

DOCTORAL STUDENT-FACULTY ADVISOR RELATIONSHIPS: THE IMPACT OF
GENDER MATCHING ON STUDENT EDUCATIONAL AND EMPLOYMENT OUTCOMES

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Women continue to be underrepresented as tenure-track faculty members at research institutions despite the growing percentage of women completing doctoral degrees in Science, Technology, Engineering, and Mathematics (STEM) fields. Fostering mentoring relationships between women faculty and women doctoral students is commonly proposed as a method for facilitating student success. Yet, there is limited empirical evidence that a doctoral student-faculty advisor gender match contributes to improved outcomes. Thus, I evaluate the impact of advisor gender match on female doctoral students' likelihood of degree completion, time to degree, volume of publications, and post-graduation academic job placement.

I analyze survey and administrative data on female and male STEM doctoral students from a selective research university using ordinary least squares, logit, and negative binomial regression analyses in a social identity theoretical framework. For comparison, I evaluate survey and administrative data on Humanities and Humanistic Social Science (HHSS) doctoral students across 13 highly-ranked research institutions. Since HHSS departments tend to have greater proportions of female faculty than STEM departments, they provide a different context for gender matching to operate.

I find that numeric representation of female faculty influences student outcomes. An increase in the proportion of female STEM faculty leads to a higher graduation probability and shorter time to degree among female doctoral students. Larger proportions of female faculty may aid in improving climate, visibility of positive role models, and opportunities for informal mentorship.

Advisor gender match appears to increase the likelihood of completion for women doctoral students in HHSS departments. In contrast, advisor gender does not impact likelihood of completion, time to degree, or academic job placement among women in STEM departments or among men in STEM and HHSS departments. Rather, advisor attitude toward dissertation completion and frequency of meetings during the dissertation process influence student publication rates, time to degree, and academic placement indicating that positive advising practices can enhance student educational and employment outcomes.

BIOGRAPHICAL SKETCH

Joyce Bautista Main graduated from the Van Nuys High School Math and Science Magnet Program, Van Nuys, California in 1995. She earned a Bachelor of Arts degree in Integrative Biology from the University of California, Berkeley, in 1999. Thereafter, Joyce earned a Master in Education degree from the Harvard Graduate School of Education in Administration, Planning, and Social Policy. After working as an academic advisor at Harvard University, Joyce pursued doctoral studies at Cornell University where she earned a Ph.D. in the Field of Education in 2011.

To my sun, Bruce
my moon, Emma Sophia
and my earth, Russ

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CHAPTER 1

INTRODUCTION

Despite the growing number of women earning doctoral degrees in Science, Technology, Engineering, and Mathematics (STEM) fields, women continue to be underrepresented as tenure-track faculty members at research institutions. Women comprise only 6.4% of senior faculty in Engineering, 10% in Physical Sciences, 11.8% in Mathematics, 17.2% in Computer Sciences, 21.3% in Natural Sciences, and 28.8% in Life Sciences across a sample of research institutions in 2003 (National Research Council [NRC], 2009). Meanwhile, the percentage of doctoral degrees awarded to women has grown over the last three decades. Between 1977 and 2007, the percentage of doctoral degrees awarded to women increased from 2.8% to 20.7% in Engineering, from 9.8% to 28.1% in the Physical Sciences, and from 20.8% to 51.4% in the Life Sciences (National Science Foundation [NSF], 2010). Even though the trend is increasing, the percentage of doctorates earned in Engineering and Physical Sciences is far from reaching gender parity.

Achieving gender equity and minimizing barriers for women interested in pursuing scientific endeavors are of high importance for reasons extending from the individual to the global scale. National and global scientific and technological advancements are dependent on a diverse and talented scientific labor force of sufficient size and quality. As such, the deterrence of talented women from pursuing or continuing in STEM fields constitutes a loss not only in the production of scientific and technological knowledge, but in national competitiveness in these areas. At the individual level, qualified women who are interested in using their scientific training to contribute to society should be able to achieve their goals without institutional barriers (NRC, 2009; Xie & Shauman, 2003).

The complexity of the issues surrounding the underrepresentation of women in STEM fields has inspired a sizable body of research and literature encompassing every stage of the life course (preschool, kindergarten through high school, college, graduate school, and beyond) and across several disciplines (sociology, psychology, education, etc.). Blickenstaff (2005) summarizes the strands of literature as falling into one of the following broad categories:

1. *Biological differences between men and women.*
2. *Girls' lack of academic preparation for a science major/career.*
3. *Girls' poor attitude toward science and lack of positive experiences with science in childhood.*
4. *The absence of female scientists/engineers as role models.*
5. *Science curricula are irrelevant to many girls.*
6. *The pedagogy of science classes favors male students.*
7. *A 'chilly climate' exists for girls/women in science classes.*
8. *Cultural pressure on girls/women to conform to traditional gender roles.*
9. *An inherent masculine worldview in scientific epistemology.*

At the doctoral and faculty levels, researchers have identified challenges in work-life balance, inhospitable work environments, negative self-assessments, and biased recruiting, evaluation, and promotion efforts as potential sources of variation in educational and employment outcomes by gender (Correll, 2004; Fox, 2001; Moyer, 1999; National Academy of Sciences, 2006; Valian, 1999).

As numerous and as diverse as the potential sources of gender inequity in the sciences are, there is also a wide array of programs and policies to help encourage more girls and women to enter, persist, and succeed in the sciences. One commonly proposed method to increase the number of women pursuing the sciences is to foster same gender mentorship and accessibility of positive role models. For example, the National Science Foundation ADVANCE program, Harvard Graduate Women in Science, and Association of Women in Science all advocate for increased representation and advancement of women in science through mentorship and otherwise. Same gender mentoring or gender matching between faculty advisor and doctoral

student is often promoted in STEM departments; yet, there are relatively few empirical studies investigating its efficacy in improving educational outcomes or in producing a greater proportion of female faculty.

Here I evaluate the impact of same gender mentorship, or gender match between doctoral student and faculty advisor, on students' likelihood of degree completion, time to degree, volume of publications, and placement in a tenure-track faculty position. Empirical data include survey and administrative records on male and female doctoral students in nine different STEM departments from a selective research university, as well as survey and administrative data from Humanities and Humanistic Social Science (HHSS) departments across 13 top research institutions for comparison. Whereas the entrance of critical numbers of female faculty in STEM fields is a relatively recent and ongoing development, departments in the humanities and social sciences have long maintained female faculty in the tenure ranks. With relatively higher proportions of female faculty in HHSS departments, uncomfortable work environments, structural barriers, and gender biases ordinarily associated with male dominated fields should be attenuated or less prevalent (Tolbert et al., 1995). Thus, I incorporate the study of HHSS departments to provide a comparative aspect to the understanding of the role of gender matching in different contexts.

My theoretical framework incorporates social identity and ingroup bias theories. Social identity theory proposes that an individual identifies with a group based on some prototypical characteristic and consequently perceives the "successes and failures" of that group as her own. Therefore, in order to maintain positive self-evaluation, she strives to promote her group in a positive light (Ashforth & Mael, 1989; Hogg & Terry, 2000; Hornsey, 2008; Tajfel & Turner, 1984). Ingroup bias theory posits that bias is prompted by preferential treatment of one's group

members (Brewer, 1999), such that female students matched with female advisors should experience some benefit of group membership. Therefore, I hypothesize that female graduate students matched with female faculty advisors will have better educational and employment outcomes than female graduate students matched with male faculty advisors.

My research findings determine whether promoting same gender mentorship is an effective method for engendering women's success in the sciences. It adds to our general understanding of how to improve gender equity at the doctorate and professoriate levels. Consequently, higher education institutions and other entities can use these findings to develop more effective programs, practices, and policies to encourage more women to persist in the sciences and to enter academia. Additionally, my research encompasses HHSS departments, and thus, findings can be applied to improve doctoral programs in other fields to maximize student potential in regard to degree completion, publication, and job placement.

Chapter 2 follows with a literature review on gender matching in higher education and a discussion of the social identity theoretical framework. Chapter 3 presents data, results, and discussion of the STEM analyses. Chapter 4 evaluates data on female and male doctoral students in Humanities and Humanistic Social Science departments. Chapter 5 concludes with primary findings and directions for future research.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Literature Review on Gender Matching in Higher Education

The importance of faculty gender in relation to student educational outcomes is documented in post-secondary education.¹ Among undergraduate students enrolled in the United States Air Force Academy, female students are more likely to take additional math and science courses and to complete a STEM degree if they have taken STEM courses from female professors (Carrell et al., 2009); the effect is largest among female students with the highest math ability. In contrast, professor gender shows little impact on students in the humanities fields and on male students in general. Data from Colgate University classes of 1988 through 2000 suggest that gender-matched faculty serve as role models and have a positive influence on students' decisions to major in their respective fields (Rask & Bailey, 2002). Bettinger and Long (2007) suggest that a gender match has the potential to increase student interest in a field as measured by course selection and major choice. They find that when female faculty teach math or geology, female students in the course are more likely to persist in the respective field. Conversely, male students who take an introductory course from male faculty in education, a predominantly female field, are more likely to take additional courses and major in the subject.²

To date, there are limited studies on the impact of same-gender mentoring on the success and academic persistence of PhD students. Hilmer and Hilmer (2007) find no significant

¹ In primary and secondary education, Ehrenberg, et al. (1995) find that white female students are rated higher by female teachers than by male teachers, but that female gender match does not lead to increased test scores. See also Dee, T. (2005).

² See also Canes and Rosen, 1995; Dynan & Rouse, 1997; Hoffman & Oreopoulos, 2007; Rothstein, D. 1995; and Turner & Bowen, 1999.

difference in initial job placement and early-career research productivity between female students working with female advisors and female students working with male advisors in economics PhD programs. All things equal, they show that female students working with male advisors are more likely to accept research oriented jobs than male students working with male advisors. Neumark and Gardecki (1998) do not find any support for improved graduation probabilities or job placement success when female economics graduate students are matched with female faculty advisors or female dissertation chairs; however, they provide evidence that female faculty advisors can reduce time to degree for female students. As for publication rates, Goldstein (1979) shows that New York psychology students publish more when they have same gender advisors, but more recent research provides contrasting results. In psychology, women supervised by women publish at the same rate as women supervised by men, and there is no difference in mean publication rates between men and women who study under the same advisor in the same university (Over et al., 1990). Likewise, Schuckman (1987) finds no difference in publication rates among biology and psychology students by advisor gender.

Theoretical Framework

The matching of doctoral student and faculty dissertation advisor occurs by mutual agreement. Rather than distinguish whether the pairing is student or advisor driven, I view it as a coalescence based on shared interests, availability, programmatic requirements, financial considerations, and other nuances that arise from doctoral programs, as well as psycho-social factors stemming from role model, similarity-attraction, social cognitive, and social identity theories. From the student's perspective, gender matching, beyond the practical requirements of selecting an advisor, is in step with role model and social cognitive theories whereby individuals

seek role models who are similar to them and then envision potential career trajectories based on the attributes, experiences, and successes of selected role models (Bandura, 1986; Gibson, 2004; Marx & Roman, 2002; Quimby, 2006). In other words, female students may select female faculty advisors due to gender similarity and perceived shared experiences and aspirations, in addition to instrumental concerns relating to research interests. Conversely, social identity theory predicts female faculty advisors may serve on female students' dissertation committee due to same gender group membership and the subsequent desire to help and promote female students to advance the overall achievements of the group (provided that there is no negative association with group membership).³ After all, positive self-assessment is tied to membership in a group that is viewed in high esteem. Further, ingroup identification and attachment (Brewer, 1999) posit that individuals are biased toward group members and afford demographically similar individuals with preferential treatment (without negative attitudes toward outgroups). Taken together, ingroup bias and social identity theories predict that female students and female faculty tend to work together and that the partnership leads to improved educational and employment outcomes as preferential treatment is conferred to female students in an effort to advance the group's overall status.

Nevertheless, the psycho-social processes of social identity theory (SIT) are not acting in isolation. The potential positive benefits afforded by SIT may be mitigated or mediated by contextual factors, such as numeric representation, group categorical status, and work group prestige. Categorical status is the differential "prominence, respect, and influence afforded to individuals" in different demographic categories while work group prestige is the level of "prestige (low or high) accorded to a certain group within an organization" (Duguid et al., 2010,

³ When there is negative association with group membership, some individuals may disengage from the group to protect their self-esteem.

p. 2; Anderson et al., 2006). For example, value threat occurs among individuals who are of numeric minority in high-prestige work groups. It leads individuals to disengage from a demographically similar group due to a fear of not being accepted by an alternative higher status group. Value threat can affect behavior in the following ways: 1. collective threat – concern that other women will confirm or exacerbate negative stereotypes, 2. favoritism threat – fear of appearing “positively biased” toward female over male graduate students, and 3. competitive threat - fear of appearing less qualified than other women (Duguid et al., 2010). Given that historical and demographic factors tend to categorize women in STEM fields as “lower status, numeric minorities in high-prestige work groups,”⁴ value threat may mitigate potential benefits rendered by ingroup preference. Consequently, for fear of not being seen as members of an alternative higher status group (vis à vis academics), women faculty may be less likely to help or support female graduate students.

Provided that historical and demographic factors tend to categorize women in STEM as “lower status, numeric minorities in high-prestige work groups,” SIT in a value threat model may mitigate potential benefits afforded by similarity-attraction or ingroup preference. To test this, I analyze comparative groups to better understand the impact of gender matching in different contexts. I include male doctoral students in the analyses as they tend to be viewed as members of higher categorical status and of numeric majority in STEM fields. I also examine data on doctoral students in Humanities and Humanistic Social Sciences because women are less likely to be low-status or of numeric minority in these departments.

⁴ The professoriate is regarded as a high prestige work group.

CHAPTER 3

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

As doctoral students ordinarily conduct research in collaboration with and/or under the supervision of a faculty advisor and much can be learned about the field, research methods, culture, and professional activities from the advisor, a positive student-advisor relationship is critical to a student's success. Here I investigate several aspects of the relationship between doctoral students and faculty advisors to determine possible sources of variation that could lead to the underrepresentation of women as tenure-track faculty members in research institutions, as well as the gender imbalance among doctorates in STEM fields. Since gender matching, or same gender mentorship, is a method often used to advance women in science, I focus on its impact on a student's likelihood of graduation, time to degree, volume of publications, and academic job placement. Additionally, I examine the effects of advisor attitudes toward dissertation completion and frequency of meetings during the dissertation process. Using a theoretical framework incorporating ingroup bias and social identity theory in a value threat model, I hypothesize that female graduate students matched with female faculty advisors have better educational and employment outcomes than female graduate students matched with male faculty advisors, but that the potential gains are mediated by the group's relative numerical representation.

DATA

The data on doctoral students in STEM departments come from a selective four-year research institution in the Northeast United States. The dataset includes individual-level and

department-level administrative records on student demographics obtained from the Graduate School, as well as individual responses to an online survey focusing on student experiences with faculty advisors, number of publications, and career aspirations or post-study employment. STEM departments include Biochemistry, Biology, Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, Mathematics, Mechanical Engineering, and Physics. The sample consists of: (1) recent doctorates who earned their degree between 2003 and 2009⁵, (2) students currently enrolled at the time of survey, January 2010, and (3) students who entered between 1997 and 2007, but left the PhD program before graduating. I include only withdrawn students who notified the Graduate School of their withdrawal before March 2010.

Description of Sample

The administrative data consists of 1,850 individuals: 947 PhDs, 674 current students, and 229 leavers/withdrawn students (Table 3.1). The majority of students are matched with male advisors. 92% of male PhDs are advised by male faculty compared to 8% by female faculty. Meanwhile, 18% of female PhDs are matched with female faculty advisors. 98% of male leavers and 90% of female leavers are advised by male faculty.

Survey

I designed a 32-question survey for doctoral students primarily addressing the advisor matching process, advising experiences with the faculty chair,⁶ research productivity, views on

⁵ The retrospective survey is limited to individuals who graduated in 2003 and later due to the availability of valid e-mail addresses from administrative records.

⁶ Some of the survey questions, such as advisor attitude toward dissertation completion and frequency of meetings, were derived from the Graduate Education Survey conducted by the

Table 3.1
Description of Sample Size

Full Sample

	Male Students		Female Students		Total
	N	%	N	%	
Current Student	649	69%	298	31%	947
PhD	503	75%	171	25%	674
Withdrawn	168	73%	61	27%	229
Total	1,320		530		1,850

By Advisor Gender

Male Students

	Male Advisor		Female Advisor		Total
	N	%	N	%	
Current Student	579	89%	70	11%	649
PhD	462	92%	41	8%	503
Withdrawn	164	98%	4	2%	168
Total	1,205		115		1,320

Female Students

	Male Advisor		Female Advisor		Total
	N	%	N	%	
Current Student	247	83%	51	17%	298
PhD	141	82%	30	18%	171
Withdrawn	55	90%	6	10%	61
Total	443		87		530

the professoriate, and post-study career employment or trajectory. After vetting the survey instrument, I contracted an independent research institute to help conduct the pilot study and administer the online survey to ensure secure data collection. From January through February 2010, the research institute sent invitation and reminder e-mails to recent doctorates and currently enrolled students to participate in the survey.

Andrew W. Mellon Foundation so that responses could be more easily compared between STEM and HHSS students.

There are two slightly different versions of the survey based on a respondent's status; the version for current students contains text written in the present tense and includes questions pertaining to career intentions (see Appendix A), whereas the retrospective survey for recent PhDs contains text written in the past tense and asks for post-study employment information (see Appendix B). Although it would have been valuable to survey students who have withdrawn to learn more about their reasons for leaving especially in regard to faculty advising, it was not feasible given the limited availability of valid e-mail addresses and resources.

The survey closed at the end of February 2010 with a relatively high response rate of 61.84%. 919 out of 1,486 individuals who received the survey (or had valid e-mail addresses) completed the online form. An additional 56 individuals partially completed the survey and their answers are included in the dataset. Based on t-tests, there is no statistically significant difference between survey respondents and non-respondents on GRE scores, Citizenship, Age, and Non-white United States Citizenship (Table 3.2). The Non-white US Citizen variable includes American Indian, Asian American, African American, Hispanic, Multicultural, and "other" students. Given the small number of members in each racial group, it was not possible to conduct analyses without aggregation. Women comprise 33% of the respondents and 23% of the non-respondents.

Since the majority of the regression analyses are conducted using only PhD recipients, I present t-tests omitting current students and leavers. T-tests limited to PhDs yield no difference between respondents and non-respondents, except that Non-white United States citizens are more likely to complete the survey (Table 3.2). Non-white US citizens comprise 11.7% of the respondents and 6.8% of the non-respondents. Given that only 9.3% of the PhD population is non-white US citizens, this slight overrepresentation is helpful towards analysis. Of the 63 non-

white US citizens, 41 completed the survey, whereas 22 did not respond. The PhD respondents total 350 individuals: 251 men and 99 women. Female faculty chaired dissertation committees for 21% of the female PhD respondents and 8% of the male PhD respondents.

Table 3.2
Summary and T-test Statistics for Respondents and Non-respondents

	<u>PhDs and Current Students</u>			
	Non-respondent	Respondent	Diff	T-stat
	Mean	Mean		
GRE Verbal Score	565.8011	571.8323	-6.031	(-1.00)
GRE Quantitative Score	759.5396	755.894	3.646	(1.12)
US Citizen	.5323077	.5798146	-0.048	(-1.89)
Non-white US Citizen	.1107692	.1390319	-0.028	(-1.67)
Age	23.78923	24.00721	-0.218	(-1.55)
Research Assistantship	.4027348	.3997226	0.00301	(0.17)
Teaching Assistantship	.3296169	.31367	0.0159	(0.97)
Fellowship	.2056999	.2312748	-0.0256	(-1.71)
Proportion Women	0.2261538	0.3316169	-0.105	(-4.61)
Number of Men	503	649		
Number of Women	147	322		
Total	650	971		
	<u>PhDs only</u>			
	Non-respondent	Respondent	Diff	T-stat
	Mean	Mean		
GRE Verbal Score	565.8712	574.5205	-8.649	(-0.93)
GRE Quantitative Score	757.8788	758.4247	-0.546	(-0.12)
US Citizen	.4969136	.56	-0.0631	(-1.64)
Non-white US Citizen	.0679012	.1171429	-0.0492*	(-2.20)
Age	23.64815	23.81143	-0.163	(-0.79)
Research Assistantship	.4780864	.4650522	0.0130	(0.53)
Teaching Assistantship	.2920831	.2795964	0.0125	(0.59)
Fellowship	.18398	.2099671	-0.0260	(-1.32)
Proportion Women	0.2222222	0.2828571	-0.06	(-1.81)
Number of Men	252	251		
Number of Women	72	99		
Total	324	350		

Forming the Dissertation Committee: Gender Matching

The Graduate School requires students to form a dissertation committee composed of a faculty chair and at least two additional “minor” faculty members. In general, students are asked to select a faculty chair within the first semester and the rest of the committee by the end of the third semester. Committee member selection is a mutual process that requires the agreement of both student and faculty member to work together. The decision to work together can arise from shared research interests, availability, programmatic requirements, funding opportunities, and other considerations including psycho-social factors.

Consistent with role model, social identity, similarity-attraction, and social cognitive theories where individuals prefer demographically similar others, female STEM doctoral students are more likely to match with female faculty dissertation chairs. All else equal, female students are 6 percentage points more likely than male students to pair with a female dissertation chair (Table 3.3). No other student characteristic in this model is predictive of matching with a female advisor, except for age. Compared to 22-year old matriculants, individuals 28 years old or older are 8 percentage points less likely to pair with a female dissertation chair, everything else held constant. This finding appears to be driven by the male students given that when the sample is divided by student gender, men who are 28 years old or older are less likely to pair with a female dissertation chair by 10.6 percentage points, all else equal.

When the sample is divided by student gender, mother’s education plays a role in the propensity to match with a female dissertation chair. Among women, a jump in mother’s education from a bachelor’s to a master’s degree leads to a higher likelihood of pairing with a female dissertation chair by 8 percentage points, everything else held constant. Among men, an increase in mother’s education from a bachelor’s to a doctoral degree increases the likelihood of

matching with a female chair by 7.5 percentage points. This suggests that the normalization of women with higher degrees facilitates the inclination to work with women dissertation advisors.

