Fewer Diplomas for Men: The Influence of College Experiences on the Gender Gap in College Graduation[1]

Stephanie Ewert

University of Washington

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Fewer Diplomas for Men: The Influence of College Experiences on the Gender Gap in College Graduation

Women reached parity with men in college graduation rates around 1980 and they are now much more likely to graduate from college. This emerging advantage for women in college graduation is evident at all socioeconomic levels and for all racial and ethnic groups. Although past research has documented the effects of background and early academic performance on the gender gap in college graduation, more proximate factors should affect this gap above and beyond their role in mediating background characteristics. In this study, I examine the impact of college experiences on gender inequality in college graduation. Using data from the National Education Longitudinal Study of 1988 (NELS:88), this study tests whether formative college experiences, including college major, attendance patterns, social integration, and academic performance, contribute to the gender gap in graduation. The results show that attendance patterns and academic performance benefit women relative to men in college graduation while higher rates of participation in sports increase the likelihood of graduation for men compared to women.

Introduction

A dramatic reversal of gender inequality in education occurred when women reached parity with men in college graduation rates around 1982 and surpassed men since then (Figure 1). Currently, women are more likely than men to earn

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Insert Figure 1 about here

Bachelor's degrees among most racial and ethnic groups and across all levels of the socioeconomic distribution, with the greatest gender gap found among those of low socioeconomic status (Goldin et al., 2006; Buchman and DiPrete, 2006). Given that educational attainment is consequential for labor market participation, marital formation, and childbearing, the contemporary female advantage in college graduation is likely to affect these economic and demographic patterns. For example, due to the persistence of educational homogamy, where spouses share the same education level, a relatively more highly educated female population would limit the pool of eligible marriage partners for women (Schwartz and Mare, 2005). The disproportionate number of female college graduates has also reshaped the discussion surrounding higher education policy as administrators and admissions officers consider the need for preferential admissions for males (Gose, 1999). Indeed, some public and private universities, including The College of William and Mary and The University of Georgia, have developed male admission's preferences that admit less academically qualified males over more highly-performing females in efforts to keep the gender balance on campus from becoming too heavily female (Kingsbury, 2007; Whitmire, 2007).

Although scholars have extensively examined the factors affecting entry into college, enrollment does not automatically guarantee college graduation and as many as

half of college entrants never graduate (Light and Strayer, 2000). More focused attention is needed on how college experiences affect college graduation. Education research historically focused on the consequences of high school academic preparation or family background while less attention has been paid to college experiences that are sure to influence graduation (c.f. Buchman and DiPrete 2006). In order to clearly identify the effects of college experiences, research much take into account other life course events that occur during the college years. This study expands our understanding of gender differences in college graduation by more thoroughly accounting for proximate causes of graduation—educational experiences in college that include college major, attendance patterns, and social integration. A deeper understanding of the determinants of the gender gap in college completion will raise questions about its consequences, such as changing demographic and labor market patterns, as well as inform public policy on higher education.

Background

In order to situate this research within an adequately comprehensive framework that takes into account the complex interactions among past experiences, background, and concurrent life course events, I utilize the life course paradigm. This paradigm asserts that early life course decisions, opportunities, and conditions affect later outcomes and that the various domains of peoples lives such as family, work, and school interact with one another (Xie and Shauman, 2003; Lucas, 2001; Cavanagh et al., 2006). Although scholars often use the life course perspective to explain the effects of early experiences on later life outcomes, the perspective also addresses how coinciding life course events influence one another. People live multidimensional lives with different

areas, or trajectories, which require their time and energy, including family trajectories, work trajectories, and educational trajectories (Xie and Shauman, 2003). Events from one life course trajectory can interact with and shape outcomes in other trajectories (Elder, 1977). For example, a significant event in the family trajectory, such as marriage, may affect college graduation in the educational trajectory. Therefore, the life course perspective would suggest that not only background factors and high school experiences, but also college experiences and other life course events during the college years, contribute to college completion.

