

*Graduate Women's
Expectations in
Doctoral Programs and
Beyond....*

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**The Broadening Scope of
Graduate Education**

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Graduate Women's Expectations in Doctoral Programs and Beyond: Marriage, Family, and Career

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Abstract

Using the interim findings from the national study, "Ph.D.'s-Ten Years Later," this paper examines the relationship between family status and career patterns among women with Ph.Ds. in English and biochemistry, who were employed in academia ten to 13 years after completing their doctorates. Women were asked to respond to a 22 page mail-survey which contained questions on career goals at the beginning and the end of the graduate studies; evaluation of job prospects at the degree completion; employment as of December 1995; spouse's education; and job satisfaction. Analysis of women's responses suggest that neither marriage nor child-raising alone are detrimental to career growth-but the way in which these factors intersect with career structures can affect career growth. The paper ends with recommendations for graduate women, departments, and higher education institutions.

Introduction

In recent years, graduate schools have invested substantial effort toward increasing the numbers of women in the graduate student population. Deans and graduate divisions have studied the challenges particular to women in graduate school and have developed programs that address these challenges with positive results. During the last ten years, as in the previous ten, the proportion of women doctoral recipients has increased steadily from 22 percent in 1975, to 34 percent in 1985, and 39 percent in 1995 (NRC, Summary Report, 1998). In fact, in 1995, the number of women doctoral recipients in several fields, English among them, exceeded the number of men (57% according to the NRC, Summary Report, 1998).

As the professional ranks swell with women Ph.Ds., new questions arise with respect to career patterns and life strategies. Hochschild (1975) in her much-quoted article, *Inside the Clockwork of Male Careers*, refers to the way career structures in many professions (for example, law, medicine, and academia) are organized to assume the professional is unencumbered by family

responsibilities, unaffected by the "biological clock," and possibly endowed with a person, most often a wife, who performs support functions. In short, many professions were and still are organized around the assumption that the professional is a man.

But today the professional is just as often a woman. Do these professional women still have to choose between family and career as their predecessors at the turn of the century did? Or do they build families and careers simultaneously? Using interim results from the study "Ph.D.'s-Ten Years Later", this paper examines the relationship between family status and career patterns of women with Ph.Ds. in biochemistry and English and employed in academia. The paper concludes with recommendations for both individual women and graduate programs that address the complexities of balancing family, career, and professional advancement after graduate school.

The Ph.D.'s-Ten Years Later Project

"Ph.D.'s-Ten Years Later" is a national study that examines the career paths of some 6,000 doctorates from 61 U.S. universities who received their degrees in biochemistry, computer science, electrical engineering, English, mathematics, and political science between 1983 and 1985. The study was undertaken by the University of California, Berkeley, Graduate Division under the co-principal investigators Maresi Nerad and Joseph Cerny. Funded by the Mellon Foundation and the National Science Foundation, the study is endorsed by the Council of Graduate Schools and the Association of Graduate Schools within the American Association of Universities. The research utilized a 22 page mail-survey that builds on the Survey of Earned Doctorates and focuses on, among other things, the career paths of these 6,000 Ph.Ds. In addition, 70 in-depth interviews are being conducted to provide the context in which individuals make career decisions. Since the study is in its final year, we are able to present preliminary information on trends, but no final results. Of the 3,645 respondents to date, data are presently available for analysis on 3,067. The remaining surveys are still being processed.

We chose biochemistry and English for our analysis because among the six disciplines included in the "Ph.D.'s-Ten Years Later" study, these two disciplines contain the greatest numbers of women (Table I). English and biochemistry also have the highest response rate of the six disciplines as of March 1998, 70 percent for women in biochemistry and 66 percent for women in English (Table II).

This analysis includes U.S. citizens and permanent residents. International women Ph.Ds. will be analyzed separately, because career and family patterns are strongly influenced by the cultural context.