Table 3.3 Likelihood of Matching with a Female Faculty Advisor by Student Gender Logit Regression Marginal Effects			
	Full Sample	Female Students	Male Students
Female Student	0.05740** (0.0181)		
GRE Quantitative Score	0.00002 (0.0001)	0.00026 (0.0003)	0.0000 (0.0002)
International	-0.00434 (0.0172)	0.03641 (0.0391)	-0.0108 (0.0188)
Non-white US Citizen	-0.01202 (0.0226)	0.00265 (0.0477)	-0.02101 (0.0255)
% Female Students in Cohort	-0.10062 (0.0771)	-0.25017 (0.1588)	-0.00827 (0.0920)
% Female Faculty during Entry Year	0.00071 (0.0033)	-0.00056 (0.0075)	0.00208 (0.0035)
Departments	YES	YES	YES
<i>Age at Enrollment (22 omitted)</i>			
21 years or younger	-0.03484 (0.0533)	-0.07463 (0.0767)	-0.00593 (0.0368)
23 years	0.01416 (0.0269)	-0.00686 (0.0453)	-0.03719 (0.0230)
24 years	0.01997 (0.0223)	0.00097 (0.0495)	-0.01827 (0.0245)
25 years	-0.01969 (0.0261)	-0.03945 (0.0668)	0.00098 (0.0280)
26 years	0.0087 (0.0275)	0.00297 (0.0761)	-0.00931 (0.0301)
27 years	0.017 (0.0288)	0.02587 (0.0683)	-0.03553 (0.0418)
28 years or older	-0.08333* (0.0348)	-0.09426 (0.0696)	-0.10601** (0.0404)

Table 3.3 (Continued)

Father's Education (Bachelor's Degree Omitted Category)

Less than High School	0.05319 (0.0607)	0.15051 (0.1723)	0.05225 (0.0627)
High School Graduate	0.03613 (0.0424)	0.12467 (0.0927)	0.00991 (0.0487)
Some College	0.01564 (0.0343)	0.08039 (0.0679)	-0.02239 (0.0411)
Some Graduate School	0.00701 (0.0456)	-0.0871 (0.1114)	0.0242 (0.0466)
Master's Degree	0.00945 (0.0236)	0.03155 (0.0473)	-0.01873 (0.0285)
Doctoral Degree	0.0245 (0.0285)	0.03255 (0.0575)	0.01064 (0.0336)

Mother's Education (Bachelor's Degree Omitted Category)

Less than High School	0.03336 (0.0546)	0.08936 (0.1206)	0.00599 (0.0625)
High School Graduate	-0.03309 (0.0394)	-0.02915 (0.0841)	-0.03108 (0.0456)
Some College	0.0385 (0.0277)	-0.06665 (0.0708)	0.07776** (0.0290)
Some Graduate School	-0.03776 (0.0530)	0.10194 (0.0981)	-0.10059 (0.0821)
Master's Degree	0.02689 (0.0249)	0.08132+ (0.0484)	0.00808 (0.0308)
Doctoral Degree	0.05231 (0.0375)	0.0271 (0.0782)	0.07515+ (0.0426)

Observations	1812	519	1293
Pseudo R-squared	0.076	0.112	0.078

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Standard errors in parentheses

Descriptive Statistics

Table 3.4 summarizes student characteristics by advisor gender using the full sample of PhDs, current students, and leavers. Based on t-tests, there is no difference between female students matched with male faculty advisors and female students matched with female faculty

Table 3.4

Summary Statistics and T-tests of Students with Male and Female Advisors
(Includes PhDs, Leavers & Current Students)

	<i>Male Students</i>			
	Male Advisor	Female Advisor	Diff	T-stat
	Mean	Mean		
GRE Verbal Score	563.9482	571.7172	-7.769	(-0.66)
GRE Quantitative Score	763.6933	756.9697	6.724	(1.16)
US Citizen	.5487042	.5913043	-0.0426	(-0.87)
Non-white US Citizen	.1277927	.1217391	0.00605	(0.19)
Age at Enrollment	24.03485	23.73043	0.304	(1.14)
Father's Education	4.665414	4.666667	-0.00125	(-0.01)
Mother's Education	4.050467	4.15625	-0.106	(-0.48)
Research Assistantship	.401335	.4668737	-0.0655*	(-1.97)
Teaching Assistantship	.3388458	.2748861	0.0640	(1.93)
Fellowship	.1924148	.1948758	-0.00246	(-0.09)

	<i>Female Students</i>			
	Male Advisor	Female Advisor	Diff	T-stat
	Mean	Mean		
GRE Verbal Score	576.6981	582.1918	-5.494	(-0.41)
GRE Quantitative Score	739.8742	739.4521	0.422	(0.05)
US Citizen	.6	.6321839	-0.0322	(-0.56)
Non-white US Citizen	.1443038	.1494253	-0.00512	(-0.12)
Age at Enrollment	23.80506	24.09195	-0.287	(-0.81)
Father's Education	4.923729	5.016667	-0.0929	(-0.39)
Mother's Education	4.351695	4.633333	-0.282	(-1.21)
Research Assistantship	.368877	.326902	0.0420	(1.08)
Teaching Assistantship	.3205885	.3580186	-0.0374	(-0.99)
Fellowship	.2604568	.2614258	-0.000969	(-0.03)

advisors on the following student characteristics: GRE scores, Citizenship, Non-white US Citizenship, Age, and parental education. Likewise, there is no difference in observable characteristics between male students advised by male faculty and male students matched with female faculty.⁷ Thus, there appears to be no observed ability difference between students who

⁷ T-tests limited to PhDs also yield no observable difference by advisor gender.

are matched with male advisors and students matched with female advisors that could potentially be used to explain differences in outcomes. Additionally, the data indicate that male and female faculty advisors have access to and pair with students of similar abilities.

I also conduct t-tests on the type of financial aid awarded by student and advisor gender. Nearly all students at this selective institution receive some form of aid during their program of study: fellowship, research assistantship, or teaching assistantship. There is no difference in the type and proportion of aid received among women with male or female advisors. In contrast, male students with female advisors are more likely to receive research assistantships than male students matched with male advisors.

METHODS

The primary outcomes of interest are likelihood of completion, number of publications, time to degree, and academic job placement within 6 months of receiving the doctorate. The methods employed are described below followed by a general description of the explanatory and control variables. The impact of gender match is estimated using two models: 1. whether the individual is paired with a female or male faculty dissertation chair and whether the individual is paired with at least one female minor committee member, and 2. whether the individual has at least one female dissertation committee member (either chair or minor member).

Likelihood of Completion

Since the outcome is a binary variable (1 = complete, 0 = withdraw), the likelihood of completion is estimated using logit regression.⁸ The sample includes PhD recipients and leavers

⁸ There are too few observations in some of the categories to utilize a multinomial logit model.

who entered between 1999 and 2004,⁹ and omits current students as it is not clear whether these students will eventually complete or withdraw. Also, given that the primary variable of interest is advisor gender, only individuals who have officially submitted their faculty chair or full committee selections to the Graduate School are included. Two models are presented to estimate the impact of gender match using the following explanatory variables: 1. Female chair and at least one female minor member, and 2. At least one female faculty advisor (either chair or minor member).

Control variables for all models include proportion of female faculty in the department at the time of student's entry, GRE quantitative score, United States Citizenship, Non-white United States Citizenship, Age, entry year, and dummy variables controlling for departments and missing observations. The regression equation for Model 1 is:

$$Y_i = \alpha + \beta \text{Female}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log (Pr (graduate)/Pr (withdraw)), "Female" is the explanatory variable indicating a gender match with dissertation chair, and X is the vector for explanatory/control variables. Model 2 is the same except that "Female" is the explanatory variable indicating that the student's committee is composed of at least one female faculty.

Number of Publications

Research productivity is measured as the number of sole or first author refereed journal articles published or accepted for publication during the PhD program. The impact of female faculty on publications is estimated using negative binomial regression with the following equation:

⁹ Given the nuances of data collection, 1999 is the first year that data for the entire entering cohort is available.

$$Y_i = \alpha + \beta \text{Female}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log of the number of articles, “Female” represents the explanatory variable indicating whether the chair is female for model 1 or whether the committee is composed of at least one female faculty member for model 2, and X is the vector of control variables.

The control variables are proportion of female faculty in the department at the start of student’s PhD program, GRE quantitative score, US Citizenship, Non-white US Citizenship, Age, financial aid, advisor attitude towards dissertation completion, program duration in years, frequency of meetings during the dissertation proposal, research, and writing stages, and dummy variables for departments and missing observations. The sample consists of only doctorates.

Time to Degree

Conditional on completing the doctorate, the outcome variable, time to degree, is measured as the number of years that elapse from the time of entry to the year of completion.

The effect of female faculty on time to degree is estimated with ordinary least squares regression using the following equation:

$$Y_i = \alpha + \beta \text{Female}_i + \delta X_i + \varepsilon_i$$

where Y_i is the number of years to completion, “Female” is the explanatory variable indicating “female advisor” for model 1 or “at least one female minor member” for model 2, and X is the vector of control variables.

The model incorporates the proportion of female faculty at time of the student’s entry, GRE quantitative score, US Citizenship, Non-white US Citizenship, advisor attitude toward dissertation completion, frequency of meetings during the different dissertation stages, and dummy variables for departments, age, and missing observations as control variables. Although age is not of primary interest and serves only as a control variable, here it is dummy coded because it is hypothesized that the relationship between age and time to degree may not be linear.

Academic Job Placement

Oftentimes STEM doctorates intending to pursue tenure-track faculty positions first assume post-doctoral research positions. These “gateway” positions tend to improve competitiveness in the academic market as additional research experience, mastery of new skills, increased publications and/or grant funding, and other experiences are commonly obtained. As such, the outcome dummy variable, academic job placement is equivalent to “1” if the doctorate accepts a tenure-track faculty position or post-doctoral position at a four year research institution within 6 months of receiving the PhD.

Logit regression models are estimated using the following equation:

$$Y_i = \alpha + \beta \text{Female}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log (Pr (academic job)/Pr (other)), “Female” is the explanatory variable indicating “female advisor” for model 1 or “at least one female minor member” for model 2, and X is the vector for independent variables.

Control variables include proportion of female faculty, GRE quantitative score, US Citizenship, Non-white US Citizenship, Age, number of journal articles, financial aid, program duration, and dummy variables for departments and missing observations.

Description of Independent Variables

- Female Chair – Dummy variable indicating the gender of the dissertation committee faculty chair (0 = male, 1 = female). Dissertation chair ordinarily supervises dissertation work and provides research facilities and resources.
- One Female Minor Member – Dummy variable indicating that there is at least one female faculty serving as a minor member on the dissertation committee. Minor members represent student’s minor subjects.

- One Female Advisor – Equivalent to “1” if there is at least one female faculty on the dissertation committee serving as chair or minor member.
- Proportion of Female Faculty – the proportion of female faculty in the student’s department at time of entry.¹⁰
- GRE Quantitative score – test score required for admission to a PhD program measured on a scale of 200 to 800 points in 10-point increments.
- Number of publications – number of peer-reviewed journal articles published or accepted for publication *during* the PhD program.
- International – Binary variable that equals “1” if student is not a United States Citizen or permanent resident (foreign/international student).
- Non-white US citizen – includes American Indian, Asian American, African American, Hispanic, multiracial, and other ethnic categories. White US citizen is the omitted category.
- Age – Student’s age in years at entry. It is continuous and primarily used as a control variable. The square of age is not included in the regressions since age and age-squared are highly correlated (0.99).
- Financial Aid – Almost all students in the sample are awarded some combination of research assistantships (RA), teaching assistantships (TA), and/or fellowships during graduate study. Proportion of RAships is the number of research assistantships divided by the total number of RAships, TAs, and fellowships. Proportion of TAs is

¹⁰ The square of proportion of female faculty is not included since it is highly correlated with proportion of female faculty at (0.984).

calculated similarly and proportion of fellowships is the omitted category. The proportions of each type of aid equal 1 when summed.

- Advisor Attitude Toward Dissertation Completion – Participants were asked if their advisor encouraged them to: 1. Publish dissertation, 2. Polish dissertation, or 3. Finish quickly.
- Program Duration – Number of years that have elapsed from the time of entry to the time of graduation or withdrawal. Program duration for current students is the time elapsed between entry and the survey date.
- Frequency of meetings – Binary variable indicating whether student met with dissertation chair at least two or more times during the dissertation proposal, research, and writing stages.
- Number of Female Faculty in Department – the actual raw number of female faculty by department and entry year. One female faculty member is the omitted category.

Advisor Attitudes and Frequency of Meetings

As described above, some of the regression models incorporate advising attitudes toward dissertation completion and frequency of meetings during the different stages of dissertation preparation as explanatory/control variables for volume of publications and time to degree. Using logit regression, I estimate whether there is a difference between female and male dissertation chairs in exhibiting particular attitudes toward dissertation completion or in frequency of meetings by advisee gender. Tables 3.5 and 3.6 present the results. I find that compared to male dissertation chairs, female dissertation chairs are more likely to ask their female students to polish the dissertation by 0.08 percentage points, but to ask male students to

publish by 0.16 percentage points. Female dissertation chairs are also less likely than male dissertation chairs to encourage male advisees to finish quickly by 0.18 percentage points. Male and female dissertation chairs do not differ in the frequency of their meetings with advisees through the proposal, research, and writing stages.

Table 3.5
Advisor Attitude Toward Dissertation Completion
Logit Regression Marginal Effects

	Female PhD			Male PhD		
	<u>Publish</u>	<u>Polish, even if delay degree</u>	<u>Finish Quickly</u>	<u>Publish</u>	<u>Polish, even if delay degree</u>	<u>Finish Quickly</u>
	-			-		
Female Chair	-0.01243 (0.0608)	0.08260+ (0.0497)	0.01688 (0.0405)	0.15502*** (0.0406)	0.02591 (0.0450)	-0.18473* (0.0918)
Observations	314	314	314	642	642	642
Pseudo R-squared	0.000	0.009	0.001	0.020	0.001	0.020
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001						
Standard errors in parentheses						

Table 3.6
Frequency of Meetings
Logit Regression Marginal Effects
Binary Outcome = 1 if two or more meetings per month and 0 if fewer

	Female PhD			Male PhD		
Dissertation Stage	<u>Proposal</u>	<u>Research</u>	<u>Writing</u>	<u>Proposal</u>	<u>Research</u>	<u>Writing</u>
Female Chair	0.01322 (0.0661)	-0.031 (0.0701)	0.01397 (0.0580)	0.09644 (0.0623)	-0.04693 (0.0643)	0.02276 (0.0584)
Observations	322	322	322	649	649	649
Pseudo R-squared	0.000	0.000	0.000	0.003	0.001	0.000
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001						
Standard errors in parentheses						

RESULTS

Table 3.7 provides summary statistics of outcome variables. Regression results are presented by outcome of interest below.

Table 3.7 Summary Statistics of Outcome Variables					
Female Students					
	Mean	Std. Dev.	Count	Min	Max
Time To Degree	5.947368	1.293709	171	4	17
Time to Attrition	1.754098	1.362054	61	0	8
Number of Publications during PhD	3.164948	2.808768	97	0	11
Academic Track Job 6 months after PhD	.4949495	.5025189	99	0	1
Male Students					
	Mean	Std. Dev.	Count	Min	Max
Time To Degree	5.707753	1.195976	503	4	15
Time to Attrition	1.809524	1.677439	168	0	9
Number of Publications during PhD	3.720648	2.900606	247	0	11
Academic Track Job 6 months after PhD	.4183267	.49427	251	0	1

Likelihood of Completion

The average completion rate and average time to degree by department is summarized in Table 3.8.¹¹ The summary is calculated using data from entering cohorts 1987 through 2008 and ends when at least 90% of the cohort leaves the program through graduation and otherwise. Completion rates range from 68% in Civil Engineering to 83% in Biochemistry and Biology. The average completion rate across all departments in the sample is 75%.

¹¹ Appendix C summarizes the percentage of male and female students who graduate and who leave by advisor gender. 88% of women gender matched with women faculty chairs attain the PhD compared to 80% of women matched with men faculty chairs. 15% of women with male dissertation chairs leave the program compared to 7% of women matched with female dissertation chairs.

Table 3.8
Completion Rate and Average Time to Degree by Department

Department	Completion Rate	Avg Years to Degree
Biochemistry	83%	6
Biology	83%	6.5
Chemistry	73%	5.3
Chemical Engineering	77%	5.4
Civil Engineering	68%	5.1
Electrical Engineering	76%	5.2
Mathematics	69%	5.5
Mechanical Engineering	70%	5.1
Physics	75%	6.2
Average Across Departments	75%	5.6

Data source: Graduate School Administrative Records

A gender match with faculty chair or with one minor member does not affect women's likelihood of completion contrary to my hypothesis that a gender match should lead to improved outcomes based on ingroup bias theory. The gender of the faculty chair also does not impact men's likelihood of completion (Table 3.9). While advisor gender does not have a direct impact on female students' graduation probabilities via formal mentorship or advising on the dissertation committee, the proportion of female faculty in the department is positively associated with completion of the PhD degree for female students. All else held constant, a one percent increase in the proportion of female faculty increases a woman's likelihood of completion by 17.6 percentage points in Model 1 and by 24.9 percentage points in Model 2. This magnitude is significant given that the average completion rate is 75% across the sample. A percentage increase in the proportion of female faculty may not be a small matter either; the proportion ranges from 2.27% to 28.57% with a mean of 9.90 and standard deviation of 6.20.

Among men, non-white US citizens are less likely to complete the degree by 0.09 to 0.10 percentage points, everything else held constant. For both men and women, increasing age negatively impacts graduation probabilities by about 0.02 percentage points, all else equal. Older students are generally more likely to experience life course events that can delay or derail their progress.

Table 3.9
Likelihood of Completion
Logit Regression Marginal Effects

	<u>Female Students</u>		<u>Male Students</u>	
	1	2	1	2
Female Chair	-0.02698 (0.0780)		0.05287 (0.0701)	
One Female Minor Member	0.11877 (0.0948)		-0.04903 (0.0382)	
One Female Advisor		0.12283 (0.0803)		0.04306 (0.0472)
Proportion of Female Faculty	0.17621+ (0.1043)	0.24933+ (0.1328)	-0.01785 (0.0118)	-0.00898 (0.0130)
GRE Quantitative Score	0.00009 (0.0007)	0.00004 (0.0006)	0.00049+ (0.0003)	0.00057 (0.0003)
International	0.08285 (0.0666)	0.03037 (0.0666)	0.01953 (0.0328)	-0.00824 (0.0373)
Non-white US citizen	-0.08955 (0.0712)	-0.05022 (0.0897)	-0.10072** (0.0351)	-0.08834+ (0.0480)
Age	-0.02316+ (0.0127)	-0.02444+ (0.0126)	-0.00899* (0.0038)	-0.02178*** (0.0055)
Departments	YES	YES	YES	YES
Entry Year	YES	YES	YES	YES
Observations	113	142	368	451
Pseudo R-squared	0.260	0.205	0.151	0.128

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Standard errors in parentheses

Sample Includes PhDs and Leavers who started PhD programs 1999-2004

Students who did not select an advisor are not included

Number of Publications

The mean number of peer-reviewed journal articles published or accepted for publication during doctoral study is 3.16 for female PhDs and 3.72 for male PhDs (Table 3.7). The negative binomial regression results indicate that female advisors have a weak negative effect on number of publications. All else equal, female PhDs gender matched with female faculty chairs publish 1.29 fewer articles ($p < 0.10$) while dissertation chair gender does not impact male PhDs. Both men and women publish fewer articles when there is at least one female minor member on the committee: 1.13 and 1.43 fewer, respectively. Model 2 shows that at least one female faculty member on the committee either as chair or minor member reduces women's publications by 1.2 articles, *ceteris paribus* (Table 3.10).

Program duration does not affect volume of publications, but advisor attitude toward dissertation completion and the frequency of meetings differentially impact men and women's research productivity. Among women, number of articles increase by 1.29 if dissertation chair encourages publication and by 2.61 if dissertation chair meets at least twice a month during the research stage, all else equal. Meeting more frequently during the dissertation writing stage, however, reduces publications by 1.83 articles (Model 1). Women PhDs also tend to publish more when they have more fellowships relative to research and teaching assistantships. Among men, advisor attitude toward dissertation completion is a predictor of research productivity; advisors who encourage publishing increase peer-reviewed articles by 1.03 units (Model 2), whereas encouraging finishing quickly reduces publications by 0.97 units (Model 1), everything else held constant. Frequency of meetings and proportion of research or teaching assistantships do not affect men's publication rate.

Table 3.10
Volume of Publications during the PhD program
Negative Binomial Regression Marginal Effects

	<u>Model 1</u>		<u>Model 2</u>	
	Women	Men	Women	Men
Female Chair	-1.29458+ (0.6808)	0.08678 (0.6706)		
One Female Minor Member	-1.43296+ (0.7587)	-1.13347+ (0.5823)		
One Female Advisor			-1.20307* (0.5982)	-0.57654 (0.4682)
Proportion of Female Faculty	0.34254 (0.2698)	-0.03603 (0.1207)	0.32321 (0.2718)	-0.01687 (0.1188)
GRE Quantitative Score	0.00339 (0.0061)	0.00449 (0.0046)	0.0068 (0.0055)	0.00355 (0.0044)
International	0.76452 (0.6575)	0.18664 (0.4364)	0.62052 (0.6553)	0.09321 (0.4253)
Non-white US Citizen	0.89935 (0.8354)	-0.47414 (0.6504)	0.80463 (0.8264)	-0.39287 (0.6364)
Age at Enrollment	-0.05285 (0.1109)	-0.09336 (0.0864)	-0.03326 (0.1117)	-0.08668 (0.0837)
Departments	YES	YES	YES	YES
<u>Financial Aid (Fellowship Omitted)</u>				
Research Assistantship	-1.97987+ (1.1263)	0.84478 (0.8367)	-1.91567+ (1.1359)	0.91405 (0.8152)
Teaching Assistantship	-2.2108 (1.3676)	0.0389 (0.9554)	-2.47282+ (1.3833)	0.01975 (0.9334)
<u>Advisor Attitude Toward Dissertation Completion</u>				
Publish Dissertation	1.29083+ (0.6950)	0.95911+ (0.5080)	1.39320* (0.7006)	1.03146* (0.4943)
Polish Dissertation	-0.39226 (0.7575)	0.31413 (0.4726)	-0.40146 (0.7583)	0.38583 (0.4692)
Finish Quickly	0.14927 (0.7974)	-0.97170+ (0.5767)	0.13417 (0.7998)	-0.92345 (0.5689)

Table 3.10 (Continued)

<i><u>Program Duration (6 years omitted)</u></i>				
4 years	-0.89876 (1.8801)	0.74294 (0.6865)	-1.17031 (1.8931)	0.90763 (0.6736)
5 years	-0.86585 (0.6613)	-0.08471 (0.4194)	-0.94447 (0.6693)	0.00036 (0.4117)
7 years	-0.1563 (1.0144)	-0.80761 (0.6182)	-0.51788 (1.0161)	-0.75869 (0.6108)
8 years or more	-1.44169 (1.3863)	-0.01256 (0.7779)	-1.66287 (1.3984)	-0.00748 (0.7721)
<i><u>Frequency of Meetings (at least 2 times per month)</u></i>				
Proposal Stage	-1.19118 (0.8195)	0.06864 (0.5000)	-1.32451 (0.8114)	0.13838 (0.4955)
Research Stage	2.60554** (0.9745)	0.60067 (0.4801)	2.48649* (0.9817)	0.52946 (0.4744)
Writing Stage	-1.82707* (0.7325)	-0.55768 (0.4648)	-1.59939* (0.7264)	-0.52939 (0.4614)
Observations	95	241	96	245
Pseudo R-squared	0.138	0.066	0.133	0.064

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Standard errors in parentheses

Departments and Missing Dummy Variables Not Shown

Time to Degree

Conditional on completing the PhD, a female chair or at least one female faculty member on the dissertation committee does not significantly impact time to degree for either male or female PhDs. Rather, the proportion of female faculty in the department at the time of entry reduces the number of years to completion for men and women; all else equal, each unit increase in the proportion of female faculty reduces time to degree by about 0.08 to 0.09 years (Table 3.11). The average time to degree for this sample is 5.95 years for women and 5.71 years for men (Table 3.7). Advisor attitude and frequency of meetings also reduce time to degree. Among women, advisors who encourage finishing the dissertation quickly shorten the time to

degree by about 0.8 years while meeting with advisors at least 2 times per month during the proposal stage shortens program duration by about 0.6 years, all else equal. Among men, advisors who encourage polishing the dissertation increase program duration by about 0.37 years and a unit increase in the proportion of research assistantships compared to fellowships lengthens program duration by about 0.48 years, everything else held constant.¹²

Table 3.11
Time To Degree
Ordinary Least Squares Regression

	<u>Model 1</u>		<u>Model 2</u>	
	Women	Men	Women	Men
Female Chair	0.295 (0.191)	0.103 (0.168)		
One Female Minor Member	-0.167 (0.178)	0.0488 (0.135)		
One Female Advisor			0.102 (0.146)	0.0726 (0.114)
Proportion of Female Faculty	-0.0951+ (0.0512)	-0.0816** (0.0302)	-0.0932+ (0.0510)	-0.0771* (0.0299)
GRE Quantitative Score	0.000361 (0.00156)	-0.00177 (0.00110)	0.000187 (0.00143)	-0.00160 (0.00108)
International	-0.218 (0.188)	-0.219* (0.111)	-0.245 (0.187)	-0.206+ (0.110)
Non-white US Citizen	0.0616 (0.225)	0.311+ (0.177)	-0.00417 (0.223)	0.302+ (0.175)
Departments	YES	YES	YES	YES
<i><u>Financial Aid (Fellowship Omitted)</u></i>				
Research Assistantship	0.437 (0.323)	0.479* (0.207)	0.501 (0.322)	0.481* (0.204)
Teaching Assistantship	-0.0497 (0.375)	0.349 (0.235)	-0.120 (0.364)	0.323 (0.232)

¹² I also tested whether a critical mass of female faculty impacts time to degree using categorical variables indicating the number of female faculty (2, 3, 4, and 5 or more) with 1 as the omitted category. Departments with 2, 4, and 5 or more female faculty compared to 1 female faculty tend to shorten program duration for both men and women PhDs.