Past research has identified numerous background factors and high school experiences that shape educational attainment generally, and college graduation in particular. Studies of educational attainment typically take into account socioeconomic status, family structure, race, and gender (Goldin et al., 2006; Baker and Velez, 1996; Buchman and DiPrete 2006). High school academic performance directly and indirectly affects college graduation, and students with higher high school academic performance (grades, tests scores), who take college preparatory classes, and do not have disciplinary problems are more likely to graduate (Buchman and DiPrete, 2006; Goldin et al. 2006). Highly performing high school students may benefit from adequate academic preparation, development of effective study habits, and commitment to school.

This study's focus on college-level factors draws on prior research identifying college experiences within the educational trajectory that may shape college graduation and the resulting gender gap. This college-level focus is warranted given Buchman and DiPrete's (2006) conclusion that the bulk of the female advantage in college graduation arises at the college level. Beyond academic performance, I focus on three critical

college experiences—attendance patterns, college major, and social integration. These educational experiences are consequential for college graduation and may partially account for gender differences in the likelihood of graduation.

Just as in middle and high school, women consistently earn higher grades than men in college (Bae et al., 2000). This gender difference in college grades is consequential since college academic performance directly affects the likelihood of graduation (Bae et al., 2000; McCornack and McLeod 1988; Sax and Harper 2007). Buchman and DiPrete (2006) estimate that approximately one-third of the gender gap in graduation among white students is attributable to differences in college grades.

College attendance patterns, which vary by gender, may affect the likelihood of graduation (Goldrick-Rab 2006). Today, many students in all sectors of higher education transfer schools, enroll part time, or take time off. These various interrupted pathways have consequences for students and their educational attainment. When students transfer, they may face difficulty in transferring credits and so are forced to retake classes, slowing down time to graduation. Students who attend part time will take longer to finish than others. Students who temporarily leave school face the possibility that they will not return. All of these non-traditional pathways lengthen the time students are in school, and research suggests that students are less likely to graduate the longer they spend in school beyond the traditional four to five years (King, 2003; Goldrick-Rab, 2006; Jacobs and King, 2002). Goldrick-Rab (2006) found gender differences in nontraditional attendance patterns, including taking time off and transferring schools, and argued that such patterns may account for a portion of the gender gap in college completion; she did not test this hypothesis, but I do so in this analysis.

Students structure their college experiences around choice of college major, and so field of study is a key factor in eventual graduation (Leppel, 2001). Field of study may influence graduation through a variety of mechanisms, including the number of course requirements, the rigor of the coursework, and average grades. Since many women and men remain segregated in traditionally female or male majors, choice in college major may partially account for the gender gap in college completion (England and Li, 2006; Davis and Guppy, 1997). Buchman and DiPrete (2006) found that differences in college major help explain some of the female advantage in college completion among black students and hypothesize that college major might affect the gender gap in college graduation if grade inflation is stronger in female-dominated majors and grades influence college completion. However, if there are more resources available in traditionally male majors that facilitate graduation, gender differences in field of study might benefit men relative to women in graduation. Therefore, it is not intuitively clear in which direction college major might affect the gender gap in college graduation.

In addition to attendance patterns and college major, social integration is a consequential element in the education trajectory during college that may shape a student's likelihood of graduation. Tinto's (1993) theory of social integration argues that students who are socially and academically integrated into the college community will be more committed to completing college and the particular institution, resulting in higher chances of persistence to degree completion. While a few studies have examined whether gender differences in social and academic integration exist, none have examined social integration's role in producing the gender gap in college completion. Charles et al.