Table I
Ph.D. Recipients in 6 Fields at 61 Universities:
July 1, 1982 - June 30, 1985 Size of Surveyed Population

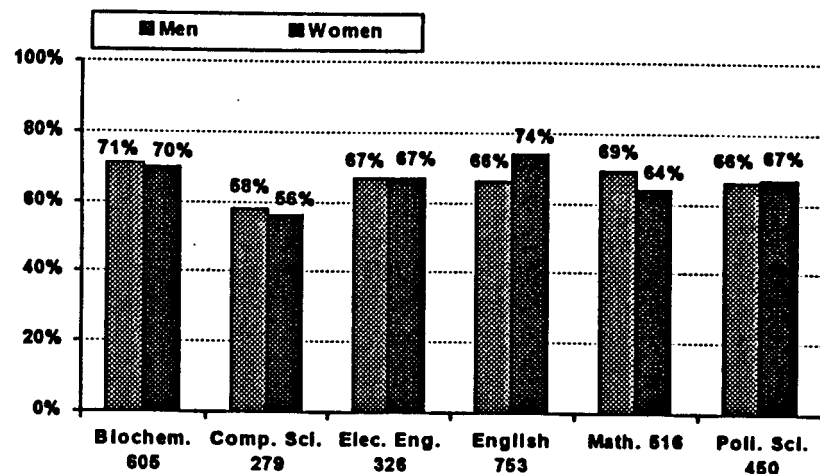
Major Field	Men	Women	International	Total
Biochemistry	694	268	97	962
Computer Science	583	69	209	652
Electrical Engineering	967	36	428	1003
English	567	650	71	1218
Mathematics	1007	187	392	1194
Political Science	632	199	145	832
TOTAL	4450	1409	1332	5859*

* Excluded:- deceased

Data as of April 1998

Source: "Ph.D.'s-Ten Years Later" Study, Graduate Division, UC Berkeley

Table II
Domestic Survey Response Rates by Field & Gender



Data as of April 1998

Source: "Ph.D.'s-Ten Years Later" Study, Graduate Division, UC Berkeley

Women in Biochemistry and English

In order to understand individual career paths from the time of the Ph.D. award until the present, we asked respondents a variety of questions about their post-Ph.D. employment history. We began by inquiring about career goals before and after earning the doctorate. We then asked respondents to evaluate their academic job prospects at the time they finished the degree, to indicate whether they were employed in December 1995, and, if so, where and in what type of employment they were engaged. The following analysis is based on responses from 167 domestic women biochemists and 355 domestic women with Ph.Ds. in English.

Career Goals

From the analysis of responses, we determined the career goals of the women respondents when they started and ended their doctoral studies. At the beginning of their doctoral education, a larger proportion of women in English wanted to become professors (over 60%) than those in biochemistry (about 30%), (Table III). At the conclusion of their doctoral studies, the difference in stated career goals for women in biochemistry and English was even more pronounced. In English over 70 percent aspired to the professorship, while in biochemistry the proportion remained at about 30 percent. However, the

number of biochemists who wanted to become academic researchers increased from 30 to nearly 40 percent by the end of their doctoral studies.

Table III
Career Goals at the Beginning and End of Doctoral Education:
Domestic Women Ph.Ds.

	Biochemistry N=167		English N=355	
	Beginning	End	Beginning	End
Professor	27%	28%	65%	73%
Acad. Researcher	31%	39%	2%	2%
Non Acad. Researcher	9%	14%		
Acad. Admin.			2%	4%
Non Acad. Admin.	1%	2%		1%
No Goal, Interest in Field	25%	3%	23%	4%
Independent Work				3%
Other/Missing	7%	14%	8%	13%

Data as of April 1998

Source: "Ph.D.'s-Ten Years Later" Study, Graduate Division, UC Berkeley

What explains the difference in career aspirations of women in the two fields? Different job-market prospects might be one source of this difference. University laboratories and medical schools offer a number of well-paid academic research positions; positions of this kind do not exist for English researchers. With the development of the biotech industry in the mid-1980s, opportunities for careers outside academia expanded for biological scientists. Consequently, a research position in a non-university laboratory may be an acceptable goal for a biochemist. In contrast, the culture in most 1980s English departments was oriented exclusively toward preparing graduates for a professorial career, with employment outside academia beyond the range of acceptable career options for an English Ph.D.