Table 3.11 (Continued)

<i>Age at Enrollment (22 omitted)</i>				
21 years or younger	0.0270 (0.254)	0.402* (0.197)	0.0793 (0.249)	0.411* (0.197)
23 years	-0.0291 (0.191)	0.0912 (0.125)	-0.00562 (0.188)	0.112 (0.123)
24 years	-0.0984 (0.228)	-0.0414 (0.148)	-0.110 (0.227)	-0.0311 (0.148)
25 years	0.802** (0.300)	0.274 (0.184)	0.811** (0.301)	0.286 (0.183)
26 years	-0.373 (0.384)	0.129 (0.205)	-0.408 (0.383)	0.142 (0.204)
27 years	-0.602 (0.421)	-0.121 (0.306)	-0.583 (0.424)	-0.106 (0.306)
28 years or older	0.214 (0.309)	-0.122 (0.189)	0.317 (0.295)	-0.109 (0.185)
<i>Advisor Attitude Toward Dissertation Completion</i>				
Publish Dissertation	0.0323 (0.257)	0.0807 (0.191)	0.0645 (0.257)	0.0660 (0.188)
Polish Dissertation	0.140 (0.244)	0.366* (0.179)	0.155 (0.245)	0.372* (0.179)
Finish Quickly	-0.848** (0.263)	0.0410 (0.200)	-0.821** (0.261)	0.0283 (0.198)
<i>Frequency of Meetings (at least 2 times per month)</i>				
Proposal Stage	-0.628* (0.256)	0.0842 (0.186)	-0.588* (0.256)	0.0879 (0.185)
Research Stage	0.475 (0.325)	-0.197 (0.178)	0.536+ (0.323)	-0.179 (0.177)
Writing Stage	-0.218 (0.260)	0.00307 (0.170)	-0.285 (0.254)	0.00000873 (0.170)
Constant	5.773*** (1.153)	6.772*** (0.872)	5.888*** (1.073)	6.613*** (0.852)
Observations	166	491	170	498
Adjusted R-squared	0.291	0.212	0.277	0.209

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Standard errors in parentheses

Departments and Missing Dummy Variables Not Shown

Academic Job Placement

49% of female PhDs and 42% of male PhDs obtained post-doctoral or tenure-track faculty positions in four-year research institution within 6 months of receiving the doctorate (Table 3.7). The gender of the faculty chair and the gender composition of the dissertation committee do not make a difference in the likelihood of placement in an academic position for either men or women. Yet, it is not clear from the data whether the PhDs intended to pursue academic careers, if they applied for academic positions, or if they selected other types of employment.¹³

Publications are positively associated with higher probability of obtaining a post-doctoral or tenure-track faculty position. For men, an additional peer-reviewed journal article increases the probability of academic job placement by about 2 percentage points ($p < 0.10$), all else equal. For women, each unit increase in publications during the PhD leads to about 4 percentage increase in the likelihood of obtaining an academic position, everything else held constant.

All else equal, a unit increase in the GRE quantitative score leads to a 0.3 percentage point greater likelihood of securing academic employment for women. Also, shorter program durations do not necessarily lead to academic employment for women. Women who graduate in 5 years, which is one year earlier than the mode of 6 years, are 19 or 22 percentage points less likely to accept an academic job (Table 3.12).

Based on the estimates in Table 3.12, the proportion of female faculty does not impact academic employment probability. Since departments explain 92% of the variation in the proportion of female faculty, I also present a model without controlling for departments. When

¹³ In general, the assumption is that doctoral students intend to pursue academic careers; although this may not necessarily be the case in engineering fields (Nerad in Ehrenberg & Kuh, 2009; Golde & Dore, 2001).

Table 3.12
Academic Job Placement Within 6 Months of PhD
Logit Regression Marginal Effects

	<u>Model 1</u>		<u>Model 2</u>	
	Women	Men	Women	Men
FemaleChair	0.16144 (0.1350)	0.01196 (0.1150)		
OneFemMinorMem	-0.13671 (0.1507)	-0.10129 (0.0993)		
OneFemAdvisor			0.08225 (0.1137)	-0.06365 (0.0802)
Proportion of Female Faculty	-0.00931 (0.0493)	-0.011 (0.0220)	-0.01274 (0.0489)	-0.00582 (0.0219)
GREQuant	0.00262* (0.0013)	-0.00001 (0.0008)	0.00272* (0.0012)	0.00006 (0.0007)
International	0.17503 (0.1153)	-0.04243 (0.0748)	0.15089 (0.1160)	-0.06227 (0.0736)
NonWhiteUSCit	0.2267 (0.1679)	-0.0917 (0.1063)	0.12984 (0.1604)	-0.12544 (0.1050)
Age	-0.01011 (0.0204)	0.0087 (0.0143)	-0.00945 (0.0212)	0.00401 (0.0140)
Publications	0.03616+ (0.0198)	0.01969+ (0.0108)	0.04262* (0.0206)	0.02030+ (0.0107)
Departments <i>Financial Aid (Fellowship Omitted)</i>	YES	YES	YES	YES
Research Assistantship	-0.11523 (0.2146)	-0.15194 (0.1396)	-0.09203 (0.2114)	-0.0971 (0.1382)
Teaching Assistantship	0.12754 (0.2283)	-0.08351 (0.1598)	0.10155 (0.2247)	-0.05315 (0.1580)
<i>Program Duration (6 years omitted)</i>				
4 years	-0.03827 (0.3121)	0.04216 (0.1264)	-0.02782 (0.3158)	0.05942 (0.1247)
5 years	-0.19540+ (0.1136)	0.01504 (0.0727)	-0.22087* (0.1110)	0.00684 (0.0718)
7 years	0.16393 (0.1895)	0.01354 (0.1023)	0.1561 (0.1932)	0.00457 (0.1016)
8 years or more	-0.19194 (0.2210)	-0.15094 (0.1354)	-0.21905 (0.2195)	-0.15386 (0.1349)
Observations	91	241	92	245
Pseudo R-squared	0.266	0.119	0.257	0.115

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Standard error in parentheses

Departments and Missing Dummy Variables Not Shown

Academic job includes post-doctoral and tenure-track faculty positions at a four-year institution.

departments are omitted from the model, each unit increase in the proportion of female faculty leads to an increase of 1.7 percentage points in women's likelihood of obtaining an academic position, *ceteris paribus* (Appendix D). Again, the proportion of female faculty does not impact men's academic job placement. While these results are not conclusive, there is some indication that the gender composition of faculty may matter for female students' academic job placement.

DISCUSSION

For female doctoral students in STEM fields, gender matching with the dissertation chair does not impact or improve graduation probability, time to degree, or academic job placement. These results are generally consistent with previous research on gender matching by Hilmer and Hilmer (2007) and Neumark and Gardecki (1998), who find no difference by advisor gender on female economics students' graduation probability or academic job placement. The limited impact of gender matching on educational and employment outcomes is supported by the value threat model. Since women are of numeric minority in STEM departments comprising only 9.9% of the faculty and 26% of doctoral students and STEM is historically a male-dominated field, the value threat model predicts that female faculty will not be as likely to exhibit ingroup preference. Therefore, given these results, it is possible that STEM female faculty do not provide female graduate students with preferential treatment based on fear of favoritism, collective, and/or competitive threat. On the other hand, it is also plausible that the absence of an effect suggests that there is no difference between male and female advisors on important educational outcomes despite women's historical association with lower categorical status in the sciences.

The proportion of female faculty positively affects women's graduation probabilities and time to degree, and when department controls are omitted from the regression model, academic job placement. Research on gender integration in large, private industry firms show that adding women in managerial roles improves the status of other women in the establishment and facilitates the inclusion of women and reduces the saliency of gender (Huffman, 2010). Likewise, a higher proportion of female faculty appears to improve student outcomes possibly through heightened visibility of positive demographically similar role models or an increased sense of belonging among female PhD students. It is also plausible that informal mentoring relationships are quite important; according to Trower (2010), "informal relationships arise organically, and because they are not part of a formal process, they may feel more natural, closer, more trusting and honest, which may be especially important to women in STEM, who are often in a numerical minority in their departments." The importance of proportion of female faculty lends support to initiatives designed to increase the number of women in STEM departments; recruiting more women as tenure-track faculty in STEM departments at four-year research institutions fosters gender equity in the professoriate and can also improve student outcomes.

Female students who are gender matched with dissertation chairs or at least one minor committee member tend to publish fewer articles. According to Xie and Shauman (2003), it has been repeatedly documented that women publish at lower rates than men in the sciences and that "women are less likely than men to have the personal characteristics, structural positions, and facilitating resources that are conducive to publication" although these differences are waning over the years (p. 192). Since male graduate students with one female minor member also publish fewer articles, differences in structural positions and facilitating resources between female and male faculty may help partially explain the gender matched female PhDs' lower rates

of publication. Additionally, female PhDs paired with tenured female faculty members are more likely to indicate that their dissertation chair encouraged them to polish their dissertation (rather than finish quickly or publish). It is possible that female faculty tend to encourage their advisees to spend more time writing, and/or perhaps “perfecting,” journal articles leading to fewer publications.

Although student-advisor gender match does not positively impact women graduate students’ likelihood of completion, time to degree, publication rate, or early job placement, the results indicate that advisor attitude toward dissertation completion and positive advising practices in terms of frequency of meetings lead to better outcomes, regardless of advisor gender. A dissertation chair who encourages publishing dissertation research increases number of publications for both female and male doctorates, while meeting more often during the dissertation research stage leads to more than 2 additional peer-reviewed articles for women PhDs. In regard to time to degree, female PhD students benefit from advisors who encourage finishing the dissertation quickly and who meet with them at least two or more times per month during the dissertation proposal stage. Thus, positive advising practices may be more important than ascriptive processes or demographic similarity in STEM women’s educational and employment outcomes.

CHAPTER 4

HUMANITIES AND HUMANISTIC SOCIAL SCIENCES

Since the positive effects predicted by social identity theory can be mediated by contextual factors, I also investigate the impact of faculty advisor-doctoral student gender match in Humanities and Humanistic Social Sciences (HHSS) departments as a comparison to STEM departments. Across higher education institutions in the United States, women comprise 49.4% of faculty in the Humanities and 38.6% in the Social Sciences. In contrast, only 8.2% of Engineering faculty are women (Humanities Indicators, 2008). Given the greater proportion of female faculty in HHSS departments, biases and barriers ordinarily associated with STEM and other male dominated fields should be attenuated (Tolbert et al., 1995). Women are less likely to be categorized as “lower status numeric minorities” in HHSS departments. Consequently, HHSS female faculty should be less prone to value threat. I therefore hypothesize that gender matching should positively impact HHSS female students’ educational and employment outcomes based on ingroup preference and social identity theory.

In addition to bolstering the analyses on gender matching in STEM fields, examining HHSS data contributes to the ongoing dialogue on the low completion rates and lengthy time to degree prevalent in HHSS fields. Based on the Council of Graduate Schools Program Completion and Attrition data (2007), the ten-year completion rate is 49.3% and 55.9% for Humanities and Social Sciences fields, respectively. Meanwhile, Engineering fields have a 63.6% and Life Sciences a 62.9% ten-year completion rate. Moreover, the Humanities field also contends with lengthy time to degree among doctorates. The median number of years to PhD completion in the Humanities is 9.3 compared to 7.8 for all fields (Humanities Indicators, 2009).

The comparatively low PhD completion rate and lengthy program duration in Humanities have attracted the interest of many educational researchers. Most notably, Bowen and Rudenstine (1992, p.3) called attention to the “intrinsic importance” of understanding the mechanisms and outcomes of doctoral education, as “doctoral education is, after all, the apex of this country’s system of higher education in the arts and sciences.” Beyond the intrinsic and incalculable value of understanding doctoral education programs, there are real consequences to high attrition rates for graduate students, doctoral programs, and higher education institutions in the form of time, effort, and financial investments.

Previous research on doctoral education examined numerous sources of variation in student outcomes: differences in financial support, program size, department culture, selection and admission of students, curricular processes and procedures, program examinations and requirements, professionalization and socialization, program quality, and mentoring and advising (Bowen & Rudenstine, 1992; Ehrenberg et al., 2010; Golde & Dore, 2001). Yet, there are limited studies on doctoral student-faculty advisor gender matching even though mentorship is a critical component of graduate study. Thus, I evaluate same gender mentorship as a method for increasing graduation probabilities, shortening time to degree, and improving other educational and employment outcomes in HHSS departments. In the process, I examine whether the impact of gender matching differs based on contextual factors such as organizational demography and climate.

DATA

The Humanities and Humanistic Social Sciences data consist of administrative records and survey responses collected by the Andrew W. Mellon Foundation as part of the Graduate

Education Initiative (GEI). The GEI was established in 1991 to help improve doctoral education in the humanities and social sciences by reducing student attrition and shortening time to degree. While other programs supporting doctoral education provided funding to individual students or to graduate schools, the Graduate Education Initiative focused on supporting departments. In exchange for funding, departments were required to review all aspects of their program, including curricula, examinations, advising, requirements, and timetables, as well as to develop a plan to increase graduation rates and shorten time to degree. Additionally, participating departments provided the Mellon Foundation with progress reports, departmental information, and student data (Ehrenberg et al., 2010). The ensuing Graduate Education Survey (GES)¹⁴ includes information on respondents' background, post-study employment, academic experiences, views on advising and departmental culture, experiences with teaching and research assistantships, and reasons for leaving the doctoral program. The dataset also contains student characteristics, program duration, and financial aid information provided by departments participating in the Graduate Education Initiative.

Participating departments include: Anthropology, Art History, Classics, Comparative Literature, East Asian Studies, English, Ethics, History, Medieval Studies, Music, Philosophy, Politics/Government, Religion, and Romance Languages. All of the departments are in highly ranked research institutions: 1. University of California, Berkeley, 2. University of Chicago, 3. Columbia University, 4. Cornell University, 5. Harvard University, 6. University of Michigan, Ann Arbor, 7. University of Pennsylvania, 8. Princeton University, 9. Stanford University, 10. Yale University, 11. University of California, Los Angeles, 12. University of California, San Diego, and 13. University of North Carolina, Chapel Hill. Different combinations of

¹⁴ See Appendix E for the GES. For a more comprehensive treatment of the HHSS data, please see Ehrenberg et al., 2010, *Educating Scholars*.

departments engaged in the GEI at each institution; for example, Art History, Classics, Comparative Literature, English, and History participated at University of California, Berkeley, whereas English, History, Philosophy, and Politics/Government partnered with GEI at University of Chicago.

The retrospective Graduate Education Survey was conducted between November 2002 and October 2003. All students who entered one of the participating doctoral programs between 1982 and 1996 received the survey. Thus, the sample includes current students at the time of the survey, individuals who already earned the PhD, and individuals who withdrew from the programs. 13,552 out of 18,320 individuals completed the survey resulting in a relatively high response rate of 74%.¹⁵ As the following analyses encompass only respondents who completed the PhD or withdrew from the doctoral program, it is worth noting that 81.3% and 62.8% of the members of each of these respective groups completed the survey. The lower response rate among leavers is due in part to the inability to locate 20% of the individuals in this group (Ehrenberg et al., 2010). Additionally, given the focus of this dissertation is on the gender match between graduate student and faculty advisor, I include only individuals who disclose their advisor's gender on the survey. Individuals were asked for their advisor's gender only if they have started the dissertation process in the same GEI department and institution where they entered. Among those eligible to respond to this question, 99% provided an answer (9,308 out of 9,381). Of the 73 individuals who did not respond, 52 are women compared to 21 men. Based on t-tests, there are no observable differences between responders and non-responders, except for

¹⁵ Given the high response rate, the data is reasonably representative of the population of interest. The present dataset does not include information on non-respondents, so it is not possible to determine whether there are differences between survey respondents and non-respondents. Many of the non-respondents withdrew from the PhD program 15-20 years prior to the survey and could not be located (Ehrenberg et al., 2010).

the minor gender imbalance and a difference in GRE math scores. Non-responders have a slightly higher average GRE math score by 29 points on a scale of 200 to 800 points with 10-point increments. Thus, bias arising from responders versus non-responders on the question of advisor gender is not of concern.

The remaining sample size consists of 7,834 PhDs and withdrawn students; 47% are women and 53% men.¹⁶ Women are more likely to have a female advisor. Among the PhDs, 33% (1,091) of the women are matched with female advisors, whereas only 16% (590) of the men are paired with a female advisor. Of the leavers/withdrawn students, 29% (112) of women are matched with a female advisor compared to 15% (61) of men are paired with a female advisor (Table 4.1).

Table 4.1
Description of Sample

	<u>Female Phd</u>		<u>Male Phd</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Male Advisor	2183	67%	3159	84%
Female Advisor	1091	33%	590	16%
Total	3274		3749	

	<u>Female Leaver</u>		<u>Male Leaver</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Male Advisor	280	71%	358	85%
Female Advisor	112	29%	61	15%
Total	392		419	

¹⁶ I drop PhDs who complete the degree in 3 years or less, as it is likely that they may have rejoined the department after a leave of absence and their actual total program duration is unknown.

Gender Matching

Table 4.2 presents the logit regression estimates on the likelihood of matching with a female faculty advisor. Consistent with role model, social identity, similarity-attraction, and social cognitive theories whereby individuals prefer demographically similar others (Bandura, 1986; Gibson, 2004; Marx & Roman, 2002; Quimby, 2006; Tajfel & Turner, 1984), women doctoral students are more likely to match with women faculty advisors. All else equal, compared to men, women are 12 percentage points more likely to match with women faculty. Additionally, a one unit increase in GRE Verbal score leads to a 0.024 percentage point increase in matching with a female faculty advisor, whereas a one unit increase in the GRE Math score leads to a 0.015 decrease in the likelihood of pairing with a female faculty advisor, everything else held constant. Similar to the STEM results, older students are less likely to work with female faculty advisors. Students married at the time of entry are also more likely to work with male faculty advisors.

When I analyze the likelihood of matching with female advisors separately by student gender, I find that GRE Verbal score still matters for both men and women, but GRE Math score matters only for women. Also, men who are US citizens are 4.2 percentage points less likely to pair with female faculty advisors, while women who have a prior Master's degree are 3.8 percentage points less likely to match with women faculty, *ceteris paribus*. In contrast to STEM where mother's education plays a role in advisor selection/matching, father's education matters among women students in HHSS. A jump from a bachelor's to a doctorate degree in father's education level increases women's likelihood of matching with male faculty by 5.3 percentage points.

Table 4.2
Likelihood of Matching with a Female Advisor by Student Gender
Logit Regression Marginal Effects

	Full Sample	Female Student	Male Student
Female Student	0.12024*** (0.0093)		
GRE Verbal Score	0.00024*** (0.0001)	0.00029** (0.0001)	0.00017* (0.0001)
GRE Math Score	-0.00015** (0.0001)	-0.00031*** (0.0001)	-0.00002 (0.0001)
US Citizen	-0.02064 (0.0182)	0.0076 (0.0304)	-0.04221* (0.0213)
Prior Master's Degree	-0.01583 (0.0116)	-0.03817* (0.0190)	0.00523 (0.0136)
Age at Enrollment	-0.00233* (0.0011)	-0.00333* (0.0017)	-0.00166 (0.0014)
African American	0.01185 (0.0231)	0.00295 (0.0352)	0.01633 (0.0313)
Native American	-0.08749 (0.0696)	-0.14425 (0.1096)	-0.03667 (0.0865)
Asian American	-0.02125 (0.0215)	-0.04838 (0.0324)	0.01405 (0.0284)
Hispanic	-0.00401 (0.0226)	-0.01821 (0.0381)	0.01073 (0.0259)
Married at Matriculation	-0.02718* (0.0126)	-0.03893+ (0.0202)	-0.01689 (0.0156)
Children at Matriculation	0.00195 (0.0200)	-0.01533 (0.0329)	0.01172 (0.0238)
% Female Students in Cohort	-0.00537 (0.0269)	0.02563 (0.0446)	-0.03315 (0.0331)

Table 4.2 (Continued)

Father's Education (Bachelor's Degree Omitted Category)

Less than High School	0.02901 (0.0231)	0.01522 (0.0390)	0.03121 (0.0271)
High School Graduate	0.00028 (0.0189)	-0.01681 (0.0315)	0.01004 (0.0224)
Some College	0.0191 (0.0177)	0.00915 (0.0285)	0.02598 (0.0220)
Some Graduate School	0.01518 (0.0235)	0.01331 (0.0363)	0.01286 (0.0309)
Master's Degree	-0.00132 (0.0130)	-0.0195 (0.0208)	0.01269 (0.0161)
Doctoral Degree	-0.03000* (0.0152)	-0.05340* (0.0242)	-0.00978 (0.0191)

Mother's Education (Bachelor's Degree Omitted Category)

Less than High School	-0.0219 (0.0229)	-0.03015 (0.0377)	-0.0187 (0.0275)
High School Graduate	0.00174 (0.0155)	0.01664 (0.0252)	-0.01448 (0.0190)
Some College	-0.0072 (0.0141)	-0.00717 (0.0230)	-0.00973 (0.0170)
Some Graduate School	0.00085 (0.0191)	0.00285 (0.0300)	-0.00235 (0.0243)
Master's Degree	-0.00407 (0.0125)	-0.00061 (0.0198)	-0.00818 (0.0156)
Doctoral Degree	0.01252 (0.0202)	0.01386 (0.0316)	0.00658 (0.0258)
Observations	9199	4374	4825
Pseudo R-squared	0.088	0.062	0.067

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Sample includes Current Students, PhDs, and Leavers

Student Characteristics by Advisor Gender

Table 4.3 summarizes respondent characteristics by student and faculty advisor gender. There is no statistical difference between female graduate students matched with female advisors and female graduate students paired with male advisors in terms of parental education and ethnic background. Compared to women paired with male advisors, women matched with female PhD advisors have higher GRE verbal scores, lower GRE math scores, are more likely US citizens, are slightly younger, and are less likely to have a previous Master's degree upon starting the PhD program. Regardless, these differences are small or negligible despite statistical significance. To illustrate, the two groups differ by about 12 to 13 points on the GRE Verbal and GRE Math tests, which is scored on a 200 to 800 scale in 10-point increments. There are 3.4% more U.S. citizens with female advisors while there are 4.4% more women with a previous Master degree working with male advisors. And the two groups differ in age by only 4.8 months, but the mean age for both groups is 25 years old. Male graduate students also do not differ in practice by advisor gender. Male graduate students paired with female advisors scored, on average, 13 more points on their GRE verbal score than male graduate students matched with male advisors, but again, the difference is minimal given the scale and scoring rubric of the GRE test. Also, among male students matched with male advisors, 88% are Caucasian; whereas among male students matched with female advisors, 85% are Caucasian. Otherwise, the two groups do not differ statistically in the observed characteristics tested.

Table 4.3

Summary Statistics and T-tests of Students with Male and Female Advisors

Female Students				
	Male Advisor	Female Advisor		
	Mean	Mean	Difference	T-stat
GRE Verbal Score	673.5765	686.3859	-12.81***	-3.49
GRE Math Score	618.497	606.3433	12.15**	2.96
US Citizen	.8748985	.9091667	-0.0343**	-3.07
Prior Master's Degree	.2678304	.2242798	0.0436*	2.56
Age at Enrollment	25.9127	25.5122	0.401*	2.20
Father's Education	4.982794	4.924497	0.0583	0.90
Mother's Education	4.175941	4.215	-0.0391	-0.64
Caucasian	.8461538	.8434959	0.00266	0.19
African American	.0474961	.0609756	-0.0135	-1.55
Native American	.0056789	.004065	0.00161	0.58
Asian American	.0588539	.0558943	0.00296	0.32
Hispanic	.0418172	.0355691	0.00625	0.82
<i>Factors Indicated as Most Important In Selecting a Doctoral Program</i>				
Faculty	.2874564	.2796082	.0078483	.477383
Program Reputation	.4348555	.428815	.0060405	.341811
Financial Aid	.1947995	.2057502	-.0109508	-.7502004
Location	.1191111	.1146497	.0044614	.3761615
Program Attributes	.0358007	.0363815	-.0005808	-.0813847
Withdrawn Students	0.095792	0.0771881	0.0186038*	2.03
N	2,463	1,203		
%	67%	33%		

Table 4.3 (Continued)

	Male Students			
	Male Advisor	Female Advisor	Difference	T-stat
	Mean	Mean		
GRE Verbal Score	676.0135	688.9804	-12.97**	(-2.85)
GRE Math Score	655.0348	655.3137	-0.279	(-0.06)
US Citizen	.8514091	.8410494	0.0104	(0.68)
Prior Master's Degree	.2810206	.2791128	0.00191	(0.09)
Age at Enrollment	25.92216	25.58025	0.342	(1.75)
Father's Education	4.785509	4.801242	-0.0157	(-0.19)
Mother's Education	3.987966	4.058642	-0.0707	(-0.95)
Caucasian	.8789272	.8461538	0.0328*	(2.03)
African American	.0333333	.0433925	-0.0101	(-1.13)
Native American	.0034483	.0059172	-0.00247	(-0.82)
Asian American	.0356322	.0453649	-0.00973	(-1.06)
Hispanic	.048659	.0591716	-0.0105	(-0.99)
<i>Factors Indicated as Most Important In Selecting a Doctoral Program</i>				
Faculty	.332023	.2968491	.0351739	1.693994
Program Reputation	.4478617	.4794953	-.0316335	-1.469551
Financial Aid	.1837488	.1933333	-.0095845	-.5550921
Location	.068615	.0702341	-.0016191	-.1432907
Program Attributes	.0342721	.0259259	.0083462	.9982683
Withdrawn Students	0.0889441	0.07625	0.0126941	1.164448
N	3,517	651		
%	84%	16%		

Sample includes PhDs and Withdrawn Students

* p<.05, ** p<0.01, *** p<0.001

There appears to be no apparent ability difference between students who are matched with male advisors and students matched with female advisors that could potentially explain differences in outcomes. Conversely, male and female faculty advisors do not differ in their access to students; neither male nor female faculty disproportionately matches with higher ability students. Further, the students did not differ by advisor gender in their responses to the factors

that they consider most important when selecting a doctoral program, which suggests that the two groups may also be similar in some unobservable ways. Table 4.3 includes the factors that the respondents considered important: opportunity to work with faculty, program (department and institution) reputation, financial package offered, school location, and program attributes (course requirements, scheduling flexibility, etc.). 43% of female students selected program reputation while 28% selected opportunity to work with faculty members as most important regardless of their advisor's gender. There is also no statistical difference between male students matched with male advisors and male students paired with female advisors in terms of reasons for selecting the doctoral program.