(2009) found positive effects of membership in student groups on college grades, although they did not explore gender differences. Sax (2008) found that some measures of social involvement differentially affect the college GPAs of men and women. For example, greater amounts of time spend playing sports is associated with a higher GPA for women but a lower GPA for men (Sax 2008). However, hours spent in student clubs and groups raised the college GPAs for both men and women (Sax, 2008). To the extent that social integration affects college outcomes, gender differences in social involvement may contribute to the gender gap in graduation. Participation in student clubs may facilitate academic outcomes by enhancing commitments to academic pursuits while time spent playing sports may compete for time devoted to academic studies and so decrease the likelihood of graduation.

Besides these critical experiences within the education trajectory, past research identifies life course events in other trajectories that can affect college completion and so require consideration in models of educational attainment. Within the family trajectory, marriage and childbearing can affect college completion. Married college students or those with children face competing demands on their time between family obligations and school work. Some evidence suggests that marital status has limited effects on college graduation, perhaps due to the availability of birth control, while the presence of children negatively affects women's likelihood of completing college (Jacobs and King, 2002; Goldin et al., 2006). Less research has examined the effects of family formation on men's likelihood of college graduation since mothers traditionally bear the bulk of care for children. Although the causal relationship appears to be that education delays family formation, there is a feedback loop from childbearing to education such that female

students who bear children often drop out as a result of difficulty in balancing the roles of mother and student (Kravdal and Rindfuss, 2008). If early childbearing more negatively affects women, then conditioning on early family formation may actually widen the gender gap in college graduation. Work trajectories may also influence educational attainment. Students who work while enrolled have less time to devote to their studies or social involvement on campus. Charles et al. (2009) found that increased hours spent at work relative to academic activities negatively affects GPA.

As expected from the life course paradigm, research identifies background factors and college-age experiences in the educational, family, and work trajectories that may shape the likelihood of graduation. This analysis develops more comprehensive models of college graduation by conditioning on key college-level factors identified by past research and testing whether these variables contribute to the gender gap in college completion. I empirically test the following hypothesis:

Hypothesis 1: Men are less likely to graduate from college than women because they follow nontraditional attendance patterns.

Hypothesis 2: Women are more likely to graduate from college than men because they disproportionately choose college majors that lead to easier routes to graduation.

Hypothesis 3: Women are more likely to graduate from college than men because they are more socially integrated into the college community.

Hypothesis 4: Men are less likely than women to graduate from college because of their lower college grades.

Data and Methods

These analyses use data from the National Education Longitudinal Study of 1988 (NELS) conducted by the National Center for Education Statistics (NCES) of the U.S. Department of Education. NELS is a longitudinal study that first interviewed a nationally representative sample of over 24,000 eighth graders in 1988 and followed over 12,000 of the students for four follow-up interviews, the last of which took place eight years after high school graduation in 2000. I restrict the sample to those who enrolled in postsecondary education by 1994, approximately two years after on-time high school graduation, resulting in 8,571 cases. The cohort of students in the NELS study entered college around 1992, well after the time period in which women surpassed men in college completion, making these data ideal for examining the determinants of the contemporary gender gap in college completion that advantages women. The longitudinal nature of this cohort study makes it possible to document the progression of males and females through high school and college during the same time period to explore gender differences at each stage of the education pipeline leading to college completion.

Dependent Variable

Studies on educational attainment consistently measure college graduation as completing a four-year degree (Buchman and DiPrete, 2006; Jacobs and King, 2002; Light and Strayer, 2000). Therefore, I operationalize college graduation with a dichotomous variable for earning a Bachelor's degree by 2000, approximately eight years after on-time high school graduation, given college enrollment. Although some respondents in the sample will eventually complete Bachelor's degrees beyond 2000, these cases are right-censored in the final NELS follow-up survey in 2000. Research

frequently measures college graduation seven or eight years after high school graduation based on data constraints (Goldin et al., 2006).

