-.058	-.054
	(.068)	(.055)	(.055)	(.055)	(.093)	(.072)	(.072)	(.072)
Natural Resources	-.315*	-.133	-.147	-.150	-.190	-.063	-.074	-.078
	(.131)	(.100)	(.100)	(.100)	(.109)	(.086)	(.085)	(.085)

	Men				Women			
	M1	**M2**	**M3**	**M4**	**M1**	**M2**	**M3**	**M4**
Business	-.034	.063	.037	.050	.042	.065	.023	.033
	(.096)	(.073)	(.073)	(.073)	(.137)	(.107)	(.107)	(.106)
Education	-.073	.045	.023	.021	-.003	.088	.059	.053
	(.083)	(.069)	(.069)	(.069)	(.107)	(.083)	(.083)	(.083)
Health, Human Ecology	-.239*	-.094	-.119	-.123	-.266***	-.064	-.086	-.094
	(.103)	(.083)	(.083)	(.082)	(.075)	(.063)	(.062)	(.062)
Medical Sciences	-.201*	-.149*	-.186*	-.181*	-.142	-.043	-.078	-.070
	(.096)	(.075)	(.075)	(.075)	(.087)	(.070)	(.070)	(.070)
Other	-.618***	-.259**	-.275***	-.272***	-.161	.113	.090	.095
	(.099)	(.078)	(.078)	(.078)	(.099)	(.080)	(.080)	(.080)
Private (Public omitted)	.037	.113*	.096	.088	.058	.033	.027	.018
	(.081)	(.053)	(.053)	(.052)	(.086)	(.059)	(.058)	(.059)
R1 University [a]	.159*	.071	.046	.052	.082	.078	.061	.070
	(.076)	(.046)	(.046)	(.046)	(.079)	(.050)	(.050)	(.050)
Enrollment [b]	.012	.027	.015	.017	.007	.001	-.005	-.004
	(.036)	(.023)	(.023)	(.023)	(.037)	(.025)	(.025)	(.025)
Length	-.003	-.006**	-.006**	-.005**	-.002	-.006*	-.006*	-.005*
	(.002)	(.002)	(.002)	(.002)	(.003)	(.002)	(.002)	(.002)
Formalization								
Formal Practices		.662***	.647***	.624***		.639***	.625***	.605***
		(.012)	(.012)	(.013)		(.013)	(.013)	(.014)
Formal Feedbacks		.336***	.324***	.319***		.371***	.360***	.357***
		(.035)	(.035)	(.035)		(.041)	(.041)	(.041)
Satisfaction with Time Spent								
Teaching			-.022	-.032			.015	.005
			(.017)	(.017)			(.018)	(.018)
Research			.074***	.070***			.070***	.069***
			(.014)	(.014)			(.016)	(.016)
Service			.052**	.045**			.024	.018
			(.015)	(.015)			(.016)	(.016)
Interactions with faculty								
Professional/Untenured				.021				.002
				(.027)				(.031)
Personal/Untenured				.004				.003
				(.028)				(.032)
Professional/Tenured				.013				.000
				(.026)				(.028)
Personal/Tenured				.063*				.093**
				(.027)				(.029)
Constant	3.120***	.717***	.530***	.291*	2.940***	.769***	.542***	.290*
	(.156)	(.114)	(.125)	(.133)	(.159)	(.120)	(.132)	(.143)
Number of Observations			5,410				4,691	
Number of Groups			141				139	

Source: The Collaborative on Academic Careers in Higher Education (COACHE)

Note: Standard errors shown in parentheses.

[a] Carnegie Classification of Institutions of Higher Education classifies doctoral universities as "R". They sort universities with highest levels of research activity into "R1", those with higher levels into "R2", and those with moderate levels into "R3".

[b] Enrollment was measured by the number of student enrollment from 1 to 5; 1: under 1000, 2: 1000–4999, 3: 5000-9999, 4: 10000-19999, 5: 20000 and above.

*p< .05; **p< .01; ***p<.001 (two-tailed).

References

Correll, Shelley. 2001. "Gender and the Career Choice Process: The Role of Biased Self-Assessments." *American Journal of Sociology* 106(6): 1691–1730.

Gorman, Elizabeth H. 2006. Work Uncertainty and the Promotion of Professional Women: The Case of Law Firm Partnership. *Social Forces* (85):8–23.

Kanter, Rosabeth Moss. 1977. *Men and Women of the Corporation*. New York: Basic Books.

Misra, Joya, Ivy Kennelly, and Marina Karides. 1999. "Employment Chances in the Academic Job Market in Sociology: Do Race and Gender Matter?" *Sociological Perspectives* 42(2):215–47.

Probert, Belinda. 2005. "'I Just Couldn't Fit It in': Gender and Unequal Outcomes in Academic Careers." *Gender, Work & Organization* 12(1):50–72.

Ridgeway, Cecilia L. 1997. "Interaction and the Conservation of Gender Inequality: Considering Employment." *American Sociological Review* 62(2): 218–35.