METHODS

Below I describe the method of analysis for each outcome of interest: likelihood of completion, volume of publications, time to degree, and academic job placement within 6 months of receiving the doctorate. A general description of the explanatory and control variables, as well as a discussion on advisor attitudes toward dissertation completion and frequency of communications, follow.

Likelihood of Completion

I estimate likelihood of completion using ordinary least squares (OLS) and logit regressions. The logit model is better suited to dichotomous outcomes and the OLS model is presented for ease of interpretation. The sample includes only PhDs and leavers/withdrawn students. Current students are omitted from the analyses since it is not clear whether they will eventually complete or withdraw. The analyses on probability of completion are conditional on

the student having started the dissertation process; students who withdraw before reaching candidacy are not in the sample since the GES only asks students who have started their dissertation for advisor's gender.

The explanatory variable “female advisor” is a dummy variable that is equal to 0 when the advisor is male and 1 when the advisor is female; “1” represents a gender match when the analysis is limited to female students. Control variables include proportion of female graduate students in cohort, GRE verbal and math scores, United States citizenship, previous Master's degree, age at enrollment, ethnicity, advisor's tenure status, financial aid, parental education, marital status at entry, number of children at entry, department, institution, entry year, and dummy variables controlling for missing observations. The regression equation is as follows:

$$Y_i = \alpha + \beta \text{FemaleAdvisor}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log (Pr (graduate)/Pr (withdraw)), “FemaleAdvisor” is the explanatory variable indicating a gender match, and X is the vector for explanatory/control variables for the logit regression. Y_i is a dummy variable for completion (0 = withdraw and 1 = complete) for the OLS regression.

To more thoroughly examine graduation probabilities, I also analyze attrition data by student and advisor gender. I present the reasons leavers provide for withdrawing from their doctoral programs, and use t-tests to determine whether there are differences between men and women. I repeat the t-tests by student gender to see if reasons vary between students advised by male advisors and students advised by female advisors.

Publication Rate

Research productivity is measured as the number of sole or first author publications during the respondent's PhD program. Consistent with Ehrenberg et al. (2010), the outcome

variable is the total number of peer-reviewed journal articles and books published. The publication data are self-reported, and are deemed accurate by Mellon Foundation staff, who checked a random sample of the reports against other sources (Ehrenberg et al., 2010). The sample is limited to PhDs.

I estimate the following equation using OLS and negative binomial regression:

$$Y_i = \alpha + \beta \text{FemaleAdvisor}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log number of publications in negative binomial regression and number of publications in OLS, “FemaleAdvisor” is the explanatory variable indicating a gender match, and X is the vector for explanatory/control variables.

Control variables include all of the variables described in the model for likelihood of completion with the addition of program duration, frequency of meetings/communications with advisor during the proposal and research/writing stage, and advisor’s attitude toward dissertation completion. Advisor’s attitude toward dissertation completion varies from finish quickly, publish dissertation even if it delays completion, to polish the dissertation even if it delays the degree.

Time to Degree

Conditional on graduating, I estimate the impact of gender match on time to degree using ordinary least squares regression. I measure time to degree as the number of years that have elapsed from the year of entry to the year of completion. The regression equation is as follows:

$$Y_i = \alpha + \beta \text{FemaleAdvisor}_i + \delta X_i + \varepsilon_i$$

where Y_i is the number of years to completion, “FemaleAdvisor” is the explanatory variable indicating a gender match, and X is the vector for explanatory/control variables.

The control variables include all of those described in the research productivity model above with the inclusion of the continuous variable, volume of publications.

Job Placement

The data do not provide information on career intentions prior to graduation, so it is not possible to differentiate between doctorates who purposefully select employment outside of academia versus those who are not offered a position after applying. Nevertheless, previous studies indicate that the majority of humanities and social sciences doctoral students intend to become professors. Using data from the Social Sciences PhDs – Five+ Years Out survey, Nerad (in Ehrenberg & Kuh, 2009) shows that 72% of Anthropology, 84% of History, and 76% of Political Science graduate students intend to become professors at the time of degree completion. Similarly, Golde and Dore (2001) find that 88.7% of Philosophy, 81.2% of History, 79.7% of English, and 72.7% of Art History graduate students consider faculty careers.

The outcome is placement in a tenure track faculty position at a research institution within 6 months of receiving the PhD. I use the same control variables as in the time to degree model, and estimate the following equation using OLS and logit regression:

$$Y_i = \alpha + \beta \text{FemaleAdvisor}_i + \delta X_i + \varepsilon_i$$

where Y_i is the log (Pr (academic job)/Pr (other)), “FemaleAdvisor” is the explanatory variable indicating a gender match, and X is the vector for explanatory/control variables for the logit regression. Y_i is a dummy variable indicating job placement (0 = other, 1 = tenure track faculty) for the OLS regression.

Description of Explanatory Variables

- Female Advisor – Dummy variable indicating the gender of the advisor (0 = male and 1 = female).
- % Female in Cohort – the proportion of female students in the individual’s cohort (by department, institution, and entry year).

- GRE Verbal Score – GRE Verbal score measured on a 200 to 800 scale with 10 point increments. A GRE Verbal test score is required for admission to doctoral programs.
- GRE Math Score – GRE Math score measured on a 200 to 800 scale with 10 point increments. A GRE Math test score is required for admission to doctoral programs.
- US Citizen – Binary variable indicating whether respondent is a US Citizen.
- Prior Master's Degree – Dummy variable indicating a Master's degree prior to entering the PhD program.
- Age at enrollment – Number of years indicating respondent's age.¹⁷
- Ethnicity – Categories include Caucasian, African American, Native American, or Hispanic. Regressions omit Caucasian for comparison.
- Advisor tenured – Dummy variable equivalent to “1” if advisor received tenure before or during the respondent's PhD program; “0” otherwise.
- Marital status – Binary variable indicating whether student was married upon entering PhD program (not shown in the result tables).
- Number of children – Number of dependent children at the time of entry (not shown in the result tables).
- Program Duration – The number of elapsed years between year of entry and year of departure (by withdrawing or completing the PhD).
- Financial aid variables – Financial aid information come from administrative data provided by the departments. Departments indicated whether students received teaching/research assistantship, fellowship, tuition aid, or no aid each program year. Since it is possible for students to receive multiple types of aid in a given year, the

¹⁷ Age squared is not included because age and age squared are highly correlated at 0.99.

financial aid variables are measured as the number of teaching/research assistantships and the number of fellowships divided by program duration. Departments combined teaching and research assistantships in one variable, so it is not possible to differentiate between the two.¹⁸

- Publications – number of sole or first author books and peer-reviewed journals published *during* the doctoral program.
- Advisor attitude toward dissertation completion – Includes four options: 1. Finish dissertation as quickly as possible, 2. Polish dissertation, even if it delays completing the degree, 3. Publish, even if it delays completing the degree, and 4. Advisor did not indicate a preference (omitted category).
- Frequency of communications with advisor – Dummy variable equivalent to “1” if student communicated with advisor two or more times per month during the proposal and research/writing stage.
- Parental education – measure of mother’s and father’s level of education using the following increments: less than high school, high school, some college/vocational school, bachelor’s, some graduate school, master’s or professional degree, or doctoral degree.
- Department
- Institution
- Entry Year

¹⁸ Self-reported data are available for number of terms served as a research assistant and number of terms served as a teaching assistant separately. Results from analyses incorporating these variables did not differ substantially from models utilizing administrative financial aid data.

Advisor Attitudes and Frequency of Meetings/Communications

Using logit regression, I estimate whether there is a difference in exhibiting particular attitudes toward dissertation completion or in frequency of meetings by advisor gender and tenure status. I repeat the regression for male and female students and present the results in Tables 4.4 and 4.5. Compared to tenured male faculty, tenured and untenured female faculty are more likely to encourage their female students to polish the dissertation, even if it delays the degree. Tenured female faculty are also more likely than tenured male faculty to encourage male advisees to polish the dissertation. In regard to frequency of meetings or communications during the different stages, tenured female faculty are more likely to meet with their female PhD students during the writing stage at least two times per month. Untenured male faculty, however, are more likely to meet with female advisees during the proposal and research stages, in comparison to tenured male faculty advisors. Moreover, untenured male faculty are also more likely to meet with male advisees at least two times per month during the dissertation writing stage.

Table 4.4 Advising Attitude Toward Dissertation Completion by Faculty Gender and Tenure Status (Omitted Category: Tenured Male Advisor)			
	Female PhD		
	<u>Finish Quickly</u>	<u>Publish</u>	<u>Polish, even if delay degree</u>
Tenured Female Advisor	-0.02481 (0.0192)	-0.00063 (0.0054)	0.05427** (0.0178)
Untenured Female Advisor	-0.05362 (0.0358)	-0.01871 (0.0159)	0.13637*** (0.0298)
Untenured Male Advisor	-0.03282 (0.0396)	0.00939 (0.0087)	0.05545 (0.0345)
Observations	3208	2951	3208
Pseudo R-squared	0.022	0.098	0.022

Table 4.4 (Continued)

	Male PhD		
	<u>Finish Quickly</u>	<u>Publish</u>	<u>Polish, even if delay degree</u>
Tenured Female Advisor	-0.02602 (0.0236)	0.00376 (0.0055)	0.04347* (0.0213)
Untenured Female Advisor	-0.03902 (0.0490)		0.03754 (0.0432)
Untenured Male Advisor	-0.03416 (0.0352)	-0.0135 (0.0138)	0.01897 (0.0316)
Observations	3673	3278	3673
Pseudo R-squared	0.019	0.061	0.022

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 4.5

Frequency of Meetings or Communications During Dissertation Stages

Binary Outcome = 1 if two or more meetings/communications per month and 0 if fewer

(Omitted Category: Tenured Male Advisor)

Dissertation Stage	Female PhD		
	<u>Proposal</u>	<u>Research</u>	<u>Writing</u>
Tenured Female Advisor	-0.01702 (0.0205)	0.01529 (0.0172)	0.03320+ (0.0198)
Untenured Female Advisor	0.05165 (0.0369)	-0.00967 (0.0320)	0.04222 (0.0360)
Untenured Male Advisor	0.07555+ (0.0406)	0.06561* (0.0325)	0.01483 (0.0401)
Observations	3155	3239	3239
Pseudo R-squared	0.050	0.044	0.041

Dissertation Stage	Male PhD		
	<u>Proposal</u>	<u>Research</u>	<u>Writing</u>
Tenured Female Advisor	0.00522 (0.0247)	-0.01748 (0.0224)	0.00153 (0.0241)
Untenured Female Advisor	-0.05424 (0.0504)	0.00861 (0.0440)	-0.05724 (0.0502)
Untenured Male Advisor	0.05335 (0.0363)	0.04936 (0.0309)	0.07781* (0.0352)
Observations	3623	3693	3693
Pseudo R-squared	0.046	0.041	0.044

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

RESULTS

I present results in the sections that follow by outcome of interest. Table 4.6 includes summary statistics for the outcomes of interest.

Table 4.6 Summary Statistics of Outcome Variables					
Female Students					
	Mean	Std. Dev.	Count	Min	Max
Proportion who graduated (cohorts before 1993)	.8057533	.395676	3511	0	1
Program Duration of Completers in years	7.844267	2.115268	3262	4	19
Program Duration of Leavers in years	7.706633	3.831243	392	1	21
Number of Publications during PhD program	.6357759	1.328205	3248	0	14
Tenure-track faculty at 4-year Institution	.3526126	.4778619	3043	0	1
Male Students					
	Mean	Std. Dev.	Count	Min	Max
Proportion who graduated (cohorts before 1993)	.8290946	.3764741	3932	0	1
Program Duration of Completers in years	7.54653	2.170401	3718	4	21
Program Duration of Leavers in years	7.391408	3.747985	419	1	21
Number of Publications during PhD program	.8973805	1.655582	3703	0	14
Tenure-track faculty at 4-year Institution	.3379035	.473063	3501	0	1

Likelihood of Completion

Among students who entered between 1982 and 1993 and indicated their advisor's gender on the survey, 80.6% of female students and 82.9% of male students graduated.¹⁹ 33% of

¹⁹ The full sample encompassing all students who entered PhD programs in participating departments/institutions between 1982 and 2002 includes 22,994 students. (Note that the survey was given only to entering cohorts 1982-1996.) "53 percent graduated, 45 percent left the

female doctorates were advised by female advisors and 67% by male advisors; while 16% of male doctorates had female advisors and 84% had male advisors (Table 4.1). These percentages are roughly consistent with the percentages of male and female faculty of the sample departments. While data on the number of male and female faculty by department and institution for the years between 1982 and 1996 were not collected, faculty distribution by gender was collected in 2005 from institutional websites. In 2005, the mean percentage of full and associate male professors was 78% while the mean percentage of full and associate female professors was 22%.

The regression results suggest that gender match positively impacts female graduate students' likelihood of completion, but does not uniquely affect male graduate students. Among female graduate students, a gender match with a female advisor increases the probability of graduating by 2 percentage points ($p = 0.068$), all else equal (Table 4.7). Fellowship awards lead to better graduation probabilities for both men and women. Everything else held constant, a unit increase in fellowship award over program duration increases the likelihood of completion by 14.1 and 14.7 percentage points for women and men, respectively. Fellowships certainly provide recipients with more time to focus on finishing their program requirements and dissertation, but it is also likely that fellowship review panels are fairly effective in selecting potential completers based on unobservables. Otherwise, male and female graduate students differ in the factors that affect their probabilities of graduating. Male graduate students, all else equal, are more likely to graduate by 2.6 percentage points if they enter the PhD program with a previous Master's degree and by 4.8 percentage points if their advisor is tenured, *ceteris paribus*.

program, and 3 percent were still pursuing the PhD 17 years after entry.” (Ehrenberg et al., 2010, p. 98)

Table 4.7
Likelihood of Completion

	<u>OLS</u>		<u>Logit Marginal Effects</u>	
	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>
Female Advisor	0.0205+ (0.0114)	0.00672 (0.0132)	0.02120+ (0.0116)	0.00531 (0.0135)
% Female in Cohort	0.0327 (0.0325)	-0.00385 (0.0292)	0.03589 (0.0335)	-0.00141 (0.0302)
GRE Verbal Score	-0.000127+ (0.0000756)	-0.0000153 (0.0000689)	-0.00015+ (0.0001)	-0.00001 (0.0001)
GRE Math Score	-0.0000129 (0.0000655)	-0.0000815 (0.0000604)	-0.00001 (0.0001)	-0.00009 (0.0001)
US Citizen	-0.0254 (0.0224)	-0.0523** (0.0191)	-0.03334 (0.0251)	-0.06725** (0.0224)
Prior Master's Degree	0.0173 (0.0140)	0.0255* (0.0123)	0.01847 (0.0144)	0.02560* (0.0127)
Age at Enrollment	-0.000755 (0.00126)	-0.00113 (0.00126)	-0.00057 (0.0011)	-0.00069 (0.0012)
African American	-0.0201 (0.0273)	0.0151 (0.0303)	-0.02593 (0.0277)	0.02126 (0.0355)
Native American	0.0155 (0.0805)	-0.0941 (0.0873)	0.02048 (0.0973)	-0.0916 (0.0697)
Asian American	-0.0522* (0.0250)	-0.00211 (0.0286)	-0.05019* (0.0221)	-0.00362 (0.0290)
Hispanic	0.0204 (0.0302)	-0.0123 (0.0251)	0.02224 (0.0338)	-0.01284 (0.0236)
Advisor Tenured	0.00358 (0.0168)	0.0528** (0.0169)	0.00409 (0.0167)	0.04801** (0.0149)
Teaching/Research Assistantship	-0.00174 (0.0264)	0.00243 (0.0234)	-0.00529 (0.0266)	0.00292 (0.0230)
Fellowship	0.135*** (0.0235)	0.148*** (0.0199)	0.14097*** (0.0242)	0.14722*** (0.0207)
Constant	0.917*** (0.0771)	0.912*** (0.0713)		
Observations	3666	4168	3662	4161
Adjusted or Pseudo Rsquared	0.020	0.032	0.060	0.074

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Sample includes PhDs and Withdrawn Students

Department, Institution, Cohort, Parental Education, Marital Status, Number of Children, and Missing Dummy Variables Not Shown

Attrition

Figures 1 and 2 summarize the distribution of time to attrition for male and female graduate students by advisor gender. The average time to attrition for female students is 7.70 years compared to 7.39 years for male students (Table 4.6). This dataset, however, only includes students who have reached the dissertation stage or PhD candidacy, so the average time to attrition is longer than would be expected for a sample encompassing all entering students. The average time to attrition would be reduced if the full sample of withdrawn students, regardless of candidacy status, is considered given that 30% of attritors leave their programs within the first year and 69% of all attritors withdraw within the first four years (Ehrenberg et al., 2010). Based on a t-test, female students with male advisors are more likely to drop out than female students with female advisors; 9.6% of female students with male advisors dropped out versus 7.7% of female students with female advisors (Table 4.3). Meanwhile, advisor gender does not appear to impact men's attrition rate.

Students who withdraw from their programs indicate their reason for leaving (Tables 4.8 and 4.9). Male students do not differ in their reasons for withdrawing by advisor gender. Women, however, are more likely to cite "unsatisfactory academic performance" as a reason for withdrawing when advised by a male faculty advisor (Table 4.8). 24 out of 331 women advised by male faculty leave the program due to poor academic performance compared to 2 out of 132 women advised by female faculty generating a difference of 5.74%.

Men and women, regardless of their advisor's gender, differ in the reasons that they indicate for leaving the PhD (Table 4.9). Among students who have already started the dissertation or reached candidacy, men are more likely to indicate job opportunities elsewhere, whereas women are more likely to indicate family or personal reasons, advisor or supervisor

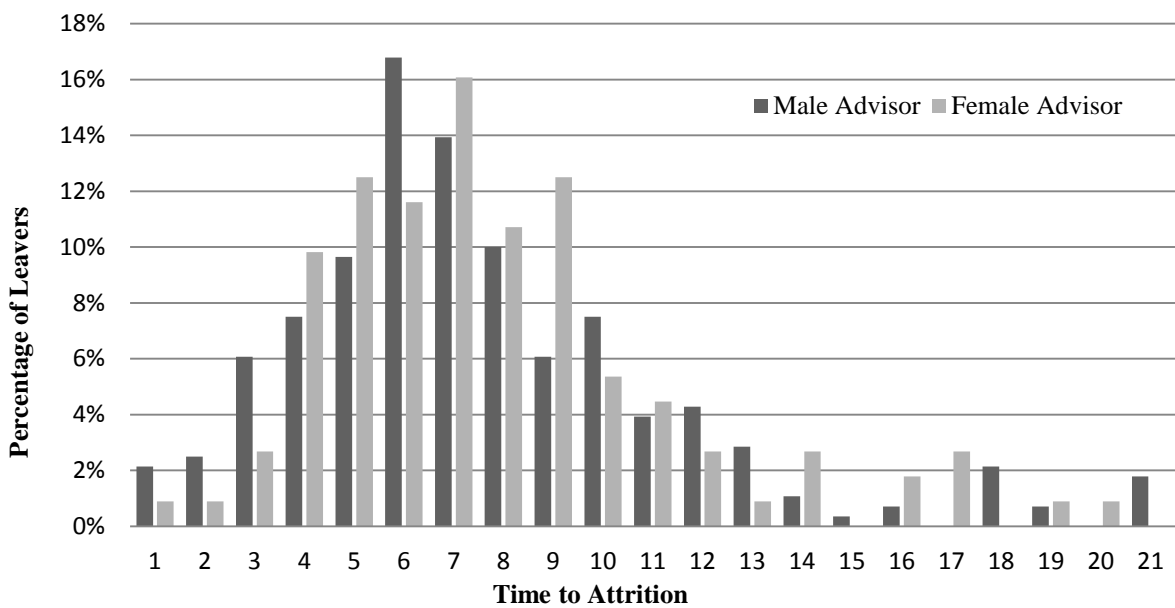


Figure 1: Female Students' Distribution of Time to Attrition by Advisor Gender

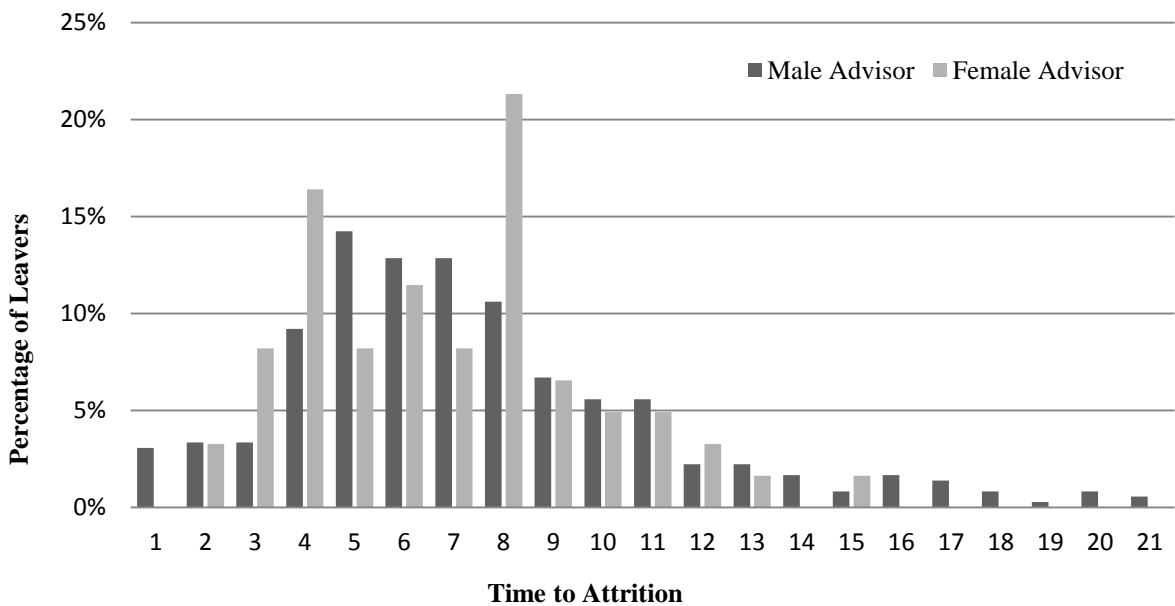


Figure 2: Male Students' Distribution of Time to Attrition by Advisor Gender

Table 4.8
Differences in Reasons for Withdrawing by Advisor Gender (T-tests)
(Note: Difference = Male Advisor Mean - Female Advisor Mean)

	Male Students		Female Students	
	Difference	T-stat	Difference	T-stat
Achieve career goals without PhD	-0.0584	(-0.93)	0.0106	(0.20)
Family/personal reasons	-0.0252	(-0.41)	0.00434	(0.09)
Changed career plans	-0.0492	(-0.79)	0.0734	(1.44)
Health problems	0.0195	(0.45)	0.0165	(0.42)
Lost interest	-0.106	(-1.81)	0.0462	(0.99)
Good job opportunity elsewhere	0.0245	(0.39)	0.0102	(0.20)
Inadequate financial support	-0.0128	(-0.21)	0.0224	(0.44)
Advisor left program	0.00685	(0.16)	0.0232	(0.55)
Inadequate advising	0.0651	(1.05)	0.0248	(0.51)
Department lacked expertise in area of interest	-0.0300	(-0.55)	0.0283	(0.59)
Dissatisfied with department/program	0.0409	(0.65)	-0.0108	(-0.21)
Exceeded time limit for enrollment	-0.0347	(-0.71)	0.00967	(0.24)
Unsatisfactory academic performance	-0.0155	(-0.55)	0.0574*	(2.43)
Unsatisfactory progress on dissertation	0.0274	(0.44)	0.0468	(0.91)
Department politics/competitive environment	0	(0.00)	-0.0628	(-0.60)
Lack of job prospects in field	-0.150	(-1.16)	0.0308	(0.40)
Transferred to a different program	0.0500	(0.72)	-0.0554	(-0.94)
Sexism, racism, sexual harassment	0.0167	(0.41)	0.0172	(0.69)

Table 4.9
Differences in Reasons for Withdrawing by Student Gender
(Note: Difference = Male Student Mean - Female Student Mean)

	Started dissertation		Did not start dissertation	
	Difference	T-stat	Difference	T-stat
Achieve career goals without PhD	-0.0183	(-0.56)	0.0260	(1.34)
Family/personal reasons	-0.0966**	(-3.19)	-0.0280	(-1.48)
Changed career plans	-0.00293	(-0.09)	0.0322	(1.74)
Health problems	-0.0355	(-1.53)	-0.0396**	(-3.13)
Lost interest	-0.0325	(-1.09)	0.00252	(0.14)
Good job opportunity elsewhere	0.0766*	(2.42)	0.0425*	(2.46)
Inadequate financial support	0.00985	(0.31)	0.0235	(1.23)
Advisor left program	-0.0743**	(-3.04)	0.0191	(1.55)
Inadequate advising	-0.101**	(-3.26)	-0.146***	(-7.80)
Department lacked expertise in area of interest	-0.0687*	(-2.36)	-0.0326	(-1.79)
Dissatisfied with department/program	-0.0950**	(-2.97)	-0.0836***	(-4.58)
Exceeded time limit for enrollment	-0.00493	(-0.20)	0.00955	(1.56)
Unsatisfactory academic performance	-0.00269	(-0.18)	0.0465**	(3.10)
Unsatisfactory progress on dissertation	0.0100	(0.31)	0.0201	(1.72)
Department politics/competitive environment	-0.0791	(-1.14)	0.00166	(0.05)
Lack of job prospects in field	0.0435	(0.76)	-0.0216	(-0.87)
Transferred to a different program	-0.0269	(-0.71)	0.0416	(1.39)
Sexism, racism, sexual harassment	0.00266	(0.15)	-0.0288	(-1.74)

leaving, inadequate advising, lack of expertise in area of interest, and dissatisfaction with program as reasons for leaving. There are also differences among early leavers, students who withdraw before reaching the dissertation or candidacy stage. Women are more likely to indicate health problems, inadequate advising, and dissatisfaction with the program as reasons for leaving. Men, on the other hand, are more likely to cite unsatisfactory academic performance for leaving their program. Taken together, this suggests that advising experiences may be more important to women than men, and can be a critical factor in determining women's persistence or likelihood of completion.