I follow Mare (1980) and Lucas (1996) in measuring college graduation given college enrollment. Mare (1980) urged scholars to regard educational attainment as a series of school transitions or continuation decisions. Therefore, college graduation results from a series of events, including the graduation from high school given enrollment, enrollment in college given high school graduation, and graduation from college given enrollment in postsecondary education. Since background characteristics have changing effects across school transitions, analyzing school outcomes for people at the given level reduces the likelihood of confounding the effects of independent variables at the level of interest with the cumulative impact of the independent variable across all earlier transitions (Mare, 1980; Lucas, 1996). For example, models restricted to college entrants will not confound the effects of SES on college graduation with the effects of SES on earlier events such as high school graduation or college entry.

Independent Variables

I condition on background characteristics that include race and ethnicity, composite SES, and intact families, and high school performance variables that include overall high school GPA, SAT scores, and enrollment in college preparatory curriculum. I control for significant events in the family trajectory with two indicators of early family formation—being married or having a child within two years of on time high school graduation. I measure important events in the work trajectory with a dummy variable for working while enrolled. In order to distinguish between modes of entry into

postsecondary education, I include indicators for first attending a two-year college and selectivity of first institution attended.

Here I provide greater detail on how I measure key events in the educational trajectory during college that test the hypotheses outlined above.

Attendance patterns

I include two measures of nontraditional attendance—part time attendance and taking time off. I measure part time attendance with a dichotomous variable for attending part time at some point during college. I measure taking time off using a dichotomous variable for taking off a period of six months or longer from school at any time after initial enrollment. These covariates test hypothesis 1 that nontraditional attendance patterns explain part of the gender gap in college completion.

College major

I measure college major with three dummy variables—one indicates majoring in the male dominated fields of engineering, math, or the physical sciences, the second indicates majoring in the female dominated fields of education or health; and the final indicates majoring in the relatively more gender balanced arts and sciences or other majors. For these analyses, arts and science majors are the reference category. These variables test hypothesis 2 that college major mediates the gender gap in graduation.

Social integration

I operationalize social integration into the college environment as involvement in extracurricular activities. I measure social and academic club membership with a dichotomous variable for participating in student government, performing arts, campus newspaper or radio, or social clubs, including fraternities and sororities. I measure sports

participation with a dichotomous variable for involvement in any athletics, including varsity and intramural sports. These variables test hypothesis 3 that social integration accounts for a portion of the gender gap in graduation.

Analytic Methods

I measure college graduation with a dichotomous variable that is best analyzed using logistic regression. The following equation summarizes the model:

$$Pr(Y_i=1|X)= BX_i + e_i$$

where Y is a measure of college graduation of the *i*th individual, X represents a matrix of observed characteristics that influence college graduation, B is the vector of their coefficients, and e is an error term that includes unobserved attributes that affect college graduation. Logistic regression coefficients represent the log odds of graduation, but I report the more interpretable exponentiated coefficients which are odds ratios.

The first model includes only gender as represented by being male and shows the observed gender gap in the likelihood of college graduation. I then add variables to the equation in blocks and examine how the gender coefficient changes across models; I test for significant changes in the gender gap across models. The second model adds standard background variables and high school educational experiences to control for early experiences that may affect later educational attainment. The remaining models add college-age experiences one at a time in order to isolate effects on the gender gap in graduation. Due to data constraints, I cannot distinguish the temporal ordering of these college-level experiences and so I first add variables in the educational trajectory given the focus of this study. Model 3 tests the hypothesis regarding attendance patterns, model 4 the expectations about college major, model 5 the hypothesis about social

integration, and model 6 the expectation for academic performance. Model 7 accounts for relevant college-age experiences in other life course trajectories, including early family formation and working while enrolled.

I use multiple imputation by chained equations to impute the missing values in the data (Rubin, 1987; Royston, 2004). I create five multiply-imputed datasets, run the analyses on each imputed dataset, and then report the average coefficients across the datasets. Standard errors are adjusted to account for the degree of uncertainty in the imputation.