Another factor explaining the different career aspirations of women in English and biochemistry may be the number of women faculty in biochemistry, as compared to English in the 1980s. In 1993, the only year for which figures are available on women faculty by discipline, 51 percent of full-time faculty in English and 24 percent in biochemistry were women. The relatively few women faculty role models in biochemistry may have deterred

graduate women from aspiring to an academic career.

Evaluation of Job Prospects in the Academic Market

The high proportion of women in English who aspired to the professoriate is surprising given that, when asked about their prospects in the academic job market, only about one-fourth of these women considered their chances for employment good or excellent. Fewer women in biochemistry wanted an academic career. In spite of this, these women (42%) viewed their chances for securing an academic position more optimistically than women in English. Only 20 percent of women in biochemistry perceived their chances of an academic position as fair or poor.

Employment by Sector as of December 1995

Ten to 13 years later, employment outcomes for these women respondents in English and biochemistry are somewhat congruous with their stated aspirations. Consistent with their goals, nearly 70 percent or 244 of the women with English Ph.Ds. were employed in the academic sector,² although as of December 1995 not all of them had become professors. Fifteen percent of the women with English Ph.Ds. were employed in the non-academic sector,³ and another 10 percent worked either in both sectors, or employment information was unavailable.

Less than half of all women with biochemistry doctorates worked in the academic sector (71 women) and about one-third worked in the nonacademic sector. Another 20 percent worked either in both sectors or we only know that they were employed, but not in which sector.

Not in the Work Force

Five percent of women in English and seven percent in biochemistry were not gainfully employed as of December 31, 1995. The responses of these women to open-ended questions indicated several reasons for unemployment including that they were caretakers, were retired, had medical conditions that prevented their working, or were employed in low income "fringe" occupations earning less than \$5,000 a year.

As expected, the largest number of women not in the paid work force were occupied as caretakers. This circumstance was more prevalent among women from biochemistry than from English. Among the English doctorates, 10 women had already retired by December 31, 1995, but only one woman in biochemistry had retired. The different retirement profiles presented in the two fields can be explained in part by the relative ages of the women in these disciplines.

Academic Employment and Family Patterns

For the purposes of this paper, we chose to follow the career paths and family patterns of women in the academic sector only. We made this decision because as of December 31, 1995, the majority of women in both disciplines, 244 English Ph.Ds. and 71 biochemistry Ph.Ds. were employed in the academic sector.

We will examine academic job titles and salaries, and the relationship between marriage, children, and the academic careers of these women as well as marriage to another Ph.D. Because of the small numbers of women of color in the academic sector, we cannot present findings based on race and ethnicity without jeopardizing the anonymity of our respondents.

Academic Employment

More than half of the 244 women with Ph.Ds. in English were tenured professors and approximately 10 percent were assistant professors on December 31, 1995. Of the seventy-one women Ph.Ds. in biochemistry, only about one-third were tenured professors and another one-third assistant professors at the time of the study. The significant difference in proportion of tenured women in English and biochemistry can be explained by the fact that most women (and men) biochemists (over 80%) in our study spent an average of 4.3 years in postdoctoral appointments after completing their Ph.Ds. and before beginning their academic employment. English Ph.Ds., on the other hand, spent on average 1.3 years without a job or in postdoctoral positions (10%) after the completion of their Ph.D. and before beginning their first, tenure-track employment. In both fields, an average of 5.7 years was spent achieving tenure.

Approximately 20 percent of academic women biochemists were employed in non-tenure-track teaching positions, while about 11 percent were working as academic researchers and as administrators.

Of the women in academia with Ph.Ds. in English, 18 percent were in non-tenure-track teaching positions, five percent were working as non-faculty administrators, and the remaining held other academic positions.

Job Title and Salary

Our findings regarding comparative earnings for the two fields were as we expected. In 1995 women biochemists had higher total annual salaries than women with Ph.Ds. in English. The highest earners in both fields were women employed in administrative positions as deans or directors of college writing. Within these two fields, status differences were reflected in the salaries associated with the different academic positions. Tenured professors earned more than tenure-track professors, who, in turn, earned more than non-tenure-track instructors. Salaries earned by non-tenure-track instructors in English were frequently quite low.