Publication Rate

Gender match does not affect publication rates of men and women PhDs (Table 4.10). Rather, advisor attitudes toward dissertation completion and frequency of communications impact publication rates. Female respondents whose advisors encourage them to finish quickly publish 0.12 fewer articles or books while those with advisors who encourage publishing the dissertations publish 0.40 units more, all else equal. Likewise, male respondents whose advisors encourage them to publish produce 0.61 units more of books and journal articles. Communicating with dissertation advisors more frequently also helps male PhDs' publication rates; communicating at least two or more times per month during the proposal stage leads to 0.12 units more of publications while communicating frequently during the research/writing stage increases publications by 0.15 units, *ceteris paribus*. The impact of advisor attitude and frequency of communications is not trivial given that the mean number of publications for women is 0.64 units with a standard deviation of 1.33, while the mean for men is 0.90 units with

a standard deviation of 1.66. These results provide evidence that positive mentorship practices can be more important than ascriptive processes in student research productivity.

Table 4.10
Volume of Publications during the PhD program

	<u>OLS</u>		<u>NBReg</u>	
	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>
Female Advisor	-0.0300 (0.0516)	0.0190 (0.0765)	-0.04236 (0.0472)	0.0304 (0.0705)
Proportion Female Students in Cohort	0.0787 (0.146)	0.0192 (0.169)	0.04679 (0.1316)	0.02029 (0.1588)
GRE Verbal Score	0.0000648 (0.000343)	-0.000662+ (0.000400)	0.00012 (0.0003)	-0.00072+ (0.0004)
GRE Math Score	0.00000966 (0.000299)	-0.000304 (0.000352)	-0.00002 (0.0003)	-0.00035 (0.0003)
US Citizen	-0.110 (0.100)	-0.0911 (0.110)	-0.07364 (0.0897)	-0.08094 (0.1048)
Prior Master's Degree	0.0380 (0.0638)	0.169* (0.0730)	0.04015 (0.0576)	0.17970** (0.0669)
Age at Enrollment	0.00178 (0.00582)	0.0130+ (0.00753)	0.00341 (0.0052)	0.00972 (0.0070)
African American	-0.337** (0.124)	-0.710*** (0.172)	-0.46345*** (0.1369)	-1.00357*** (0.2020)
Native American	-0.101 (0.355)	-0.102 (0.526)	0.0583 (0.3267)	-0.03078 (0.4686)
Asian American	-0.164 (0.115)	-0.173 (0.165)	-0.13959 (0.1119)	-0.17523 (0.1602)
Hispanic	-0.249+ (0.135)	-0.308* (0.147)	-0.32428* (0.1390)	-0.38948** (0.1475)
Advisor Tenured	0.0441 (0.0760)	0.0975 (0.101)	0.01792 (0.0731)	0.11102 (0.0973)
Finish Dissertation Quickly	-0.120* (0.0558)	-0.0882 (0.0650)	-0.12057* (0.0524)	-0.09478 (0.0616)
Publish Dissertation	0.527** (0.199)	0.980*** (0.249)	0.40388* (0.1575)	0.61325** (0.2067)
Polish Dissertation	-0.0338 (0.0598)	-0.0305 (0.0695)	-0.03576 (0.0552)	-0.01041 (0.0652)
Meet During Proposal Stage	0.0320 (0.0531)	0.101 (0.0640)	0.0374 (0.0495)	0.11755+ (0.0602)
Meet During Research/Writing Stage	0.0264 (0.0618)	0.173* (0.0706)	-0.00251 (0.0577)	0.15414* (0.0654)
Teaching/Research Assistantship	-0.213+ (0.122)	-0.260+ (0.141)	-0.21302+ (0.1127)	-0.32815* (0.1335)

Table 4.10 (Continued)				
Fellowship	0.111 (0.113)	0.367** (0.125)	0.07194 (0.1058)	0.36375** (0.1179)
Constant	0.901* (0.356)	0.930* (0.428)		
Observations	3248	3703	3248	3703
Adjusted or Pseudo R-squared	0.043	0.039	0.039	0.028

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001
Sample includes only PhDs
 Not Shown: Department, Institution, Cohort, Parental Education, Marital Status,
 Number of Children, Program Duration, and Missing Dummy Variables

Time to Degree

The average time to degree for women is 7.83 years compared to 7.51 years for men (Table 4.6). The mode is the same for both male and female doctorates; 24% of each group completed their programs in year 7. Figures 3 and 4 show the distribution of time to degree by student and advisor gender. Students who graduate in years 4 and 5 tend to be advised by male advisors while students who graduate in years 6 and after tend to be advised by female advisors.

Gender match does not impact time to degree for either male or female PhDs (Table 4.11). As with research productivity, advisor attitude toward dissertation completion and frequency of communications affect time to degree. Advisors who encourage female students to finish quickly shorten time to degree by 0.152 years, all else equal. On the other hand, advisors who encourage female and male students to polish their dissertations, lengthen time to degree by 0.352 and 0.302 years, respectively. For each percentage increase in proportion of female students in the entering cohort, women's program duration lengthens by 0.005 years (~2 days), but men's program duration shortens by 0.00860 years (~3 days). As expected, financial aid in the form of teaching/research assistantships and fellowships decrease time to degree; fellowships have a larger effect as it allows students more time to focus on the dissertation.

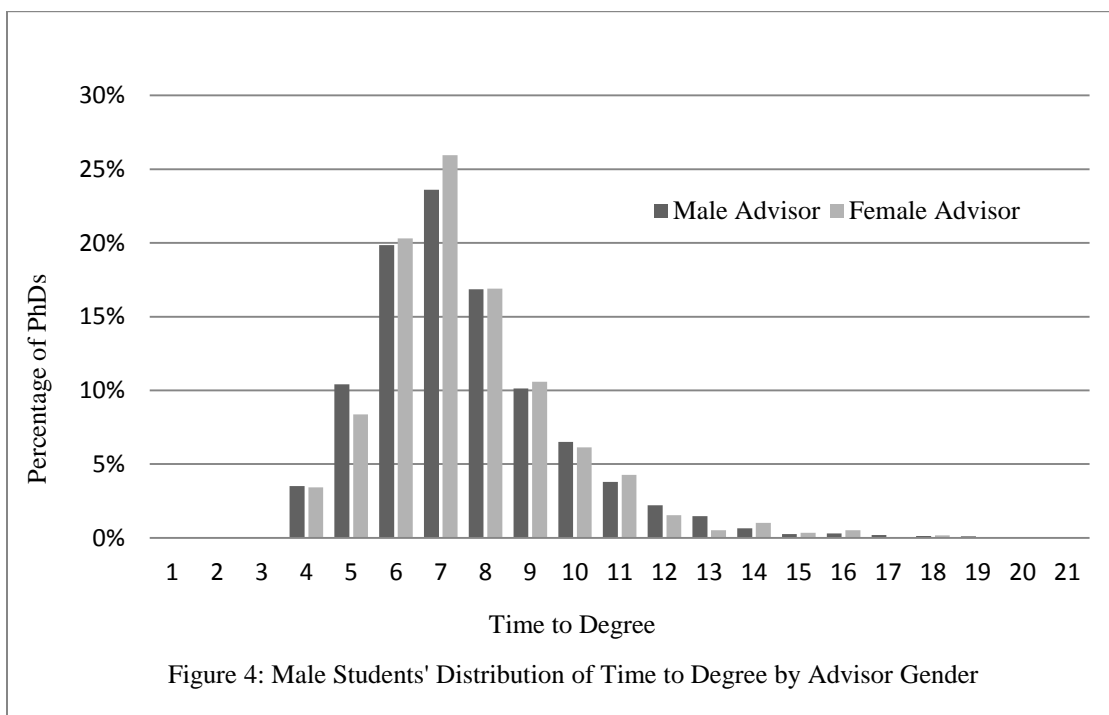
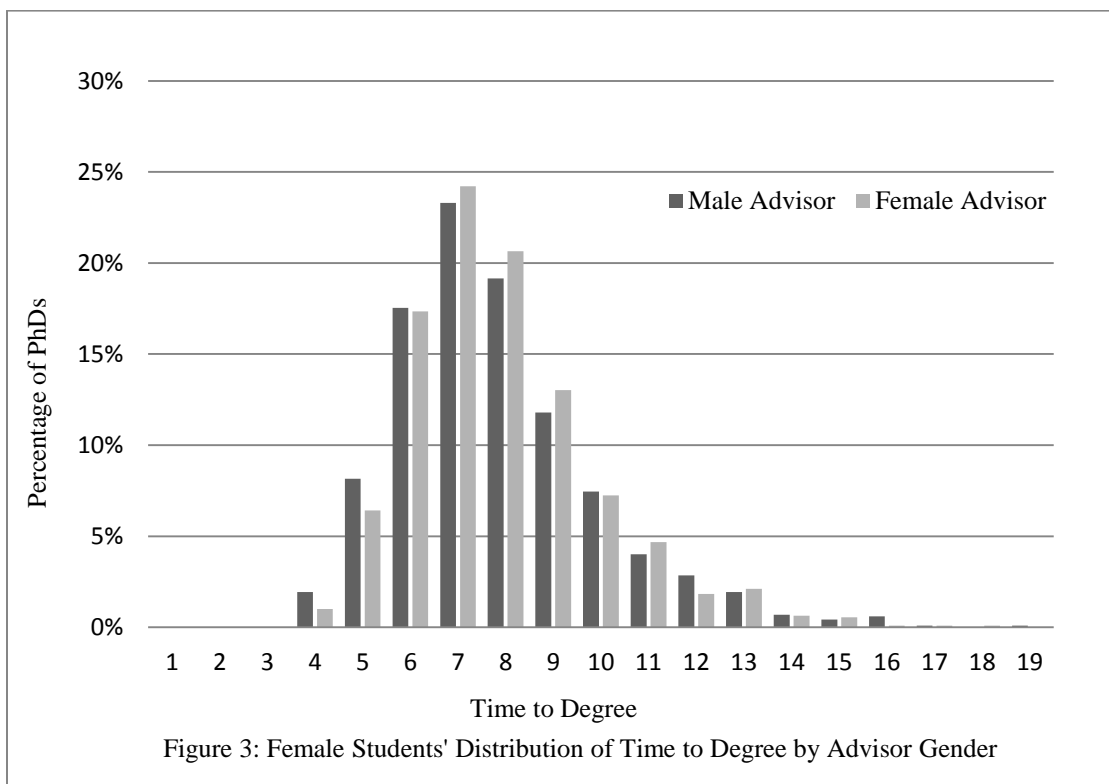


Table 4.11
Time to Degree (OLS)

	<u>Women</u>	<u>Men</u>
Female Advisor	0.0388 (0.0708)	0.0215 (0.0885)
Number of Publications	-0.0240 (0.0247)	-0.0563** (0.0195)
% of Female Students in Cohort	0.00494* (0.200)	-0.00860*** (0.195)
GRE Verbal Score	0.000499 (0.000470)	0.000407 (0.000462)
GRE Math Score	-0.000564 (0.000411)	-0.000790+ (0.000407)
US Citizen	0.334* (0.137)	0.401** (0.127)
Prior Master's Degree	-0.355*** (0.0869)	-0.572*** (0.0835)
Age at Enrollment	-0.0104 (0.00796)	-0.00265 (0.00870)
African American	0.446** (0.170)	0.0946 (0.200)
Native American	0.119 (0.488)	0.980 (0.609)
Asian American	0.164 (0.159)	0.569** (0.191)
Hispanic	0.318+ (0.185)	0.426* (0.170)
Advisor Tenured	0.0327 (0.104)	-0.0663 (0.117)
Finish Dissertation Quickly	-0.152* (0.0765)	-0.0601 (0.0751)
Publish Dissertation	0.160 (0.271)	-0.0448 (0.289)
Polish Dissertation	0.352*** (0.0816)	0.302*** (0.0800)
Meet During Proposal Stage	-0.220** (0.0727)	-0.247*** (0.0739)
Meet During Research/Writing Stage	-0.504*** (0.0842)	-0.369*** (0.0814)
Teaching/Research Assistantship	-1.035*** (0.167)	-1.000*** (0.162)
Fellowship	-2.402*** (0.149)	-2.411*** (0.138)
Constant	8.662*** (0.485)	9.430*** (0.491)
Observations	3262	3718
Adjusted or Pseudo Rsquared	0.285	0.249

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Sample includes only PhDs

Dept, Inst, Cohort, Parent Educ, Marital, Children, Program Duration, and Missing Dummies Not Shown

Early Job Placement

(Tenure-track faculty position at a research institution within 6 months of the PhD)

35.26% of female PhDs and 33.79% of male PhDs who provide their post-graduate employment history obtained a tenure-track faculty position at a four-year research institution (Table 4.6). The likelihood of obtaining a tenure-track faculty position is not determined by a gender match for female or male students (Table 4.12²⁰). All else equal, each additional publication during the PhD program improves the likelihood of obtaining a tenure track faculty position by about 2.6 percentage points for women and 1.4 percentage points for men. African American, Native American, Asian American, and Hispanic doctorates, regardless of gender, are more likely than Caucasian doctorates to obtain tenure-track faculty positions, as are students with more fellowship awards.

Among female students, those who report that their advisors encouraged them to finish their dissertation quickly are 7.85 percentage points more likely to secure tenure-track faculty positions, but this may be a reflection of advisors encouraging their advisees to meet job offer conditions. Additionally, advisors who encourage polishing dissertations increase the likelihood of placement by 3.98 percentage points ($p < 0.10$), *ceteris paribus*. Among male students, entering the PhD program with a previous Master's degree increases the likelihood of obtaining a tenure-track faculty position by 5.8 percentage points, whereas each year increase in age decreases the probability by 0.48 percentage points, everything else held constant.

²⁰ Not Shown in Table 4.12: Department, Institution, Cohort, Parental Education, Marital Status, Number of Children, Program Duration, and Missing Dummy Variables

Table 4.12

Likelihood of Obtaining a Tenure-Track Faculty Position at a Research Institution Within 6 Months

	OLS		Logit Marginal Effect	
	Women	Men	Women	Men
Female Advisor	0.00642 (0.0188)	-0.00677 (0.0224)	0.00747 (0.0185)	-0.00685 (0.0222)
Number of Publications	0.0268*** (0.00655)	0.0142** (0.00489)	0.02600*** (0.0063)	0.01407** (0.0047)
% Female Students in Cohort	0.00312 (0.0528)	0.0115 (0.0492)	0.01033 (0.0526)	0.01586 (0.0492)
GRE Verbal Score	-0.0000606 (0.000126)	0.0000477 (0.000116)	-0.00006 (0.0001)	0.00004 (0.0001)
GRE Math Score	0.000289** (0.000110)	0.0000778 (0.000103)	0.00028* (0.0001)	0.00008 (0.0001)
US Citizen	-0.0954* (0.0370)	0.00356 (0.0326)	-0.09045* (0.0363)	0.0041 (0.0323)
Prior Master's Degree	0.0232 (0.0234)	0.0592** (0.0214)	0.02259 (0.0228)	0.05805** (0.0207)
Age at Enrollment	-0.000480 (0.00211)	-0.00460* (0.00221)	-0.00072 (0.0022)	-0.00477* (0.0023)
African American	0.239*** (0.0455)	0.256*** (0.0500)	0.22349*** (0.0428)	0.23714*** (0.0470)
Native American	0.346** (0.126)	0.512*** (0.149)	0.33499** (0.1174)	0.55690*** (0.1634)
Asian American	0.131** (0.0432)	0.0962* (0.0481)	0.12631** (0.0407)	0.09279* (0.0451)
Hispanic	0.195*** (0.0500)	0.181*** (0.0426)	0.18747*** (0.0468)	0.17308*** (0.0399)
Advisor Tenured	0.0411 (0.0277)	-0.0281 (0.0296)	0.04521 (0.0286)	-0.0288 (0.0293)
Finish Dissertation Quickly	0.0800*** (0.0203)	0.0283 (0.0189)	0.07854*** (0.0197)	0.0272 (0.0185)
Publish Dissertation	0.0371 (0.0713)	0.0736 (0.0716)	0.03026 (0.0736)	0.07295 (0.0678)
Polish Dissertation	0.0404+ (0.0219)	0.0200 (0.0202)	0.03981+ (0.0217)	0.01924 (0.0200)
Meet Proposal Stage	0.00721 (0.0194)	0.00715 (0.0186)	0.0088 (0.0192)	0.00656 (0.0184)
Meet Research/Writing Stage	-0.0117 (0.0224)	0.0227 (0.0205)	-0.01256 (0.0222)	0.0241 (0.0202)
Teaching/Research Assistantship	0.0504 (0.0448)	0.00868 (0.0407)	0.05761 (0.0446)	0.00889 (0.0405)
Fellowship	0.181*** (0.0411)	0.105** (0.0363)	0.17795*** (0.0400)	0.10207** (0.0356)
Constant	0.112 (0.131)	0.317* (0.124)		
Observations	3043	3501	3043	3501
Adjusted or Pseudo R-squared	0.078	0.059	0.087	0.070

+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Sample includes only PhDs

DISCUSSION

Humanities departments are often marked by relatively low completion rates and lengthy program duration. Here I present evidence supporting gender matching as a potential method for improving graduation probabilities among women in HHSS departments. Female students advised by female faculty are more likely to graduate, whereas advisor gender does not impact male students' graduation probabilities. Compared to STEM departments, HHSS departments are better integrated along gender lines. Women faculty are more normalized and do not tend to be deemed of lower categorical status. Hence, value threat is less likely to occur, and demographically similar individuals may be more likely to help or facilitate each other's success. Consistent with ingroup bias and social identity theories, gender matching can lead to improved outcomes such as greater likelihood of PhD completion.

Based on an examination of withdrawn students, I also find support for the importance of advising in increasing graduation probabilities among women in HHSS departments. Women are more likely than men to cite issues with advising as reasons for leaving the PhD program. Moreover, t-tests show that there is a difference in attrition rates between women advised by male faculty and women advised by female faculty; a lower percentage of women advised by women drop out of the PhD program.

Advisor gender does not impact time to degree, research productivity, or initial job placement for both men and women. Rather, advisor attitude toward dissertation completion and frequency of communications influence educational and employment outcomes suggesting that positive advising practices may be more important than ascriptive processes in improving student outcomes. Regardless of gender, advisors who encourage publishing the dissertation lead to

increased student publications, while advisors who meet more frequently with advisees during the dissertation proposal and research/writing stages reduce time to degree.

CHAPTER 5

CONCLUSION

The impetus for this research is to evaluate the efficacy of doctoral student-faculty advisor gender match on student educational and employment outcomes to address the underrepresentation of women in tenure-track faculty positions and the relatively low proportion of women doctorates in STEM fields. While ingroup bias and social identity theories predict positive outcomes for demographically similar individuals, I find that the gender of the dissertation chair does not influence likelihood of degree completion, time to degree, or placement in a tenure-track faculty position within 6 months of graduation for female graduate students. Likewise, working with at least one female faculty minor member on the dissertation committee does not improve graduation probabilities, time to degree, or job placement. It is possible that the predicted positive benefits afforded by same gender mentoring may be mitigated by value threat since female faculty are of numeric minority in the STEM departments analyzed. The findings are consistent with the value threat model where individuals of “lower categorical status, numeric minority in a high-prestige work group” (Duguid et al., 2010) are less likely to facilitate success for other similar individuals in the group suggesting that organizational demography or numeric representation of women may play an important role in student outcomes. In contrast, HHSS departments where women are relatively well represented, advisor gender match positively impacts female doctoral students’ likelihood of degree completion. Women faculty in HHSS departments may be more comfortable exhibiting ingroup preference since collective threat, favoritism threat, and competitive threat are not as salient.

The importance of equitable numeric representation of women is also evident in the finding that the higher the proportion of female faculty (controlling for department, cohort year, and other student characteristics), the more likely female STEM doctoral students will be to complete the PhD. Furthermore, among women STEM doctorates, higher proportions of female faculty lead to shorter program duration. These findings lend support to initiatives designed to increase the number of female faculty in STEM departments as a means of fostering gender equity and improved student outcomes. Research on large, private industry firms indicate that increasing women in managerial or high status roles improves the status of other women in the establishment, facilitates gender integration, and reduces the saliency of gender (Huffman, 2010). A similar phenomenon may be occurring in the academic setting where increased female representation counteracts potential chilly environments and allows female doctoral students to develop a greater sense of belonging from the higher visibility of same gender role models.

While I do not find support for improved outcomes based on advisor gender match, I show that advisor attitude toward dissertation completion and the frequency of meetings/communications impact student publication rates, time to degree, and job placement. Among female STEM PhDs, frequent meetings during the dissertation proposal stage and advisors who encourage finishing the dissertation quickly reduces time to degree. As can be expected, advisors who encourage publication lead to more refereed journal publications for the student. The effect of advisor attitude and frequency of meetings are also similar for women HHSS doctorates suggesting that advisor practices and attitudes may be more important than ascriptive processes in improving educational and employment outcomes.

My dissertation research provides support for increased representation of female faculty in STEM departments to facilitate gender parity and integration, improve female student

educational outcomes, and increase the number of female STEM doctorates. Potential directions for future research include investigating the causes for student attrition from doctoral programs, interviewing faculty advisor-doctoral student dyads to determine whether there are differences in how faculty guide or mentor students based on gender, and exploring women doctorates' career choices. The NRC (2009) finds that women doctorates are less likely than their male counterparts to apply for tenure-track faculty positions. Thus, are women doctorates from departments with higher proportions of female faculty more likely to apply for tenure-track position than women from less gender-integrated departments?

APPENDIX A

Graduate Student-Faculty Advisor Gender Match Survey

Introduction

You are invited to participate in a research study investigating whether the gender of a doctoral student's faculty advisor matters in the student's doctoral experience, publication rate, career aspirations, and early job placement. We are asking you to participate because you are currently a doctoral student at _____ in a Science, Engineering, or Mathematics field. Your participation is entirely voluntary, and every effort will be made to keep your responses secure and confidential.

What we will ask you to do: If you agree to be in this study, we will ask you to complete an online survey, which will take only 10-15 minutes.

Risks and Benefits: There are no anticipated risks to you beyond what is encountered in day-to-day life. _____, which is administering this survey, uses state-of-the-art of technology to ensure security and confidentiality. However, with any online transmission, there is possibility that responses could be read by a third party. The responses you provide will benefit current and future doctoral students, as the findings will be used to inform policy decisions at higher education institutions to improve the doctoral education experience and to increase completion rates, as well as to encourage more women in Science and Engineering fields to pursue academic careers.

Your answers will be confidential: The records of this study will be kept private and will be secured by the _____. In any sort of report we make public we will not include any information that will make it possible to identify you.

Taking part is voluntary: You may skip any questions that you do not want to answer. If you decide to skip some of the questions or decide not to take part in the study, it will not affect your current or future relationship with _____.

If you have any questions: Please e-mail _____. The researchers conducting this survey are _____.

[[Note: If consent is given then start survey, otherwise ask respondent to confirm that they are declining consent](#)]

[consent] Please indicate below if you have read the above information and consent to take part in the study.

☐ Yes, I have read the above information and consent to take part in the study.