I restrict my analyses to students enrolled in post secondary education by 1994. These are the students who realistically had the opportunity to graduate by 2000 since most students complete college within four to six years. Since community colleges remain an important mode of entry into higher education for low income and minority students, I analyze the probability of graduation for all students who enter higher education in order to capture the range of students who may eventually graduate. In order to more clearly distinguish between modes of entry into postsecondary education, I include a covariate for entering higher education through a two-year school. Students who first enroll in four-year schools represent a more select group, and so I also run the analyses on all students who entered colleges through a four-year school by 1994. To test the sensitivity of my results to restricting my analyses to student who entered college by 1994, I also run the models on the sample of students enrolled by 1996. I place these results in an appendix and note any differences.

These analyses focus on gender differences in college graduation among those students who enter college. However, these analyses do not take into account the whole

universe of high school graduates, and gender differences in college enrollment may influence observed gender gaps in college outcomes (Jacob, 2002). While 81% of male high school graduates in the sample entered postsecondary education, 85% of female high school graduates did so. I cannot include high school graduates who did not enter higher education in the analyses since they lack observations on college measures, but propensity-score adjusted regression can address this issue of selection into college. Therefore, I also perform propensity-score adjusted regression in which I run models of college graduation that include propensity scores for the probability of enrollment as a covariate in the models of graduation (Stephan and Rosenbaum, 2006; Alon and Tienda, 2005; Winship and Morgan, 1999)[2]. This adjustment models a random selection process into college and removes bias that results from observations that are not independent of the outcome variables. The following equations summarize this model:

$$Pr(Y_i=1|X)= aD_i + BX_i + e_i$$

$$Pr(D_i=1|Z)= CZ_i + v_i$$

where D represents enrollment in college, Z is a matrix of observed covariates that affect enrollment in college, C is the vector of their coefficients, v is an error term that includes unobserved factors that affect enrollment, and a is the coefficient for a student's probability of enrolling in college (Alon and Tienda, 2005). I include the results from these selection models in an appendix and note any differences in results in the discussion[3].

[2] I additionally explore selection effects by running Heckman selection models that include Inverse Mills Ratios as covariates in the models.

[3] The selection equation includes some overlapping variables from the graduation model, such as gender, race, and high school GPA. However, the selection equation includes additional measures of high school performance such as behavioral problems, grade retention, hours spent on homework, educational aspirations, and encouragement from friends and family to pursue higher education.

I do not emphasize these results due to the strong assumptions of these propensity-score adjusted models and Mare's (1980) argument to analyze school outcomes for people at the given level in order to reduce the likelihood of confounding the effects of independent variables at the level of interest with the cumulative impact of the independent variable across all earlier transitions. Analyses that model the selection process involve strong assumptions that, if unmet, may produce inaccurate results. The strongest assumption in propensity score analysis is that the selection process is modeled correctly and no unobserved factors are associated with college enrollment (Winship and Morgan, 1999). Although past research developed strong models of college enrollment, there are surely unobserved factors or underlying characteristics that are unavailable in the data or difficult to measure but affect college enrollment, such as motivation and perseverance. Additionally, the model assumes that no omitted variables influence both enrollment in college and the college outcome of interest (Winship and Morgan, 1999, p. 677). In other words, this analysis assumes that the error terms for college enrollment and college graduation models are uncorrelated. Since the analyses likely violate these assumptions, caution should be taken when interpreting the results.

Results

Among students who enrolled in higher education by 1994, 46% of women and 42% of men graduated by 2000. There is a greater gender gap—6.5 percentage points—among students who entered through *four-year* colleges than among all students who entered higher education. The larger gender gap in graduation among students who entered higher education through a four year school rather than any school suggests that

men are more likely than women who enter through two year schools to eventually transfer and graduate from a four year school.