Employment and Children

We were particularly interested in determining whether women Ph.Ds. combined child raising and professional employment. We wondered whether these women, many of whom performed at a high level in their careers, did so at the expense of forming families. Several specific issues were of interest to us including, how many of these women had children, and whether the percentage of women with children varied between those working in tenure-track and non-tenure-track positions. This is what we discovered. Overall about 60 percent of women Ph.Ds. in biochemistry and in English, who were employed in the academic sector, had children. Dividing further into tenure/tenure-track, we found that over half of all tenured and tenure-track women in both fields have children. However, we also found that the proportion of non-tenure-track women with children was greater than that of tenure-track women with children. Although a larger percentage of assistant professors than associate or full professors have children, these differences were not statistically significant at the 95 percent level of confidence.

Employment and Marital Status

In analyzing the relationship between marriage, employment status, and career advancement we uncovered three interesting findings.⁴ First, a substantially larger percentage of women biochemists (nearly two-thirds) were married at the time of survey completion than were women with Ph.Ds. in English. Second, about ten percent of women in English were divorced or separated, but only one woman in biochemistry was divorced. Third, tenured women in English were less likely to be married, in part as a result of divorce. Consistent with this pattern, the percentage of divorced and separated women increased with each increase in academic rank. The fact that the women in English were, on average, older than the women in biochemistry also may explain to some degree the higher percentage of divorces among the women with Ph.Ds. in English.

Further research needs to be undertaken to examine the question of whether the divorce rate for women in English is typical for women in this age cohort or whether there is something about the career structure in certain disciplines that leads to a clash between career and marriage.

Employment and Spouse/Partner with Ph.D.

The career/family picture for women in this study is not complete without examining the educational attainments of their partners. We found that a greater proportion of women biochemists (nearly two-thirds) than women in English (less than half) had a partner with a Ph.D. In both groups, a larger proportion of women in non-tenure-track positions were married to Ph.Ds. than women who were in tenure or tenure-track positions. Assuming that the partner

is also an academic these findings may suggest that the marriage of two Ph.Ds., both with academic careers in tenure-track positions, is a more difficult combination than that of the marriage of an academic tenure-track Ph.D. and a Ph.D. holding a non-tenure-track position.

Marriage, Family, and Career

The hope of the 1970s was that women could "have it all" career, marriage, and family. What do our findings actually reveal about the lives of academic women in English and biochemistry in the 1990s? As we have noted, about 60 percent of women in both fields had a family (that is children and spouse) and were gainfully employed. Forty percent who were employed did not have children. Disaggregating further, over one-third of the women working in the academic sector in both fields who were tenured or in tenure-track positions, were married and had children. Less than one-third of the women in non-tenure-track positions were married and had children. Among the women with Ph.Ds. in English, a number had achieved tenure and raised children, but were divorced at the time that they completed the survey, thus increasing the percentage of tenured women with children to 43 percent (Table IV & V). In biochemistry there were no women who achieved tenure, had children, and were divorced. In all, 17 percent of the tenured women in English and eight percent of the biochemists were neither married nor had children in 1995 (Table IV & V).

Table IV
Family and Academic Employment Status as of December 1995
Women Ph.Ds.: ENGLISH

Status as of December 1995						
Family Status at Survey Completion	Academic Sector: Dec 31, 1995					
	Non-Tenure Track		Tenured/ Tenure Track		Total Academic	
	%	N	%	N	%	N
Married w/Children	15%	(36)	37%	(90)	52%	(126)
Married w/ No Children	5%	(13)	13%	(32)	18%	(45)
Not Married w/Children	2%	(5)	6%	(14)	8%	(19)
Not Married w/ No Children	5%	(8)	17%	(42)	22%	(50)
TOTAL	73%	(175)	27%	(65)	100%	(240)

Interim Data: As of April 1998
Source: WPA, D-2

Interim Data: As of April 1998

Source: "Ph.D.'s - Ten Years Later" Study, Graduate Division, UC Berkeley

Table V
Family and Academic Employment Status as of December 1995
Women Ph.Ds.: BIOCHEMISTRY