☐ No, I do not wish to participate.

Next

Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the _____.

Section A: Dissertation Chair

The following questions pertain to your dissertation committee chair (your primary advisor).

[q1a] Dissertation Committee Chair - Gender:

- ☐ Female ☐ Male

[q1b] Dissertation Committee Chair - Tenure Status:

- ☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected my Dissertation Chair because he or she:

	Not at all	Minor reason	Major reason
[q2a_a] Is doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_b] Has a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_c] Has a reputation for being a good classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_d] Has a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_e] Is knowledgeable in the techniques and methods that I want(ed) to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_f] Fosters a working environment that I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_g] Makes me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_h] Has a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_i] Was assigned to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q3] Which of the following statements best characterizes your dissertation chair's attitude toward finishing the dissertation/completing the degree?

- ☐ Finish as quickly as possible
☐ Polish the dissertation, even if it delays completing the degree
☐ Publish, even if it delays completing the degree
☐ Advisor did not indicate a preference

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the

Section A: Dissertation Chair (continued)

Indicate the extent that each statement describes the behavior of your dissertation chair.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Does not apply
[q15a] Is available to me when I need help with my research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15b] Helps connect me with other professionals in my field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15c] Assists me in writing presentations or publications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15d] Helps me with skills and techniques for teaching undergraduates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15e] Provides emotional support when I need it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often have you met with your dissertation chair during the following phases:

	Weekly or more often	2 to 3 times a month	Once a month	Once every 2 to 3 months	Less than once every 3 months	Does not apply
[q16a] while preparing your dissertation proposal or prospectus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q16b] while researching or analyzing data for your dissertation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q16c] while writing your dissertation (including the end stage of your dissertation writing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the

Section A: Dissertation Chair (continued)

Indicate the extent to which you agree with the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
[q17a] I currently have the dissertation chair I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q17b] I am satisfied with the amount of time I spend with my dissertation chair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q17c] My dissertation chair provides me with the guidance that I need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q18] How satisfied do you think your **dissertation chair** is with being a faculty member at _____ ?

☐ Very dissatisfied
 ☐ Somewhat dissatisfied
 ☐ Neither satisfied nor dissatisfied
 ☐ Somewhat satisfied
 ☐ Very satisfied
 ☐ Don't know

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If you have questions or require technical assistance with this survey, please [email](#) the

Section B: Publications

The following section asks about your publications. Include only works published during your doctorate program at . Also include works that have been accepted for publication, but not yet printed.

[q4] While a doctoral student, did you publish or have accepted for publication any articles, books, book chapters, or reviews?

☐ Yes ☐ No

[q5] While a doctoral student, did you coauthor a publication with your dissertation chair?

☐ Yes ☐ No

[q7] While a doctoral student, how many peer-reviewed journal articles did you publish or have accepted for publication (include coauthored and sole-authored)

-- Select --

[q8] While a doctoral student, on how many peer-reviewed journal articles accepted for publication were you the sole or first author?

-- Select --

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Dissertation Committee Members

[[Note: this page is only shown to current students](#)]

This section pertains to your minor dissertation committee members.

[scq1] The Graduate School requires graduate students to have a special or dissertation committee composed of the dissertation chair and at least two minor committee members. **Have you selected your minor committee member(s)?** Please include faculty members who you intend to place on your dissertation committee as minor members even if you have not filed the official form with the Graduate School.

- ☐ Yes, I have selected one minor committee member
- ☐ Yes, I have selected two minor committee members
- ☐ Yes, I have selected three minor committee members
- ☐ No, I have not yet selected a minor committee member

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[Finish Later](#)

If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Dissertation Committee Members

[nq12a] Minor Committee Member One - Gender:

☐ Female ☐ Male

[nq12b] Minor Committee Member One - Tenure Status:

☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected Minor Committee Member One because he or she:

	Not at all	Minor reason	Major reason
[q2b_a] Is doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_b] Has a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_c] Has a reputation for being a good classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_d] Has a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_e] Is knowledgeable in the techniques and methods that I want(ed) to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_f] Fosters a working environment that I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_g] Makes me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_h] Has a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq14] While a doctoral student, did you coauthor a publication with Minor Committee Member One?

☐ Yes ☐ No

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Committee Members (continued)

[nq15a] Minor Committee Member Two - Gender:

☐ Female ☐ Male

[nq15b] Minor Committee Member Two - Tenure Status:

☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected Minor Committee Member Two because he or she:

	Not at all	Minor reason	Major reason
[q2c_a] Is doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_b] Has a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_c] Has a reputation for being a good classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_d] Has a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_e] Is knowledgeable in the techniques and methods that I want(ed) to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_f] Fosters a working environment that I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_g] Makes me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_h] Has a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq17] While a doctoral student, did you coauthor a publication with Minor Committee Member Two?

☐ Yes ☐ No

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If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Committee Members (continued)

[Note: This page is only shown when respondent indicates in question scq1 that three minor committee members have been selected.]

[sc3q1] Minor Committee Member Three - Gender:

☐ Female ☐ Male

[sc3q2] Minor Committee Member Three - Tenure Status:

☐ Not Tenured

☐ Tenured

☐ Became Tenured while I was a graduate student

I selected Minor Committee Member Three because he or she:

	Not at all	Minor reason	Major reason
[sc3q3_a] Is doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_b] Has a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_c] Has a reputation for being a good classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_d] Has a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_e] Is knowledgeable in the techniques and methods that I want(ed) to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_f] Fosters a working environment that I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[sc3q3_g] Makes me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[qsc3q3_h] Has a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[sc3q4] While a doctoral student, did you coauthor a publication with Minor Committee Member Three?

☐ Yes ☐ No

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the

Section D: Demographic Data

[q9] How satisfied are you with your overall graduate education experience?

☐ Very dissatisfied
 ☐ Somewhat dissatisfied
 ☐ Neither satisfied nor dissatisfied
 ☐ Somewhat satisfied
 ☐ Very satisfied

[sqd2] If you could do it over again, would you select another institution for your graduate studies?

☐ Yes
 ☐ No

[sqd3] If you could do it over again, would you select another department or field for your graduate studies?

☐ Yes
 ☐ No

[sqd4] Before you started your doctoral program at _____, were you employed full-time for a salary?

☐ Yes
 ☐ No

[Note: Question displayed if answer to above question was yes.]

[sqd5] If yes, was this full-time position related to your field of study that you are undertaking at _____?

☐ Yes
 ☐ No

[nq19] When you first enrolled in your doctoral program at _____, were you:

☐ Married
☐ Living with a domestic partner
☐ Widowed, Divorced, or Separated
☐ Never Married

[nq20] When you first enrolled in your doctoral program at _____, did you have any dependents under the age of 18 in your household?

☐ Yes
 ☐ No

When you first enrolled in your doctoral program at _____, what was the highest level of education your mother and father had attained?

	Less than a high school graduate	High school graduate	Some college/vocational school	Bachelor's degree	Some graduate school	Master's or professional degree (e.g. MA, MBA, MD, JD)	Doctoral degree	Don't know
[nq21a] Mother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[nq22b] Father	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq22] Currently, are you:

☐ Married

- ☐ Living with a domestic partner
- ☐ Widowed, Divorced, or Separated
- ☐ Never Married

[nq23] Currently, do you have any dependents under the age of 18 in your household?

- ☐ Yes
- ☐ No

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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations

Please rate the extent the following individuals have influenced your career goals during your doctorate program at .

	Very little influence 1	2	3	4	A lot of influence 5
[q10a] Current Dissertation Chair	jñ	jñ	jñ	jñ	jñ
[q10b] Minor Committee Member One	jñ	jñ	jñ	jñ	jñ
[q10c] Minor Committee Member Two	jñ	jñ	jñ	jñ	jñ
[q10d] Parent or other family member	jñ	jñ	jñ	jñ	jñ
[q10e] Friends	jñ	jñ	jñ	jñ	jñ
[q10f] Peers/Fellow Graduate Students	jñ	jñ	jñ	jñ	jñ
[q10g] Self	jñ	jñ	jñ	jñ	jñ
[q10h] Spouse/Domestic Partner [NOTE: display if nq22 is 'Married' or 'Living with a domestic partner' or unanswered]	jñ	jñ	jñ	jñ	jñ
[q10i] Other [q10i_spec] - Please Specify: <input type="text"/>	jñ	jñ	jñ	jñ	jñ

Please indicate your opinion regarding the following factors as it relates to your desire to pursue or not to pursue an academic career:

[q11a] Appeal of other careers

jñ 1 Unappealing jñ 2 jñ 3 jñ 4 jñ 5 Very appealing

[q11b] Encouragement I received from faculty to pursue academia

jñ 1 Discouraged jñ 2 jñ 3 jñ 4 jñ 5 Strongly encouraged

[q11c] Exposure to other careers

jñ 1 Know very little jñ 2 jñ 3 jñ 4 jñ 5 Know a lot about them

[q11d] My spouse's/partner's career

jñ 1 Conflicts with mine jñ 2 jñ 3 jñ 4 jñ 5 Poses no conflict

[NOTE: display if nq22 is 'Married' or 'Living with a domestic partner' or unanswered]

[q11e] Geographic restrictions for job search

jñ 1 I am very constrained	jñ 2	jñ 3	jñ 4	jñ 5 I am free to move
----------------------------------	---------	---------	---------	------------------------------

[q11f] Ability to raise family & lead a balanced life with an academic career

jñ 1 Impossible to do	jñ 2	jñ 3	jñ 4	jñ 5 Very possible to do
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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations (continued)

[q12a] Which best describes your views regarding the following aspects of being a faculty member?

Salary levels in academia are:

☐ High ☐ Low

[q12b]

Obtaining research funding is:

☐ Difficult ☐ Easy

[q12c]

Teaching is:

☐ Enjoyable ☐ A burden

[q12d]

Research is:

☐ Enjoyable ☐ Tedious

[q12e]

The work load is:

☐ Reasonable ☐ Too high

[q12f]

The tenure and promotion process is:

☐ Problematic ☐ Unproblematic

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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations (continued)

[q13] Are you considering a faculty job at any point in the future?

☐ Yes ☐ No

[Note: If yes display Likert q14 and if no display Textarea q14no (if Doctoral student)]

If yes, at what kind of institution would you prefer to be employed?

	not at all	somewhat	very strong preference
[q14a] Two year community college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14b] Four year liberal arts college, with predominantly undergraduates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14c] Four year comprehensive university, with undergraduates and master's students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14d] Research university, with undergraduates, master's, and doctoral students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q14no] Please indicate which career(s) you are considering pursuing upon graduation.

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If you have questions or require technical assistance with this survey, please [email](#) the

Interview

[q33] We will interview a subset of survey respondents to understand their experiences in greater depth. This interview will be confidential. Would you be willing to be interviewed?

- ☐ **Yes. You may contact me to discuss an interview.**
- ☐ **Maybe. I need more information, you may contact me to talk further.**
- ☐ **No. I am not interested in an interview.**

[[Note: q33a is displayed if above question is YES or MAYBE](#)]

[q33a] You can reach me at this e-mail address or phone number:

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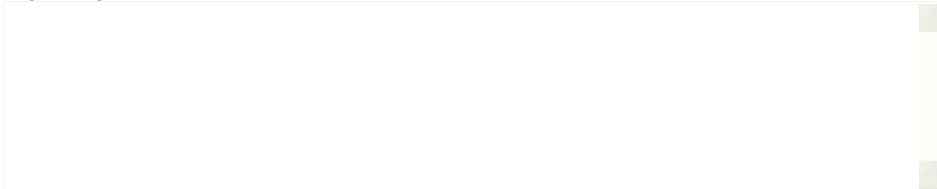
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If you have questions or require technical assistance with this survey, please [email](#) the

Other Thoughts

[q32] Please use this space to elaborate on your answer to any question, or tell us anything else you would like us to know regarding your experiences with your dissertation committee members or additional thoughts regarding your career plans.



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If you have questions or require technical assistance with this survey, please [email](#) the

Parts of the survey instrument adapted from the Andrew W. Mellon Foundation Graduate Education Survey, Council of Graduate Schools Ph.D. Completion Project, and Survey on Doctoral Education (University of Wisconsin-Madison).

APPENDIX B

Graduate Student-Faculty Advisor Gender Match Survey

Introduction

You are invited to participate in a research study investigating whether the gender of a doctoral student's faculty advisor matters in the student's doctoral experience, publication rate, and early job placement. We are asking you to participate because you received your doctorate from _____ in a Science, Engineering, or Mathematics field. Your participation is entirely voluntary, and every effort will be made to keep your responses secure and confidential.

What we will ask you to do: If you agree to be in this study, we will ask you to complete an online survey, which will take only 10-15 minutes.

Risks and Benefits: There are no anticipated risks to you beyond what is encountered in day-to-day life. The _____, which is administering this survey, uses state-of-the-art of technology to ensure security and confidentiality. However, with any online transmission, there is possibility that responses could be read by a third party. The responses you provide will benefit current and future doctoral students, as the findings will be used to inform policy decisions at higher education institutions to improve the doctoral education experience and to increase completion rates, as well as to encourage more women in Science and Engineering fields to pursue academic careers.

Your answers will be confidential: The records of this study will be kept private and will be secured by the _____. In any sort of report we make public we will not include any information that will make it possible to identify you.

Taking part is voluntary: You may skip any questions that you do not want to answer. If you decide to skip some of the questions or decide not to take part in the study, it will not affect your current or future relationship with _____.

If you have any questions: Please e-mail _____ . The researchers conducting this survey are _____.

[[Note: If consent is given then start survey, otherwise ask respondent to confirm that they are declining consent](#)]

[consent] Please indicate below if you have read the above information and consent to take part in the study.

☐ Yes, I have read the above information and consent to take part in the study.

☐ No, I do not wish to participate.

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Finish Later

If you have questions or require technical assistance with this survey, please [email](#) the _____.

Section A: Dissertation Chair

The following questions pertain to your dissertation committee chair (your primary advisor) at

[q1a] Dissertation Committee Chair - Gender:

☐ Female ☐ Male

[q1b] Dissertation Committee Chair - Tenure Status:

☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected my Dissertation Chair because he or she:

	Not at all	Minor reason	Major reason
[q2a_a] Was doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_b] Had a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_c] Had a reputation for being a good undergraduate classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_d] Had a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_e] Was knowledgeable in the techniques and methods that I wanted to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_f] Fostered a working environment that I liked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_g] Made me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_h] Had a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2a_i] Was assigned to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q3] Which of the following statements best characterizes your dissertation chair's attitude toward finishing the dissertation/completing the degree?

☐ Finish as quickly as possible
☐ Polish the dissertation, even if it delays completing the degree
☐ Publish, even if it delays completing the degree
☐ Advisor did not indicate a preference

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If you have questions or require technical assistance with this survey, please [email](#) the

Section A: Dissertation Chair (continued)

Indicate the extent that each statement describes the behavior of your dissertation chair.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Does not apply
[q15a] Was available to me when I needed help with my research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15b] Helped connect me with other professionals in my field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15c] Assisted me in writing presentations or publications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15d] Helped me with skills and techniques for teaching undergraduates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q15e] Provided emotional support when I needed it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often did you meet with your dissertation chair during the following phases:

	Weekly or more often	2 to 3 times a month	Once a month	Once every 2 to 3 months	Less than once every 3 months	Does not apply
[q16a] while preparing your dissertation proposal or prospectus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q16b] while researching or analyzing data for your dissertation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q16c] while writing your dissertation (including the end stage of your dissertation writing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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If you have questions or require technical assistance with this survey, please [email](#) the

Section A: Dissertation Chair (continued)

Indicate the extent to which you agree with the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
[q17a] I had the dissertation chair I wanted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q17b] I am satisfied with the amount of time I spent with my dissertation chair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q17c] My dissertation chair provided me with the guidance that I needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q17d] I am still in contact with my dissertation chair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[q18] How satisfied do you think your **dissertation chair** is with being a faculty member at ?

☐ Very dissatisfied
 ☐ Somewhat dissatisfied
 ☐ Neither satisfied nor dissatisfied
 ☐ Somewhat satisfied
 ☐ Very satisfied
 ☐ Don't know

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If you have questions or require technical assistance with this survey, please [email](#) the

Section B: Publications

The following section asks about your publications. Include only works published or accepted for publication during your doctorate program at (prior to graduation).

[q4] While a doctoral student, did you publish or have accepted for publication any articles, books, book chapters, or reviews?

☐ Yes ☐ No

[q5] While a doctoral student, did you coauthor a publication with your dissertation chair?

☐ Yes ☐ No

[q7] While a doctoral student, how many peer-reviewed journal articles did you publish or have accepted for publication (include coauthored and sole-authored)

-- Select --

[q8] While a doctoral student, on how many peer-reviewed journal articles accepted for publication were you the sole or first author?

-- Select --

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If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Dissertation Committee Members

The next two pages pertain to your minor dissertation committee members. (If you had a total of four dissertation committee members, please choose the minor faculty members whom you interacted with most.)

[nq12a] Minor Committee Member One - Gender:

☐ Female ☐ Male

[nq12b] Minor Committee Member One - Tenure Status:

☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected Minor Committee Member One because he or she:

	Not at all	Minor reason	Major reason
[q2b_a] Was doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_b] Had a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_c] Had a reputation for being a good undergraduate classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_d] Had a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_e] Was knowledgeable in the techniques and methods that I wanted to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_f] Fostered a working environment that I liked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_g] Made me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2b_h] Had a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq14] While a doctoral student, did you coauthor a publication with Minor Committee Member One?

☐ Yes ☐ No

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If you have questions or require technical assistance with this survey, please [email](#) the

Section C: Minor Committee Members (continued)

[nq15a] Minor Committee Member Two - Gender:

☐ Female ☐ Male

[nq15b] Minor Committee Member Two - Tenure Status:

☐ Not Tenured
☐ Tenured
☐ Became Tenured while I was a graduate student

I selected Minor Committee Member Two because he or she:

	Not at all	Minor reason	Major reason
[q2c_a] Was doing interesting research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_b] Had a reputation for being a good researcher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_c] Had a reputation for being a good undergraduate classroom instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_d] Had a reputation for being a good dissertation advisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_e] Was knowledgeable in the techniques and methods that I wanted to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_f] Fostered a working environment that I liked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_g] Made me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q2c_h] Had a good reputation for placing his or her students in academic positions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq17] While a doctoral student, did you coauthor a publication with Minor Committee Member Two?

☐ Yes ☐ No

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If you have questions or require technical assistance with this survey, please [email](#) the

Section D: Demographic Data

[q9] How satisfied are you with your overall graduate education experience?

☐ Very dissatisfied
 ☐ Somewhat dissatisfied
 ☐ Neither satisfied nor dissatisfied
 ☐ Somewhat satisfied
 ☐ Very satisfied

[sdq2] If you could do it over again, would you select another institution for your graduate studies?

☐ Yes ☐ No

[sdq3] If you could do it over again, would you select another department or field for your graduate studies?

☐ Yes ☐ No

[sdq4] Before you started your doctoral program at _____, were you employed full-time for a salary?

☐ Yes ☐ No

[[Note: Question displayed if answer to above question was yes.](#)]

[sdq5] If yes, was this full-time position related to your field of study at _____ ?

☐ Yes ☐ No

[nq19] When you first enrolled in your doctoral program at _____, were you:

☐ Married
☐ Living with a domestic partner
☐ Widowed, Divorced, or Separated
☐ Never Married

[nq20] When you first enrolled in your doctoral program at _____, did you have any dependents under the age of 18 in your household?

☐ Yes ☐ No

When you first enrolled in your doctoral program at _____, what was the highest level of education your mother and father had attained?

	Less than a high school graduate	High school graduate	Some college/vocational school	Bachelor's degree	Some graduate school	Master's or professional degree (e.g. MA, MBA, MD, JD)	Doctoral degree	Don't know
[nq21a] Mother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[nq22b] Father	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[nq22] When you completed your doctoral program at _____, were you:

☐ Married
☐ Living with a domestic partner

☐ **Widowed, Divorced, or Separated**

☐ **Never Married**

[nq23] When you completed your doctoral program at _____, did you have any dependents under the age of 18 in your household?

☐ **Yes** ☐ **No**

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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations

Please rate the extent the following individuals have influenced your career goals during your doctorate program at .

	Very little influence 1	2	3	4	A lot of influence 5
[q10a] Dissertation Chair	jñ	jñ	jñ	jñ	jñ
[q10b] Minor Committee Member One	jñ	jñ	jñ	jñ	jñ
[q10c] Minor Committee Member Two	jñ	jñ	jñ	jñ	jñ
[q10d] Parent or other family member	jñ	jñ	jñ	jñ	jñ
[q10e] Friends	jñ	jñ	jñ	jñ	jñ
[q10f] Peers/Fellow Graduate Students	jñ	jñ	jñ	jñ	jñ
[q10g] Self	jñ	jñ	jñ	jñ	jñ
[q10h] Spouse/Domestic Partner [NOTE: display if nq22 is 'Married' or 'Living with a domestic partner']	jñ	jñ	jñ	jñ	jñ
[q10i] Other [q10i_spec] - Please Specify: <input type="text"/>	jñ	jñ	jñ	jñ	jñ

Please indicate your opinion regarding the following factors as it relates to your desire to pursue or not to pursue an academic career:

[q11a] Appeal of other careers

jñ 1 Unappealing jñ 2 jñ 3 jñ 4 jñ 5 Very appealing

[q11b] Encouragement I received from faculty to pursue academia

jñ 1 Discouraged jñ 2 jñ 3 jñ 4 jñ 5 Strongly encouraged

[q11c] Exposure to other careers

jñ 1 Know very little jñ 2 jñ 3 jñ 4 jñ 5 Know a lot about them

[q11d] My spouse's/partner's career

jñ 1 Conflicts with mine jñ 2 jñ 3 jñ 4 jñ 5 Poses no conflict

[NOTE: display if nq22 is 'Married' or 'Living with a domestic partner' or unanswered]

[q11e] Geographic restrictions for job search

jñ 1	jñ 2	jñ 3	jñ 4	jñ 5
I am very constrained				I am free to move

[q11f] Ability to raise family & lead a balanced life with an academic career

jñ 1	jñ 2	jñ 3	jñ 4	jñ 5
Impossible to do				Very possible to do

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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations (continued)

[q12a] Which best describes your views regarding the following aspects of being a faculty member?

Salary levels in academia are:

☐ High ☐ Low

[q12b]

Obtaining research funding is:

☐ Difficult ☐ Easy

[q12c]

Teaching is:

☐ Enjoyable ☐ A burden

[q12d]

Research is:

☐ Enjoyable ☐ Tedious

[q12e]

The work load is:

☐ Reasonable ☐ Too high

[q12f]

The tenure and promotion process is:

☐ Problematic ☐ Unproblematic

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If you have questions or require technical assistance with this survey, please [email](#) the

Section E: Career Aspirations (continued)

[q13] While you were completing your doctorate, did you consider applying for a faculty job?

☐ Yes ☐ No

[[Note: If yes display Likert q14 and if no display Textarea q14no \(if Doctoral student\)](#)]

If yes, at what kind of institution would you have preferred to be employed?

	not at all	somewhat	very strong preference
[q14a] Two year community college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14b] Four year liberal arts college, with predominantly undergraduates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14c] Four year comprehensive university, with undergraduates and master's students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[q14d] Research university, with undergraduates, master's, and doctoral students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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If you have questions or require technical assistance with this survey, please [email](#) the

Section F: Employment

[q22] Were you employed within 6 months of receiving your doctorate?

- ☐ Yes ☐ No (not employed, but was looking) ☐ No (not employed, not looking)

[Note: Displayed if q22 is YES]

[q23] If yes, was your principal employer (6 months after receiving your doctorate) a:

- ☐ An educational institution
☐ A for-profit company, business or individual, paying wages, salary, or commissions (excluding educational institutions)
☐ A not-for-profit, tax-exempt, or charitable organization (excluding educational institutions)
☐ Local, state, or federal government (excluding educational institutions)
☐ Self-employed
☐ Other

[Note: q24 and q25 displayed if q23 is "An educational Institution"]

[q24] If you worked at an educational institution within 6 months after graduation, was the institution a:

- ☐ Two year community college
☐ Four year liberal arts college, with predominantly undergraduates
☐ Four year comprehensive university, with undergraduates and master's students
☐ Research university, with undergraduates, master's, and doctoral students
☐ Other

[q25] Was this position: faculty, post-doctoral, a lectureship, a deanship, or a provostship?

- ☐ Yes, full-time
☐ Yes, part-time
☐ No

[Note: q26 and q27 displayed if q25 is "Yes, full time" or "Yes, part Time"]

[q26] Which of the following best describes this position?

- ☐ Post-Doctoral fellow
☐ Instructor or lecturer
☐ Adjunct faculty
☐ Assistant professor - non-tenure-track
☐ Assistant professor - tenure-track
☐ Associate/full professor - non-tenure-track
☐ Associate/full professor - tenure-track
☐ Other faculty position

[q27] What was your primary work activity for this position?