Table 1, which documents the experiences of male and female college entrants, reveals significant gender differences in college experiences that may affect the gender gap in college graduation. For example, more men than women follow nontraditional attendance patterns in college. Thirty-one percent of men and only 24% of women took time off while 40% of men and 34% of women attended part time. Assuming that students who follow disruptive attendance patterns are less likely to graduate, then women would be advantaged relative to men in graduation by their attendance patterns. While 18% of men and 4% of women majored in engineering, math, and the physical sciences, 32% of women and 12% of men majored in education and health. It is not intuitively clear how college major affects graduation, and so choice of major may benefit the graduation of men or women. More women than men participated in social and academic clubs while a greater percentage of men than women played sports in college. If participation in social and academic clubs facilitates graduation through enhancing commitments to academic pursuits while playing sports competes for study time and so decreases the likelihood of graduation, then social integration would advantage women relative to men in graduation. Women earned higher college grades than comparable men, and the women in the sample had an average GPA of 2.72 while the men had an average 2.50. If highly performing students are more likely to graduate, then college grades would benefit women compared to men in graduation. Overall, significant gender gaps in college experiences may contribute to the gap in college graduation.

Insert Table 1 about here

Table 2 reports the exponentiated coefficients, or odds ratios, from the regression of college graduation on gender and other characteristics for all students enrolled in postsecondary education by 1994.

Insert Table 2 about here

The first bivariate model shows that men are 13 percent less likely than women to graduate from college among students who enrolled in college. In the baseline model net of background and high school, men are actually 21 percent less likely than women to graduate[4]. The gender gap widened net of background and high school characteristics since fewer low-SES men go to college relative to low-SES women (Table 1). Since higher SES increases the likelihood of college graduation, and male college entrants have a higher average SES than female entrants, models that do not control for SES overstate the male likelihood of graduation relative to women.

The remaining models test the effects of college experiences on the gender gap in graduation. Nontraditional attendance patterns in model 3 account for part of the gender gap in college completion, lending support to hypothesis 1. Part time attendance and taking time off reduce the gender difference in graduation by four percentage points, indicating that men are less likely to graduate from college partially due to their higher rates of nontraditional attendance. Supplemental analyses suggest that taking time off

[4] To address whether men in general are less likely to graduate or whether particular subgroups of men are exceptionally less likely to graduate and so bring down the average for men, I tested a series of interactions between being male and SES and race and ethnicity. The only significant interaction was between being male and American Indian. Since American Indians comprise a small proportion of the sample, these results suggest overall gender differences in college graduation rather than gender differences that are driven by particularly educationally disadvantaged subgroups of men.

accounts for more of the gender gap in college graduation above and beyond part time attendance than vice versa. Both nontraditional attendance patterns decrease a student's likelihood of graduation, although taking time off has a larger negative effect on college graduation than part time attendance. Accounting for college major in model 4 did not significantly reduce the gender gap in graduation, and so I found no support for hypothesis 2 that choice in college major affects the gender gap in graduation. Although men and women concentrate in different majors, choice of major does not shape the likelihood of graduation.

The gender gap widens after controlling for social integration in model 5. Participating in social and academic clubs and sports increase the likelihood of graduating from college, which supports Tinto's theory of social integration that students who are more socially and academically integrated into the college community will be more likely to persist through to college graduation. Since more men than women play sports in college, and the gender gap widens after conditioning on athletic participation, these results suggests that the higher involvement of men in sports actually suppresses the magnitude of the gender gap in graduation. Contrary to the expectations of hypothesis 3, social integration suppresses rather than explains the gender gap in college graduation.

Model 6 shows that college GPA is strongly positively associated with graduation, and renders the gender gap in graduation nonsignificant. Therefore, the higher academic performance of women relative to men in college explains the remainder of the gender gap in college completion, thus supporting hypothesis 4. The college experiences examined in this study account for all of the significant gender gap in college graduation that remained net of background and high school characteristics. Therefore,

experiences within the educational trajectory during the college years contribute to the gender gap in graduation and do not merely mediate the effects background factors and early educational outcomes.