Family Status at Survey Completion	Academic Sector: Dec 31, 1995					
	Non-Tenure Track		Tenured/ Tenure Track		Total Academic	
	%	N	%	N	%	N
Married w/Children	35%	(25)	27%	(19)	62%	(44)
Married w/ No Children	18%	(13)	6%	(4)	24%	(17)
Not Married w/Children		(0)		(0)		(0)
Not Married w/ No Children	8%	(5)	6%	(4)	14%	(9)
TOTAL	37%	(27)	63%	(43)	100%	(70)

Interim Data: As of April 1998

Source: "Ph.D.'s--Ten Years Later" Study, Graduate Division, UC Berkeley

Traditional wisdom, derived from the career path of men, suggests that one must get a career established before adding marriage and children. Based on the career and family profiles of tenured women in this study, it appears that those women who disregarded this advice were able to successfully combined career and family.

In order to evaluate how their life strategies contributed to career success, we examined family status at the time these women completed their doctorates. First, we analyzed the interaction of family status and career from the dimension of having tenure or being in a tenure-track position. As expected, a higher proportion of the women with Ph.Ds. in English who left graduate school single and without children received tenure (80%) as compared to the 67 percent who left graduate school married and with children and the 65 percent who left graduate school married and without children (Table VI). Interestingly, the group with the highest proportion of tenure (88%) consisted of those who left graduate school unmarried and with children. While only fourteen women comprised this group, these findings suggests that those who leave graduate school as older, divorced, single mothers, as this group was likely to be, do not find their status a career liability.

Table VI
Family Status at Completion of Ph.D.
and Academic Employment Status as of December 1995
Women Ph.Ds.: ENGLISH

Family Status at Completion of Ph.D. (1983-85)	Academic Sector: Dec 31, 1995					
	Non-Tenure Track		Tenured/ Tenure Track		Total Academic	
	%	N	%	N	%	N
Married w/Children	33%	(12)	67%	(24)	100%	(36)
Married w/ No Children	35%	(26)	65%	(48)	100%	(74)
Not Married w/Children		(2)	88%	(14)	100%	(16)
Not Married w/ No Children	20%	(22)	80%	(88)	100%	(110)
TOTAL	26%	(62)	74%	(174)	100%	(240)

$\chi^2=7.729$ $df=3$ $prob=0.052$

Missing: 8

Interim Data: As of April 1998

Source: "Ph.D.'s--Ten Years Later" Study, Graduate Division, UC Berkeley

Among biochemists, the women who left graduate school married and without children achieved tenure (or acquired tenure-track positions) in the greatest proportion (66%) (Table VII). However, those who left graduate school unmarried without children attained tenure at a nearly similar rate (63 %). The numbers of biochemists who left graduate school married and with children was too small to calculate meaningful percentages.

Table VII
Family Status at Completion of Ph.D.
and Academic Employment Status as of December 1995
Women Ph.D.s: BIOCHEMISTRY

Family Status at Completion of Ph.D. (1983-85)	Academic Sector: Dec 31, 1995					
	Non-Tenure Track		Tenured/ Tenure Track		Total Academic	
	%	N	%	N	%	N
Married w/Children	-	(4)	-	(3)	-	(7)
Married w/ No Children	34%	(11)	66%	(21)	100%	(32)
Not Married w/Children	-	(0)		(0)		(0)
Not Married w/ No Children	37%	(11)	63%	(19)	100%	(30)
TOTAL	38%	(26)	62%	(43)	100%	(69)

$\chi^2=1.291$ $df=2$ $prob=0.524$

Missing: 2

Interim Data: As of April 1998

Source: "Ph.D.'s-Ten Years Later" Study, Graduate Division, UC Berkeley

When outcomes were examined on multiple dimensions, such as the combination of family and career, the picture changes. In English, about two-thirds of the women who were married and had children while in graduate school, were married and tenured or in tenure-track positions 10 to 13 years later (Table VIII). During the same time period, 41 percent of those who were married in graduate school and did not have children, had received tenure, had children, and were married. Only 25 percent of those who were not married and did not have children in graduate school had been granted tenure, had children, and were married at the time of this study.