- ☐ **Mainly teaching**
- ☐ **Mainly research**
- ☐ **Teaching and research equally**
- ☐ **Teaching, research, and administration**
- ☐ **Mainly administration such as budgeting, committee work, or advising**

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If you have questions or require technical assistance with this survey, please [email](#) the

Section F: Employment (continued)

[q28] Do you currently hold a faculty position at a college or university? (Include lectureships, post-doctoral appointments, deanships, and provostships as faculty positions.)

☐ Yes ☐ No

[[Note: q29, q30 and q31 displayed if above answer is YES](#)]

[q29] If yes, which of the following best describes this faculty position?

- ☐ Post-Doctoral fellow
- ☐ Instructor or lecturer
- ☐ Adjunct faculty
- ☐ Assistant professor - non-tenure-track
- ☐ Assistant professor - tenure-track
- ☐ Associate/full professor - non-tenure-track
- ☐ Associate/full professor - tenure-track
- ☐ Other faculty position

[q30] If you have a faculty position, which type of institution do you work in?

- ☐ Two year community college
- ☐ Four year liberal arts college, with predominantly undergraduates
- ☐ Four year comprehensive university, with undergraduates and master's students
- ☐ Research university, with undergraduates, master's, and doctoral students
- ☐ Other

[q31] What is your primary work activity for this faculty position?

- ☐ Mainly teaching
- ☐ Mainly research
- ☐ Teaching and research equally
- ☐ Teaching, research, and administration
- ☐ Mainly administration such as budgeting, committee work, or advising

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If you have questions or require technical assistance with this survey, please [email](#) the

Interview

[q33] We will interview a subset of survey respondents to understand their experiences in greater depth. This interview will be confidential. Would you be willing to be interviewed?

- ☐ **Yes. You may contact me to discuss an interview.**
- ☐ **Maybe. I need more information, you may contact me to talk further.**
- ☐ **No. I am not interested in an interview.**

[[Note: q33a is displayed if above question is YES or MAYBE](#)]

[q33a] You can reach me at this e-mail address or phone number:

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If you have questions or require technical assistance with this survey, please [email](#) the

Other Thoughts

[q32] Please use this space to elaborate on your answer to any question, or tell us anything else you would like us to know regarding your experiences with your dissertation committee members or additional thoughts regarding your career plans.

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If you have questions or require technical assistance with this survey, please [email](#) the

Parts of the survey instrument adapted from the Andrew W. Mellon Foundation Graduate Education Survey, Council of Graduate Schools Ph.D. Completion Project, and Survey on Doctoral Education (University of Wisconsin-Madison).

APPENDIX C

Percent Completers and Leavers by Entry Year and Chair Gender

Percentage of students who complete PhDs by student and chair gender

	Female Students		Male Students	
	<i><u>Female Chair</u></i>	<i><u>Male Chair</u></i>	<i><u>Female Chair</u></i>	<i><u>Male Chair</u></i>
1999	80%	90%	100%	66%
2000	83%	74%	100%	68%
2001	100%	84%	100%	80%
2002	78%	78%	80%	80%
2003	100%	75%	63%	74%
Avg	88%	80%	89%	74%

Percentage of students who leave by student and chair gender

	Female Students		Male Students	
	<i><u>Female Chair</u></i>	<i><u>Male Chair</u></i>	<i><u>Female Chair</u></i>	<i><u>Male Chair</u></i>
1999	20%	10%	0%	22%
2000	17%	21%	0%	19%
2001	0%	16%	0%	18%
2002	0%	19%	10%	16%
2003	0%	11%	0%	10%
Avg	7%	15%	2%	17%

APPENDIX D

Academic Job Placement Within 6 Months of PhD (Omits Department Variables)

	Model 1		Model 2	
	Women	Men	Women	Men
FemaleChair	0.09063 (0.1251)	-0.02765 (0.1212)		
OneFemMinorMem	-0.03531 (0.1440)	-0.11716 (0.1016)		
OneFemAdvisor			0.07015 (0.1083)	-0.08848 (0.0822)
Proportion of Female Faculty	0.01706* (0.0072)	0.00184 (0.0086)	0.01682* (0.0071)	0.00654 (0.0079)
GREQuant	0.00206+ (0.0012)	0.00033 (0.0008)	0.00236* (0.0011)	0.00047 (0.0007)
International	0.0647 (0.1196)	-0.09744 (0.0750)	0.04661 (0.1180)	-0.10801 (0.0737)
NonWhiteUSCit	-0.03203 (0.1536)	-0.16273 (0.1074)	-0.06494 (0.1489)	-0.18311+ (0.1061)
Age	0.00501 (0.0191)	-0.00336 (0.0145)	0.00509 (0.0191)	-0.00766 (0.0142)
Publications	0.04722* (0.0190)	0.01860+ (0.0108)	0.04917** (0.0191)	0.01837+ (0.0108)
<i>Financial Aid (Fellowship Omitted)</i>				
Research Assistantship	-0.09125 (0.1906)	-0.17265 (0.1381)	-0.09255 (0.1874)	-0.11666 (0.1361)
Teaching Assistantship	0.21786 (0.2074)	0.02809 (0.1486)	0.19647 (0.2036)	0.04937 (0.1472)
<i>Program Duration (6 years omitted)</i>				
4 years	-0.10692 (0.3074)	0.01333 (0.1271)	-0.11196 (0.3054)	0.02706 (0.1248)
5 years	-0.15921 (0.1151)	0.04698 (0.0745)	-0.1685 (0.1132)	0.04372 (0.0737)
7 years	0.0638 (0.1719)	0.11422 (0.1028)	0.05443 (0.1688)	0.10312 (0.1022)
8 years or more	-0.02386 (0.2123)	0.06254 (0.1328)	-0.04146 (0.2085)	0.05672 (0.1326)
Departments	NO	NO	NO	NO
Observations	95	241	96	245
Pseudo Rsquared	0.177	0.037	0.181	0.037

+ p<0.10,* p<0.05,** p<0.01,*** p<0.001

Standard errors in parentheses

Missing Dummy Variables Not Shown

GRADUATE EDUCATION STUDY

(ID number, Department and School)

Sponsored by:
Andrew W. Mellon Foundation

Conducted by:
Mathematica Policy Research, Inc.

IMPORTANT: PLEASE READ

This survey focuses on graduate education. Because some of you will have completed your doctoral degrees, some are still in the process of doing so, and some have left a doctoral program, not all questions pertain to everyone. We are aware that you may have enrolled in more than one doctoral program.

- **For this survey, we want you to respond to the questions based only on your experience as a student in the department indicated on the label on the front cover.**
- Since we only have the name of your PhD department and not your specific program, most references are to "your department." If applicable, in your answers, please consider your program within the department listed.
- If you were in an interdepartmental program, please answer the questions about departments referring to that interdepartmental program.
- The questions are written in the past tense. If you are still registered in the department noted on the front cover, please answer based on your experience to date.

Because not all questions will apply to everyone, you may be asked to skip certain questions.

- Follow all "SKIP" and "GO TO" instructions AFTER marking a box. If no "SKIP" or "GO TO" instructions are provided, continue to the NEXT question.
- If you are unsure about an answer, please make your best estimate.
- Participation in this survey is completely voluntary and you may skip over any questions that you do not wish to answer.

Thank you for taking the time to complete this questionnaire.

Prepared by Mathematica Policy Research, Inc.

SECTION A: ACADEMIC EXPERIENCES

A1. Thinking about the doctoral department at which you most wanted to study (your first choice), which of the following statements best describes your experience?

MARK ONE ONLY

- 1 ☐ You were accepted by and studied at your first choice
- 2 ☐ You applied and were accepted by your first choice, but decided to study elsewhere
- 3 ☐ You applied, but were not accepted by your first choice
- 4 ☐ You didn't apply to your first choice department

A2. At the time you were applying to graduate school, how important were each of the following factors in your choice of a doctoral program?

- Please put a "1" next to the most important factor, a "2" next to the 2nd most important, and so on until each factor is ranked

- _____ Opportunity to work with particular faculty members
- _____ Reputation of the school or department
- _____ Financial support offered by the school or department
- _____ Location of the school
- _____ Program attributes (e.g., flexibility with courses or scheduling, no language requirements)

A3. When you first enrolled as a graduate student in the department indicated on the front cover, did you ...

MARK YES OR NO FOR EACH

Yes	No
-----	----

- a. Already have a Master's degree? 1 ☐ 0 ☐
- b. Transfer to this department from some other PhD program? 1 ☐ 0 ☐
- c. Receive course credit or advanced standing from this department as a result of earlier graduate work? 1 ☐ 0 ☐

A4. When you first enrolled in the PhD department listed on the front cover, how many years did you think it would take you to complete your PhD?

MARK ONE ONLY

- 1 ☐ Fewer than 5 years
- 2 ☐ 5 to 6 years
- 3 ☐ 7 to 8 years
- 4 ☐ 9 or more years
- 5 ☐ Had no specific expectation

A5. When you were admitted to the PhD program in the department listed on the front cover, were you offered financial support?

- Do not count the financial support awarded either after or outside the initial offer

- 1 ☐ Yes
- 0 ☐ No → SKIP TO A9 (PAGE 2)

A6. Was the initial offer of financial support for one year or for multiple years?

- 1 ☐ One year → SKIP TO A9 (PAGE 2)
- 0 ☐ Multiple years

A7. Was the financial support beyond the first year conditional on any of the following factors ...

MARK YES OR NO FOR EACH

Yes	No
-----	----

- a. Satisfactory progress? 1 ☐ 0 ☐
- b. Meeting particular deadlines? 1 ☐ 0 ☐
- c. Something else? (Specify) 1 ☐ 0 ☐

A8. Assuming satisfactory progress, how many years of financial support were you promised in that initial offer?

NUMBER OF YEARS: _____

A9. As part of your PhD program, did your department expect you to:

- Please include informal expectations as well as formal requirements.

MARK YES OR NO FOR EACH		
Yes	No	Don't Know/ Not Applicable

- a. Take a course or practicum on research methods in preparation for the dissertation? 1 ☐ 0 ☐ -1 ☐
- b. Attend a course or seminar to help prepare the dissertation proposal? 1 ☐ 0 ☐ -1 ☐
- c. Attend a course or seminar on the dissertation process after completing the proposal? 1 ☐ 0 ☐ -1 ☐
- d. Have portions of your qualifying or comprehensive exam(s) tailored, at least in part, to your specific dissertation research interest? 1 ☐ 0 ☐ -1 ☐
- e. Complete your dissertation proposal or prospectus as part of the qualifying or comprehensive exam? 1 ☐ 0 ☐ -1 ☐
- f. Present your dissertation work-in-progress to other students? 1 ☐ 0 ☐ -1 ☐

A10. Listed below are some tasks that departments may expect students to accomplish during the summer. Indicate in column A10.1 if each of the following were expected of you. In column A10.2 (regardless of department expectations), please indicate if you did this. In column A10.3, indicate whether you received summer funding for this activity.

A10.1 Summer Expectation?	A10.2 Did you do this?			A10.3 Did you get summer funding for this?	
	Yes	No	Don't Know	Yes	No
a. Attend a summer course or seminar on preparing for qualifying or comprehensive exams.....	1 <input type="checkbox"/>	0 <input type="checkbox"/>	-1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/> -1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/>
b. Take a summer workshop or course to prepare a dissertation proposal.....	1 <input type="checkbox"/>	0 <input type="checkbox"/>	-1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/> -1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/>
c. Do field work, travel, or archival research prior to dissertation stage.....	1 <input type="checkbox"/>	0 <input type="checkbox"/>	-1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/> -1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/>
d. Prepare for language exams.....	1 <input type="checkbox"/>	0 <input type="checkbox"/>	-1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/> -1 <input type="checkbox"/>	1 <input type="checkbox"/> 0 <input type="checkbox"/>

A11. Please indicate if you were informed in writing about each of the following, and if so, by whom.

A11.1 Informed In Writing		A11.2 By Whom		
No	Yes	Department	University	Don't Know

- a. Course requirements 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐
- b. Policies regarding Incompletes 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐
- c. Definition of satisfactory progress 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐
- d. Deadlines for completing coursework and exams (e.g., advancement to candidacy) 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐
- e. Department or university goals to increase PhD completion rates..... 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐
- f. Departmental expectations concerning length of time to complete the PhD 0 ☐ 1 ☐ → 1 ☐ 2 ☐ -1 ☐

A12. When you first began your doctoral program at the department listed on the cover, was there a university or graduate school policy regarding the maximum amount of time, without any extensions, in which students were expected to complete the PhD?

MARK ONE ONLY

- 1 ☐ Yes
0 ☐ No
-1 ☐ Don't know → SKIP TO A14

A13. What was the maximum number of years the university allowed for completing a PhD?

- Do not include any extensions

MARK ONE ONLY

- 1 ☐ Less than 5 years
2 ☐ 5 to 6 years
3 ☐ 7 to 8 years
4 ☐ 9 or more years
-1 ☐ Don't know

A14. Please indicate how your department evaluated your progress during the following stages.

- If you have reached or completed the dissertation stage: Mark "yes" or "no" for each item in both the "Coursework and Exams" column and the "Dissertation" column
- If you have not reached the dissertation stage:
☐ Mark here, then ONLY mark "yes" or "no" to each item in the "Coursework and Exams" column. After completing "Coursework and Exams" column, SKIP to A16
- If you don't know if an item was used to evaluate progress, mark the don't know (DK) column

Coursework and Exams			Dissertation		
Yes	No	DK	Yes	No	DK

- a. Letter grades 1 ☐ 0 ☐ -1 ☐ 1 ☐ 0 ☐ -1 ☐
- b. Written assessments (other than letter grades)..... 1 ☐ 0 ☐ -1 ☐ 1 ☐ 0 ☐ -1 ☐
- c. Formal review with advisor or other faculty member 1 ☐ 0 ☐ -1 ☐ 1 ☐ 0 ☐ -1 ☐
- d. Formal faculty committee review to determine progress... 1 ☐ 0 ☐ -1 ☐ 1 ☐ 0 ☐ -1 ☐
- e. Other (Specify) 1 ☐ 0 ☐ -1 ☐ 1 ☐ 0 ☐ -1 ☐

A15. Which of the following statements best characterized your dissertation advisor's attitude towards finishing the dissertation?

MARK ONE ONLY

- 1 ☐ Finish as quickly as possible
2 ☐ Polish the dissertation, even if it delayed completing the degree
3 ☐ Publish, even if it delayed completing the degree
4 ☐ Advisor didn't indicate a preference
5 ☐ Did not have advisor

A16. Which of the following statements best characterized your department's attitude towards finishing the dissertation?

MARK ONE ONLY

- 1 ☐ Finish as quickly as possible
2 ☐ Polish the dissertation, even if it delayed completing the degree
3 ☐ Publish, even if it delayed completing the degree
4 ☐ Department didn't have a preference or preferences were inconsistent

A17. How well did your doctoral program prepare you for each of the following:

- A "5" means the program prepared you very well and a "1" means the program did not prepare you well at all. You may use any number from 5 to 1
- If you are unable to rate or if an item doesn't apply to you or your program, please mark the don't know, not applicable (DK/NA) column

Very Well					Not at All Well	DK/NA
5	4	3	2	1		

- a. Teaching at the collegiate level..... 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ -1 ☐
- b. Conducting research..... 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ -1 ☐
- c. Publishing research in academic books or peer-reviewed journals.. 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ -1 ☐
- d. Applying for research grants..... 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ -1 ☐
- e. Presenting papers at professional conferences..... 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ -1 ☐

SECTION B: ADVISING AND DEPARTMENTAL CULTURE

In this section, please think only about the department listed on the front cover.

B1. While you were completing your coursework and exam requirements, did any faculty members or department administrators take a special interest in your work—that is, was there someone you could turn to for academic advice, support or encouragement?

- 1 ☐ Yes
0 ☐ No → SKIP TO B3

B2. Who took a special interest in your work while you were completing your coursework and exam requirements?

MARK ALL THAT APPLY

- 1 ☐ Eventual dissertation advisor or sponsor
2 ☐ Assigned faculty member other than dissertation advisor
3 ☐ Other faculty member
4 ☐ Department administrator/secretary
5 ☐ Someone else

B3. In general, how useful was the advising you received in each of the following areas?

MARK ONE FOR EACH				
Very Useful	Some-what Useful	Not Useful	Not Advised	Have Not Reached This Stage/Not Applicable

- a. Developing your dissertation prospectus/proposal 1 ☐ 2 ☐ 3 ☐ 4 ☐ -4 ☐
- b. Researching and writing your dissertation 1 ☐ 2 ☐ 3 ☐ 4 ☐ -4 ☐
- c. Obtaining dissertation grants 1 ☐ 2 ☐ 3 ☐ 4 ☐ -4 ☐
- d. Obtaining an academic job 1 ☐ 2 ☐ 3 ☐ 4 ☐ -4 ☐
- e. Obtaining a non-academic job 1 ☐ 2 ☐ 3 ☐ 4 ☐ -4 ☐

B4. While you were enrolled in the department listed on the front cover, how often did you ...

MARK ONE FOR EACH				
Often	Some-times	Rarely	Never	Not Available

- a. Attend optional seminars, workshops or brown bags for students and faculty? 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
- b. Make use of department space for work (e.g., office space or lab space)? 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
- c. Meet socially with faculty members at department functions? 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

B5. After a dissertation proposal was approved, did your department offer special workshops, seminars, or brown bags on dissertation writing or related topics?

- 1 ☐ Yes
0 ☐ No → SKIP TO B6 (PAGE 5)
-1 ☐ Don't know

B6. Were students required to ...

MARK YES OR NO FOR EACH

Yes	No	Don't Know
-----	----	------------

- a. Attend such workshops? 1 ☐ 0 ☐ -1 ☐
- b. Present their work at these workshops? 1 ☐ 0 ☐ -1 ☐

B7. Was financial support conditional on attending these workshops?


- 1 ☐ Yes
0 ☐ No
-1 ☐ Don't know

B8. To what extent do you agree or disagree with the following statements?

	MARK ONE FOR EACH				
	Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree
a. There was a sense of solidarity among students within the department.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
b. The department fostered competitiveness among students	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
c. Faculty facilitated student involvement in the intellectual life of the department.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
d. There was a lack of personal involvement and support among faculty, students and the department.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

B9. Thinking about the doctoral program at the department listed on the front cover, how much, if at all, did each of the following factors slow your progress towards completing your PhD?

- A "5" means the factor slowed your progress a great deal and a "1" means it did not slow your progress at all. You may use any number from 5 to 1
- Please mark "Not Applicable" if an item does not pertain to your situation or department

	SLOWED YOUR PROGRESS					Not Applicable	
	A Great Deal						Not At All
	5	4	3	2	1		
a. The number of required courses	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
b. Holding a TA or RA position.....	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
c. Being employed outside the department	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
d. Poor academic advising	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
e. Dissertation supervisor's lack of availability (e.g., being on leave, infrequent meetings or scheduling problems)	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
f. The time required for research or field work	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
g. Language requirements	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
h. Job search activities (e.g., taking time away from writing dissertation)	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
i. Time needed to find an acceptable job (delaying official completion of your dissertation)	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
j. Political struggles or friction within the department.....	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
k. Personal reasons (e.g., personal, family or health reasons)	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	
l. Other (Specify) 	5 <input type="checkbox"/>	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	4 <input type="checkbox"/>	

B10. How many language exams were you required to pass (excluding any English as a Second Language requirements)?

NUMBER OF REQUIRED LANGUAGE EXAMS: _____ OR ☐ NONE

B11. While you were completing coursework and exam requirements at the department on the front cover, were you ever registered or enrolled part-time . . .

MARK YES OR NO FOR EACH

Yes	No
-----	----

- a. While completing your coursework? ☐ Yes ☐ No
- b. After completing your coursework, but before completing exams? ☐ Yes ☐ No
- c. After completing your exams but before writing your dissertation proposal or prospectus? ☐ Yes ☐ No

B12. In total, for how many terms were you registered or enrolled part-time?

NUMBER OF TERMS
REGISTERED/ENROLLED PART-TIME: _____

☐ NONE

B13. Before completing your comprehensive exams, (sometimes called comps or quals or orals), did you ever take time off officially or unofficially?

• Do not include any leaves for academic research

Number
of Terms

- a. Official leave ☐ Yes → _____
☐ No
- b. Unofficial leave (time off) ☐ Yes → _____
☐ No

B14. For which of the following reasons did you take a leave?

☐ Did not take any leave → GO TO B15

MARK YES OR NO FOR EACH

Yes	No
-----	----

- a. Financial reasons ☐ Yes ☐ No
- b. Medical reasons ☐ Yes ☐ No
- c. Employment obligations ☐ Yes ☐ No
- d. Personal or family obligations ☐ Yes ☐ No
- e. Other (Specify) _____ ☐ Yes ☐ No

B15. Did you complete all of your course requirements?

☐ No, course requirements not completed → SKIP TO B17

- ☐ Yes, at department listed on front cover
- ☐ Yes, at some other department

B16. When did you complete all of your PhD course requirements?

MARK ONE ONLY

- ☐ By the end of the first academic year
- ☐ By the end of the second academic year
- ☐ By the end of the third academic year
- ☐ By the end of the fourth academic year
- ☐ After the fourth academic year

B17. Did you complete your exam requirements which lead to advancement to PhD candidacy?

☐ No, exam requirements not completed → SKIP TO B19 (PAGE 7)

- ☐ No exam requirements
- ☐ Yes, completed at department listed on cover
- ☐ Yes, completed at some other department

B18. Did you complete your last exam requirements . . .

MARK ONE ONLY

- ☐ Before finishing coursework
- ☐ Concurrently with finishing coursework
- ☐ Within 3 months of finishing coursework
- ☐ 3 to 6 months after finishing coursework
- ☐ 6 months to a year after finishing coursework
- ☐ More than a year after finishing coursework

The next series of questions is about the Dissertation Stage.

B19. Did you complete your dissertation proposal?

1 ☐ Yes
0 ☐ No → SKIP TO B22

B20. Was it completed in the department listed on the front cover?

1 ☐ Yes
0 ☐ No → SKIP TO B36 (PAGE 8)

B21. When was your dissertation proposal or prospectus approved?

MARK ONE ONLY

0 ☐ Not Applicable—proposal approval not required
1 ☐ Not Applicable—have not had my dissertation proposal approved
2 ☐ Before completing exam requirements
3 ☐ Concurrently with completing exam requirements
4 ☐ Within 3 months of completing exam requirements
5 ☐ 3 to 6 months after completing exam requirements
6 ☐ 6 months to a year after completing exam requirements
7 ☐ More than a year after completing exam requirements

B22. Have you begun work on your dissertation?

1 ☐ Yes, started but not yet completed
2 ☐ Yes, completed dissertation → SKIP TO B26
0 ☐ No → SKIP TO B36 (PAGE 8)

B23. When do you expect to finish your PhD?

MARK ONE ONLY

1 ☐ Within the next year
2 ☐ Within the next 2 years
3 ☐ Within the next 3 years
4 ☐ More than 3 years from now
5 ☐ Do not expect to finish the degree
6 ☐ Don't know/No specific plans

B24. Are you in contact with your dissertation advisor?

1 ☐ Yes
0 ☐ No

B25. While enrolled in the department listed on the front cover, was your dissertation advisor in this department or in a different department or school?

• If you had more than one advisor or supervisor in this department, please answer for the one with whom you worked most closely

1 ☐ This department
2 ☐ Different department or school

B26. Was your dissertation advisor:

1 ☐ Female
2 ☐ Male

B27. Was your dissertation advisor:

MARK ONE ONLY

1 ☐ Tenured?
2 ☐ Not tenured, but became tenured during the time you worked on your dissertation?
3 ☐ Not tenured?
4 ☐ Don't know

B28. Did you ever change your dissertation advisor?

1 ☐ Yes
0 ☐ No → SKIP TO B30 (PAGE 8)

B29. Why did you change your advisor?

MARK YES OR NO FOR EACH

	Yes	No
a. Changed dissertation topics	1 <input type="checkbox"/>	0 <input type="checkbox"/>
b. Changed departments	1 <input type="checkbox"/>	0 <input type="checkbox"/>
c. Bad working relationship	1 <input type="checkbox"/>	0 <input type="checkbox"/>
d. Advisor left or became unavailable (e.g., retired, over-committed, became ill, or moved)	1 <input type="checkbox"/>	0 <input type="checkbox"/>
e. Wanted advisor with more expertise or relevant experience	1 <input type="checkbox"/>	0 <input type="checkbox"/>

B30. How often did you communicate with your dissertation advisor at each of the following stages?

- Your best estimate is fine

MARK ONE FOR EACH					
Weekly or More Often	2-3 Times a Month	Once a Month	Once Every 2 to 3 Months	Less Than Once Every 3 Months	Does Not Apply/Not to This Stage

- a. While preparing your dissertation proposal or prospectus..... 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ -4 ☐
- b. While researching and writing your dissertation..... 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ -4 ☐
- c. At the end-stage of your dissertation writing..... 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ -4 ☐

B31. Did you complete and defend your dissertation?