Table VIII
Family Status at Completion of Ph.D.
and Family and Academic Employment Status as of December 1995
Women Ph.D.s: ENGLISH

Women Ph.Ds.: ENGLISH

Family Status at Completion of Ph.D. (1983-85)	Academic Sector: Dec 31, 1995					
	Tenure/ Tenure Track and Married with Children		All Other		Total Academic	
	%	N	%	N	%	N
Married w/Children	61%	(22)	39%	(14)	100%	(36)
Married w/ No Children	41%	(30)	59%	(44)	100%	(74)
Not Married w/Children	50%	(8)	50%	(8)	100%	(16)
Not Married w/ No Children	25%	(28)	72%	(82)	100%	(110)
TOTAL	37%	(88)	63%	(148)	100%	(236)

$\chi^2=16.765$
 $df=3$
 $p=0.001$

$\chi^2=16.765$ $df=3$ $prob=0.001$

Missing: 8

Interim Data: As of April 1998

Source: "Ph.D.'s-Ten Years Later" Study, Graduate Division, UC Berkeley

In biochemistry, the number of women with tenure at the time of the study, who were also married and had children in graduate school and were married with children 10 to 13 years later was too small to give meaningful percentages (Table IX). Forty-seven percent of women who were married and did not have children in graduate school but were married with children 10 to 13 years later had achieved tenure. Only 23 percent of those who were not married and had no children in graduate school were married, had children, and received tenure 10 to 13 years later.

Table IX
Family Status at Completion of Ph.D.
and Family and Academic Employment Status as of December 1995
Women Ph.D.s.: BIOCHEMISTRY

Family Status at Completion of Ph.D. (1983-85)	Academic Sector: Dec 31, 1995					
	Tenure/ Tenure Track and Married with Children		All Other		Total Academic	
	%	N	%	N	%	N
Married w/Children	-	(3)	-	(4)	100%	(36)
Married w/ No Children	47%	(15)	53%	(17)	100%	(74)
Not Married w/Children		(0)		(0)	100%	(16)
Not Married w/ No Children	23%	(7)	76%	(23)	100%	(110)
TOTAL	36%	(25)	64%	(44)	100%	(69)

$\chi^2=3.862$ $df=2$ $prob=0.145$

Missing: 2

Interim Data: As of April 1998

Source: "Ph.D.'s—Ten Years Later" Study, Graduate Division, UC Berkeley

Thus, it appears that for women respondents in English and biochemistry delaying marriage and children is a good career strategy. However, if we work on the unproved assumption that these women also wanted marriage and children, this strategy appears to be a risky life strategy, as only about a quarter of this group acquired life partners and bore or adopted children along with attaining tenure after finishing their Ph.D.s.

For biochemists, it appears that the career-suppressor is having children, while for women with Ph.D.s. in English it appears that both marriage and

child-rearing act to reduce career success, with marriage having the stronger effect. Conversely, an academic career in English may reduce a woman's chances of building a life partnership.

Satisfaction

We found that, overall, about two-thirds of the women in both disciplines were satisfied with their academic employment at the time they completed the survey. In both fields, women with tenure were more satisfied than were women in tenure-track employment. Women who were in tenure-track positions, in turn, were more satisfied than women in non-tenure-track positions. Interestingly, the administrators with a Ph.D. in English were the most satisfied.

When job dissatisfaction was examined, we found, that non-tenure-track teaching faculty had the highest level of overall job dissatisfaction (28% in English and 14% in biochemistry). In addition, the assistant professors in English also had a relatively high level of overall job dissatisfaction, while only a few assistant professors in biochemistry were dissatisfied with their employment. This difference between levels of job dissatisfaction may be explained by the fact that biochemists spend several years in postdoctoral appointments, thus women biochemists working at the assistant professor level were still confident that they were progressing at a normal rate for their field. The assistant professors in English, on the other hand, seemed to be uncertain about their futures, and 21 percent expressed overall dissatisfaction with their employment. Women in this group may have interrupted their careers for family reasons or may have had a difficult time finding tenure-track positions, and therefore were dissatisfied with various aspects of their employment. Further analysis will be necessary if we are to fully understand the reasons behind this dissatisfaction.

Conclusion

We intend to investigate in more detail the reasons that marriage seems to suppress the careers of women in English, while having children seems to suppress the careers of women in biochemistry. That childbearing and raising alone seems to have little or no effect on the careers of women in English, and that marriage seems not to interfere with the careers of women in biochemistry, suggests that neither marriage nor child-raising are intrinsically detrimental to career growth. What is critical and what determines their effect is the way in which these two factors intersect with career structures. We hypothesize that the tight labor market in English, with high demands for geographic mobility, was a strain for married women in English. After finishing graduate school, they were faced with less flexible choices than their unmarried colleagues.

For biochemists, we hypothesize that the inflexibility of long hours in a

laboratory during the career-building doctoral and postdoctoral phases of their lives made career and children incompatible. Conversely, the flexibility of work situations for the woman with a Ph.D. in English was more compatible with childrearing, while the better job prospects for biochemists made sustaining a marriage less debilitating for their careers.

The next step in our analysis will be comparing the career and family patterns of women with those of men. This will allow us to consider the ways men and women are differentially affected by the structure of careers.

Recommendations

Based on these preliminary findings, we offer the following advice to graduate women with respect to marriage, family, and career. The necessity for compromise is not completely a thing of the past. If a tenured professorship is your life's passion, be aware that marriage and children may reduce the likelihood of your reaching your goal. If you cannot imagine a life without children, delaying childbearing until after graduate school may make it difficult or even impossible for you to have children at all. We concur with the statement of one of our study respondents:

Consider very carefully the timing of having children if you are a woman. It is very difficult to have children before tenure. I almost think it is better to have them while a graduate student rather than once a "tenure clock" is running.

We would likewise advise graduate schools. Just as graduate schools have invested their efforts in increasing the number of women in the graduate school population and in developing programs that address the unique problems faced by women graduate students, they must accept the fact that many of their graduate students want to create and sustain families.

The faculty involved in doctoral programs should take married women students, and particularly women students with children, seriously. They should not discourage women from marrying and having children during graduate school. In their responses to the survey's open-ended questions, a number of our respondents indicated that they encountered a bias during their doctoral career. One woman remarked, "I was never taken seriously as a potential candidate for a full-time career...." Another said, "I met with some prejudice that a woman with children was less productive." A third described a bias in favor of the "truly single and free grad student in her (or his) late 20s."

Finally, our higher education institutions should create ample and sufficient support mechanisms for the young parents among their teaching and research staff. As the business world is slowly becoming aware, the structure of the workplace must be compatible with the needs of people—women and

men—with families. Our analysis has shown that graduate student mothers were successful in their professional careers. Graduate schools have helped to ease the way for women while in school, now institutions of higher education must examine what happens to women when they want both a career in academia and a family. They should start creating structures that allow women and men to build both a career in academia and a family.

References

- Hochschild, Arlie. 1975. Inside the clockwork of male careers. pp. 47-80. *In* Florence Howe, ed. *Women and the Power to Change*. McGraw-Hill, New York, NY.
- National Research Council. 1998. Summary Report 1996: Doctorate Recipients from United States Universities. National Academy Press, Washington, D.C.
- Stephan, Paula E. and Mary Mathews Kassis. 1997. The history of women and couples in academe. pp 44-79. *In* Ferber, Marianne A. and Jane W. Loeb, eds. *Academic Couples: Problems and Promises*, University of Illinois Press, Urbana, IL.

Endnotes

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²The academic sector includes all positions within universities; colleges, two-year colleges, as well as university hospitals and clinics.

³The non-academic sector includes for-profit business and industry; national laboratories; federal, state, and local government agencies; international agencies; foundations or other nonprofits, elementary and secondary schools; non-university hospitals; the military; and any other employer, including people who are self-employed.

⁴The question on our survey regarding marital status reads "married or living with a partner," thus unmarried cohabiting heterosexual and lesbian couples are included in the married category.