MARK ONE ONLY

- 1 ☐ Yes, completed and defended
- 2 ☐ Completed dissertation, not yet defended
- 3 ☐ Completed dissertation, but defense not required
- 4 ☐ Dissertation not completed → SKIP TO B36

B32. Which of the following factors, if any, kept you focused on finishing your dissertation during your final months of writing?

MARK YES OR NO FOR EACH

- | | Yes | No |
|--|----------------------------|----------------------------|
| a. Had a job offer? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| b. Knew your department would hire you as a post-doc or instructor if you graduated within a certain time period? .. | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| c. Wanted to limit student loans? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| d. Feared losing health care privileges? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| e. Feared losing housing privileges? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| f. Feared losing library privileges? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| g. Feared losing funding? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| h. Wanted to avoid tuition increase? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| i. Had a dissertation fellowship that allowed you to work exclusively on writing? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| j. Personal or family issues? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| k. Other? (Specify) | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |

B33. After defending your dissertation, were you required to make:

MARK ONE ONLY

- 1 ☐ Major revisions
- 2 ☐ Minor revisions
- 3 ☐ No revisions
- 4 ☐ Not yet defended or no defense required → SKIP TO B36

B34. Approximately how many months elapsed between your dissertation defense and the date your degree was conferred?

- Consider the date on your diploma or transcripts as the date conferred
- If less than one month elapsed, please enter a "1"

NUMBER OF MONTHS: _____

- 1 ☐ Don't know/Don't remember

B35. During the year in which you completed the dissertation, what was your primary source of financial support?

MARK ONE ONLY

- 1 ☐ Fellowship income
- 2 ☐ Stipend from teaching or research assistantship
- 3 ☐ Other part-time employment
- 4 ☐ Full-time employment
- 5 ☐ Support from spouse, family, or savings
- 6 ☐ Other (Specify) ➔

The next section asks about publications, regardless of where you were studying at the time.

B36. Have you ever published or had accepted for publication any papers, reviews, or books?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO C1 (PAGE 9)

B37. While you were still a PhD candidate, did you ever coauthor a publication with ...

MARK YES OR NO FOR EACH

- | | Yes | No |
|--|----------------------------|----------------------------|
| a. Your dissertation advisor? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |
| b. Other faculty members (including those from other departments or institutions)? | 1 <input type="checkbox"/> | 0 <input type="checkbox"/> |

B38. After completing your PhD, did you ever coauthor a publication with ...

☐ Have not completed PhD → SKIP TO B40

MARK YES OR NO FOR EACH

Yes	No
-----	----

- a. Your dissertation advisor? ☐ Yes ☐ No
- b. Other faculty members (including those from other departments or institutions)? ☐ Yes ☐ No

B39. Are you sole or first author on any papers, reviews or books published or accepted for publication ...

☐ MARK HERE IF NOT A SOLE OR FIRST AUTHOR ON ANY PUBLICATIONS → SKIP TO C1

Yes	No
-----	----

- a. While you were a PhD candidate? ☐ Yes ☐ No
- b. Within 3 years of completing your PhD or leaving the program? (If less than 3 years have elapsed since completing PhD or leaving program, consider publications accepted to date) ☐ Yes ☐ No

B40. On how many publications or works accepted for publication are you the sole or first author?

• If less than 3 years have elapsed since completing PhD or leaving program, consider publications accepted to date

As PhD Candidate	Within 3 Years of Leaving or Completing PhD
------------------	---

- a. Books (including edited collections) ☐ None ☐ None
- b. Refereed journal articles ☐ None ☐ None
- c. Other article length publications (e.g., chapters in books or proceedings) ☐ None ☐ None
- d. Book reviews ☐ None ☐ None

SECTION C: TEACHING AND RESEARCH ASSISTANTSHIPS

C1. Did you ever hold a teaching assistantship (TA) or graduate student instructor position?

MARK ALL THAT APPLY

- 1 ☐ Yes, in the department and university listed on label
- 2 ☐ Yes, but in some other department within that university → SKIP TO C3
- 3 ☐ Yes, at some other university
- 4 ☐ No, never held TA

C2. Do you believe that not having teaching experience as a TA or instructor limited your ability to secure a faculty position after earning your PhD?

MARK ONE ONLY

- 4 ☐ NOT APPLICABLE—NOT INTERESTED IN FACULTY POSITION
- 5 ☐ NOT APPLICABLE—HAVEN'T EARNED PHD
- 1 ☐ Yes, limited my ability
- 0 ☐ No, did not limit my ability
- 1 ☐ Don't know

C3. Did you ever hold a research assistantship (RA)?

MARK ALL THAT APPLY

- 1 ☐ Yes, in the department and university listed on label
- 2 ☐ Yes, but in some other department within that university
- 3 ☐ Yes, at some other university
- 4 ☐ No, never held RA

C4. Did you answer "yes" to either C1 or C3—held TA, graduate student instructorship, or research assistantship anywhere?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO C8 (PAGE 10)

C5. Regardless of where you held these positions, for how many terms during your doctoral studies did you serve as a ...

Number of Terms

- a. Teaching Assistant (TA) or graduate student instructor? ☐ None
- b. Research Assistant (RA)? ☐ None

C6. While working as a TA, graduate student instructor, or RA, did your primary responsibilities include . . .

MARK YES OR NO FOR EACH

	Yes	No
a. Leading a discussion or review section?	<input type="checkbox"/>	<input type="checkbox"/>
b. Preparing course materials or exams?	<input type="checkbox"/>	<input type="checkbox"/>
c. Grading papers or exams?	<input type="checkbox"/>	<input type="checkbox"/>
d. Performing research or other tasks <u>not</u> directly relevant to your own work?	<input type="checkbox"/>	<input type="checkbox"/>
e. Performing research or other tasks <u>directly</u> relevant to your own work?	<input type="checkbox"/>	<input type="checkbox"/>
f. Teaching a course as a primary lecturer?	<input type="checkbox"/>	<input type="checkbox"/>

C7. In an average week, how many hours did you work as a TA, graduate student instructor, or RA?

MARK ONE ONLY

1 ☐ Fewer than 10 hours

2 ☐ 10 to 20 hours

3 ☐ More than 20 hours

C8. Other than the assistantships (TA/RA) described above, were you employed for pay at any time during the period you were enrolled in the PhD program listed on the front cover?

1 ☐ Yes

0 ☐ No → SKIP TO SECTION D (PAGE 11)

C9. Excluding TA or RA positions, how much did you work, on average, during each of the following stages of your PhD program?

• *Exclude summer months if appropriate*

	Did Not Work	Less than 20 Hrs/Wk	20-34 Hrs/Wk	35 or More Hrs/Wk	Not to This Stage
a. While completing coursework.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. While preparing for comprehensive exams.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. While preparing my dissertation proposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C10. Approximately how many months elapsed between the time you passed your exams and your dissertation defense or your decision to leave the program?

• *Your best estimate is fine*

☐ MARK HERE IF STILL WORKING ON DISSERTATION AND SKIP TO C12

NUMBER OF MONTHS: _____

C11. For how many of those months were you working full-time and how many part-time?

• *Do not consider any TA or RA appointments you might have held*

NUMBER OF MONTHS FULL-TIME: _____ or ☐ None

NUMBER OF MONTHS PART-TIME: _____ or ☐ None

C12. In general, how relevant was your employment to your field of study?

• *Do not consider any TA or RA appointments you might have held*

MARK ONE ONLY

1 ☐ Very relevant

2 ☐ Somewhat relevant

3 ☐ Not relevant

SECTION D: OUTCOMES OF GRADUATE STUDY

D1. Referring to the department on the front cover, did you terminate your graduate study at this department?

- 1 ☐ Yes
 0 ☐ No → SKIP TO D14 (PAGE 12)

D2. In what month and year did you terminate your graduate study at the department listed on the front cover?

____/____/____
 MONTH YEAR

D3. When you left the department listed on the cover, did you think you would eventually complete your PhD?

- 1 ☐ Yes
 0 ☐ No

D4. Students leave PhD programs for many reasons. How important were each of the following in your decision to leave the department listed on the front cover?

	MARK ONE FOR EACH		
	Very Important	Somewhat Important	Not at All Important
a. I could achieve my career goals without a PhD.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
b. I had family or personal reasons	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
c. I changed career plans (e.g., chose non-academic career)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
d. I had health problems.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
e. I lost the interest or drive to complete it.....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
f. I had a good job opportunity elsewhere	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
g. My department or university did not provide me with adequate financial support	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
h. My advisor or dissertation supervisor left	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
i. I received inadequate advising (e.g., poor advice, not enough attention)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
j. My department lacked expertise in my specific area of interest	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
k. I was generally dissatisfied with my department or program	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
l. I exceeded my department's time limit for enrollment	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
m. My academic performance was unsatisfactory (e.g., low course grades, too many incompletes, did not pass qualifying exams).....	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
n. I was not making satisfactory progress on my dissertation	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
o. Other (Specify) →	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

D5. Did your department or university ask you to leave the PhD program?

- 1 ☐ Yes
 0 ☐ No → SKIP TO D9 (PAGE 12)

D6. Was unsatisfactory academic performance your main reason for leaving?

- 1 ☐ Yes → GO TO D7 (PAGE 12)
 2 ☐ No → SKIP TO D8 (PAGE 12)

<p>D7. Were you given adequate notice that unsatisfactory academic performance could lead to dismissal?</p> <p>1 <input type="checkbox"/> Yes</p> <p>0 <input type="checkbox"/> No</p> <p>D8. Were the student dismissal procedures clearly described in official handbooks or orientation materials?</p> <p>MARK ONE ONLY</p> <p>1 <input type="checkbox"/> Yes, clearly described</p> <p>0 <input type="checkbox"/> No, not clearly described</p> <p>2 <input type="checkbox"/> Not aware of written dismissal procedures</p> <p>D9. Did you receive a Master's degree from your department before you left?</p> <p>1 <input type="checkbox"/> Yes</p> <p>0 <input type="checkbox"/> No</p> <p>D10. What was your <u>primary</u> source of financial support during the year in which you left the department listed on the front cover?</p> <p>MARK ONE ONLY</p> <p>1 <input type="checkbox"/> Fellowship income</p> <p>2 <input type="checkbox"/> Stipend from teaching assistantship</p> <p>3 <input type="checkbox"/> Stipend from research assistantship</p> <p>4 <input type="checkbox"/> Part-time employment</p> <p>5 <input type="checkbox"/> Full-time employment</p> <p>6 <input type="checkbox"/> Support from spouse, family, or savings</p> <p>7 <input type="checkbox"/> Other (Specify) _____</p> <p>D11. Since leaving the department listed on the front cover, have you re-enrolled in this program?</p> <p>1 <input type="checkbox"/> Yes</p> <p>0 <input type="checkbox"/> No → SKIP TO D13</p> <p>D12. In what month and year did you return to the department?</p> <p>____ / ____ → SKIP TO D14</p> <p>MONTH YEAR</p> <p>D13. Do you intend to re-enroll in the PhD program listed on the front cover?</p> <p>1 <input type="checkbox"/> Yes</p> <p>0 <input type="checkbox"/> No</p>	<p>Question D14 is to be answered by everyone.</p> <p>D14. Which one of the following best describes you?</p> <p>MARK ONE ONLY</p> <p>Have completed degree . . .</p> <p>1 <input type="checkbox"/> PhD in department listed on cover → SKIP TO D17</p> <p>2 <input type="checkbox"/> PhD in different department but at same school → SKIP TO D16</p> <p>3 <input type="checkbox"/> PhD at a different school</p> <p>4 <input type="checkbox"/> Professional Degree (e.g., JD, MD, etc.)</p> <p>5 <input type="checkbox"/> Other degree (e.g., BA, MA, certificate etc.)</p> <p>→ GO TO D16</p> <p>Am still pursuing PhD . . .</p> <p>6 <input type="checkbox"/> In department listed on cover</p> <p>7 <input type="checkbox"/> In different department but at same school</p> <p>8 <input type="checkbox"/> At a different school</p> <p>→ SKIP TO SECTION E (PAGE 13)</p> <p>Am not pursuing PhD . . .</p> <p>9 <input type="checkbox"/> Left department and no longer pursuing PhD</p> <p>D15. Granting Institution:</p> <p>_____</p> <p>D16. Department in which degree was completed:</p> <p>_____</p> <p>D17. Date Conferred:</p> <p>• For date conferred, please use the date on your diploma or transcripts</p> <p>____ / ____</p> <p>MONTH YEAR</p>
--	--

SECTION E: BACKGROUND INFORMATION

E1. Overall, how satisfied are you with the graduate education you received from the department listed on the front cover?

MARK ONE ONLY

- 1 ☐ Very satisfied
- 2 ☐ Somewhat satisfied
- 3 ☐ Neither satisfied nor dissatisfied
- 4 ☐ Somewhat dissatisfied
- 5 ☐ Very dissatisfied

E2. Did the department listed on the front cover receive financial support for its doctoral program from the Andrew W. Mellon Foundation?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO E5
- 1 ☐ Don't know → SKIP TO E5

E3. Were you aware of this Andrew W. Mellon Foundation support when you first entered the program?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO E5

E4. Did knowing about your department's participation in the Andrew W. Mellon Graduate Education Program encourage you to apply to that department's PhD program?

- 1 ☐ Yes
- 0 ☐ No

E5. How old were you when you first enrolled in the program listed on the front cover?

AGE: _____

E6. When you first enrolled in the department listed on the front cover, were you:

MARK ONE ONLY

- 1 ☐ Married
- 2 ☐ Living with a domestic partner
- 3 ☐ Widowed
- 4 ☐ Divorced
- 5 ☐ Separated
- 6 ☐ Never married

E7. When you first enrolled in the department listed on the front cover, were there any children under the age of 18 in your household?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO E9

E8. What were your caregiver responsibilities? Did you have . . .

- 1 ☐ Primary responsibility for caregiving
- 2 ☐ Shared responsibilities for caregiving
- 0 ☐ No responsibilities for caregiving

E9. When you completed or left that PhD program, were you . . .

☐ STILL PURSUING PhD → GO TO E12

MARK ONE ONLY

- 1 ☐ Married
- 2 ☐ Living with a domestic partner
- 3 ☐ Widowed
- 4 ☐ Divorced
- 5 ☐ Separated
- 6 ☐ Never married

E10. When you completed or left that PhD program, were there any children in your household?

- 1 ☐ Yes
- 0 ☐ No → SKIP TO E12

E11. What were your caregiver responsibilities? Did you have . . .

- 1 ☐ Primary responsibility for caregiving
- 2 ☐ Shared responsibilities for caregiving
- 0 ☐ No responsibilities for caregiving

E12. When you first enrolled in the department indicated on the front cover, what was the highest level of education your mother and father had attained?

	Mother	Father
Less than a high school graduate.....	1 <input type="checkbox"/>	1 <input type="checkbox"/>
High school graduate.....	2 <input type="checkbox"/>	2 <input type="checkbox"/>
Some college/vocational school.....	3 <input type="checkbox"/>	3 <input type="checkbox"/>
Bachelor's degree.....	4 <input type="checkbox"/>	4 <input type="checkbox"/>
Some graduate school.....	5 <input type="checkbox"/>	5 <input type="checkbox"/>
Master's or professional degree (e.g., MA, MBA, MD, JD).....	6 <input type="checkbox"/>	6 <input type="checkbox"/>
Doctoral degree.....	7 <input type="checkbox"/>	7 <input type="checkbox"/>
Other (Specify).....	8 <input type="checkbox"/>	8 <input type="checkbox"/>
Don't know.....	-1 <input type="checkbox"/>	-1 <input type="checkbox"/>

SECTION F: EMPLOYMENT INFORMATION

Please indicate your current PhD status.

MARK ONE ONLY

- 1 ☐ Completed PhD (from any school)
 2 ☐ Not completed, not pursuing PhD
 3 ☐ Not completed, still pursuing PhD → SKIP TO F29 (PAGE 17)

The next questions are about jobs you might have held at three points in time:

- 1) 6 months after completing a PhD, or if you haven't completed your degree at any school, 6 months after leaving the department on the front cover;
- 2) 3 years after completing a PhD or leaving the department; or
- 3) currently.

What columns do I answer?

- If you completed a PhD or left the department more than 3 years ago, complete all 3 columns
- If you completed a PhD or left the department less than 3 years ago, complete "at 6 months after" and "current job" columns
- If you completed a PhD or left the department less than 6 months ago, complete only the "current job" column

Please answer all questions (F1-F12) in a single column before moving on to the next column.

	AT 6 MONTHS AFTER	AT 3 YEARS AFTER	CURRENT JOB
F1. Please indicate your employment status at each time period listed in column headings. Employed Not employed (looked or looking) Not in job market (not employed, not looking)	1 <input type="checkbox"/> 2 <input type="checkbox"/> → SKIP TO F1 NEXT COLUMN 3 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> → SKIP TO F1 NEXT COLUMN 3 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> → GO TO F13 (PAGE 18) 3 <input type="checkbox"/>
F2. Who (is/was) your principal employer? • Please record the full name of your principal employer, e.g., university, company or institution name (no abbreviation).	_____ _____ _____	_____ _____ _____ <input type="checkbox"/> MARK HERE IF SAME AS 6 MONTH → SKIP TO F6 THIS COLUMN	_____ _____ _____ <input type="checkbox"/> MARK HERE IF SAME AS 3 YEAR → SKIP TO F6 THIS COLUMN
F3. Which of the following BEST describes your principal employer? An educational institution A for-profit company, business or individual, paying wages, salary or commissions (excluding educational institutions) A not-for-profit, tax-exempt, or charitable organization (excluding educational institutions) Local, state, or federal government (excluding educational institutions) Self-employed Other	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> (Specify) →	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> (Specify) →	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> (Specify) →
F4. What kind of work did you do for this employer; that is, what is your occupation? Please be as specific as possible including area of specialization—e.g., high school teacher—English	_____ _____ _____	_____ _____ _____	_____ _____ _____

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	At 6 MONTHS AFTER	At 3 YEARS AFTER	CURRENT JOB
F5. Turn to back cover and choose the code that BEST describes the work you did for this employer. (Enter code in boxes)	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> OCCUPATION CODE	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> OCCUPATION CODE	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> OCCUPATION CODE
F6. Was your principal employer an educational institution? Yes No.....	1 <input type="checkbox"/> 0 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	1 <input type="checkbox"/> 0 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	1 <input type="checkbox"/> 0 <input type="checkbox"/> → GO TO F13 (PAGE 16)
F7. Was this educational institution a: Four-year college or university, other than a professional school Two-year college, community college, or technical institute..... Professional school (including university-affiliated hospital or medical center, law school, or business school) Preschool, elementary, middle school, secondary school or system.....	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> → GO TO F13 (PAGE 16)
F8. Was this a faculty position? In addition to teaching and research, include deanships, provostships, and post-doctoral appointments. Yes, full-time faculty position Yes, part-time faculty position No, not a faculty position.....	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> → GO BACK TO F1, NEXT JOB COLUMN	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> → GO TO F13 (PAGE 16)
F9. When did you start work in this position?	____ / ____ MONTH YEAR	____ / ____ MONTH YEAR <input type="checkbox"/> MARK HERE IF SAME AS 6 MONTH → SKIP TO F11	____ / ____ MONTH YEAR <input type="checkbox"/> MARK HERE IF SAME AS 3 YEAR → SKIP TO F11
F10. In which department were you employed?	DEPARTMENT _____	DEPARTMENT _____	DEPARTMENT _____
F11. At each of the time periods listed in column headings, which of the following BEST describes this faculty position? Post-Doctoral Fellow (1)..... Instructor or Lecturer (2) Adjunct faculty (3) Assistant Professor—Non-tenure-track (4) Assistant Professor—Tenure-track (5)..... Associate/Full Professor—Non-tenure-track (6) Associate/Full Professor—Tenure-track (7)..... Other faculty position (8)	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> (Specify) _____	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> (Specify) _____	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> (Specify) _____
F12. What was your PRIMARY work activity for this faculty position? Mainly teaching..... Mainly research..... Teaching and research equally..... Teaching, research and administration Mainly administration such as budgeting, committee work, or advising.....	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> GO BACK TO F1, NEXT JOB COLUMN	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> GO BACK TO F1, NEXT JOB COLUMN	MARK ONE ONLY 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> CONTINUE TO F13 (PAGE 16)

F13. Which category applies to you?

- Please include deanships, provostships, and post-doctoral appointments

- 1 ☐ Have held a faculty position
0 ☐ Never held faculty position → **SKIP TO F27 (PAGE 17)**

F14. Was your first faculty position:

MARK ONE ONLY

- 1 ☐ The 6 month job described above
2 ☐ The 3 year job described above
3 ☐ Your current job
4 ☐ A position held at some other time → **SKIP TO F20**

F15. Within how many months or years of completing your PhD or leaving the program, did you accept your first faculty position?

MARK ONE ONLY

- 1 ☐ Prior to or while completing PhD
2 ☐ Within six months
3 ☐ Within 1 year
4 ☐ Within 2 years
5 ☐ Within 3 years
6 ☐ More than 3 years after completing PhD or leaving the program

F16. Who was your employer for that first faculty position?

- Please write out the entire name of the department and institution, including a specific campus if applicable

Department: _____

Institution: _____

F17. Which of the following best describes your first faculty position when you were hired?

MARK ONE ONLY

- 1 ☐ Post-Doctoral Fellow
2 ☐ Instructor or Lecturer
3 ☐ Adjunct faculty
4 ☐ Assistant Professor—Non-tenure-track
5 ☐ Assistant Professor—Tenure-track
6 ☐ Associate/Full Professor—Non-tenure-track
7 ☐ Associate/Full Professor—Tenure-track
8 ☐ Other faculty position (Specify) _____

F18. Was your first faculty position after leaving graduate school:

- 1 ☐ A full-time position
2 ☐ A part-time position

F19. What was your primary work activity for this position?

MARK ONE ONLY

- 1 ☐ Mainly teaching
2 ☐ Mainly research
3 ☐ Teaching and research equally
4 ☐ Teaching, research, and administration
5 ☐ Mainly administration such as budgeting, committee work, or advising

F20. Have you ever held a tenure-track position?

- 1 ☐ Yes
0 ☐ No → **SKIP TO F27 (PAGE 17)**

F21. Was your first tenure-track position:

MARK ONE ONLY

- 1 ☐ The 6 month job described above
2 ☐ The 3 year job described above
3 ☐ Your current job
4 ☐ The first faculty position described above
5 ☐ Some other position → **SKIP TO F24 (PAGE 17)**

F22. Where was your first tenure-track position?

- Please write out entire name of department and institution including a specific campus if applicable

Department: _____

Institution: _____

F23. When did you assume this tenure-track position?

DATE POSITION

WAS ASSUMED: _____ / _____ / _____
Month Year

OCCUPATION CODES

The following broad occupation codes are listed in ALPHABETICAL order.

Administrators, Executives, Managers (e.g., administrators, executives, top and mid-level managers, self employed in the following fields) <i>(Codes listed below)</i>		Education Occupations	
		**	Administrators—use codes 10 or 11, see above
10	Post-secondary educational institutions	**	Counselors—use code 19, see above
11	Other educational institutions	**	Librarians—use code 31, see below
12	Sales, marketing, retail businesses	21	Post-Doctoral appointments
13	Health organizations	22	Professors—postsecondary, all ranks
14	Other areas	23	Research appointments
15	Artists, Entertainers, Writers, Public Relations Specialists, & Broadcasters (e.g., authors, musicians, editors, reporters, translators)		Teachers
16	Clerical/Administrative Support (e.g., accounting clerks, bookkeepers, secretaries, receptionists, telephone operators)	24	Elementary/Secondary including special education
17	Clergy and Other Religious Workers	25	Post-secondary
18	Computer Occupations (e.g., computer programmers, computer system analysts, computer engineers)	26	Other Education Occupations
**	Consultants <i>(select the code that comes closest to your usual area of consulting)</i>	27	Engineers, Architects, Surveyors
19	Counselors—Educational and Vocational	28	Financial, Human Resource Professionals (e.g., accountants, auditors, other financial specialists, personnel training, human resources, labor relations specialists)
20	Curators (e.g., museums, galleries, historical societies)	29	Health Occupations (e.g., doctors, nurses, health practitioners, health technologists and aides)
		30	Lawyers, Judges
		31	Librarians (including archivists, corporate and academic librarians)
		32	Sales and Marketing (e.g., insurance, securities, real estate, retail and commodities sales)
		33	Scientists (e.g., natural, biological, physical, mathematical—non-faculty position)
		34	Service Occupations, Except Health (e.g., food preparation and service, firefighters, police, security)
		35	Social Science Occupations (e.g., anthropology, economy, political science, psychology, sociology—non-faculty)
		36	Social Workers
		37	Other Occupations

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