Accounting for experiences in the family and work trajectories in model 7show that early family formation reduces the likelihood of graduation while working during college increases the chances. Although the gender gap in model 7 widens net of life course events outside of the education trajectory, the gender coefficient remains nonsignificant.

To test the sensitivity of these results to restricting the sample to students who entered PSE by 1996, I reran the analyses on students who entered PSE by 1996 (Appendix A). The coefficients are virtually identical, indicating the robustness of these findings to year of college entry. Delaying college entry for a couple of years after high school graduation does not change the underlying processes that contribute to the likelihood of graduation or the observed gender gap.

Four year entrants by 1994

Table 3 shows that the determinants of the gender gap in college completion among students who entered through four-year institutions by 1994 are very similar to those among students who entered any postsecondary institution by 1994. However, the observed gender gap in graduation among only four-year entrants is slightly larger than all postsecondary entrants, and males are 23 percent less likely to graduate than females. Similar to the results for all PSE entrants, nontraditional attendance patterns account for a portion of the gender gap in college graduation among students who enter through four year schools while social integration suppresses the magnitude of the gap. The inclusion

of college academic performance in model 6 reduces the gender gap in graduation to nonsignificance. Accounting for experiences in other life course trajectories did not change the magnitude or significance of the gender gap.

Insert Table 3 about here

Propensity score adjusted regression

These analyses do not take into account the whole universe of high school graduates, and gender differences in college enrollment may influence observed gender gaps in college outcomes. Since I cannot include high school graduates who did not enter higher education in the analyses due to a lack of observations on college measures, I also performed propensity-score adjusted regression in which I ran models of college graduation that include propensity scores for the probability of enrollment as a covariate (Appendix B). This analysis addresses differential selection into college. Results from the propensity score adjusted regression are interpreted as the effects of covariates on college graduation if college enrollment was a random process.

The results reveal that similar processes affect the likelihood of college graduation net of the likelihood of enrolling. However, the initial gender gap was one percentage point smaller than for the analyses without the propensity score adjustment, suggesting that only a small part of the gender gap in college graduation results from men's lower probabilities of enrolling in college relative to women. The results from the baseline model that accounts for background and early educational outcomes show that if college enrollment was a random process, men who entered higher education by 1994 would be 19 percent less likely to graduate than women who enrolled in four year

colleges. Overall, my findings reveal a consistent gender gap in college graduation, regardless of the selection process into college.

Conclusion

These analyses paint a clear picture of a gender gap in college completion among a cohort of 1992 high school graduates in which men are significantly less likely to graduate than women. My research focuses on the gender gap among college entrants and so the sample includes only those who have committed to pursuing higher education. While past research has identified background characteristics and academic performance early on in the educational trajectory that influence college graduation, this study illuminates college processes that shape the likelihood of graduation and contribute to the gender gap in graduation.

Altogether, college experiences in the educational trajectory significantly reduce the gender gap in graduation[5]. The results show that college experiences do not merely mediate the effects of background characteristics and prior life course events on the likelihood of graduation but are independently consequential for the gender gap in graduation. Attendance patterns, social integration, and academic performance in college all influence the gender gap in college graduation, and so I found support for some of the hypotheses tested in these analyses. Gender differences in attendance patterns mediate part of the gender gap in graduation, suggesting that men are less likely than women to graduate partially because they follow potentially harmful nontraditional attendance patterns. Furthermore, men are less likely than women to graduate due to their lower academic performance in college.

[5] Based on a one-tailed t-test ($t_{(.05,28)}$=1.70).

Although women exhibit attendance patterns and academic performance that facilitate graduation more so than men, social integration appears to benefit men relative to women. Net of measures of social integration, including academic and social club membership and participation in athletics, the gender gap widened, suggesting that social integration suppresses the magnitude of the gender gap in college graduation. Students who are socially integrated into the college community, through participation in social and academic clubs or sports, are more likely to graduate than less integrated students. Therefore, men's high rate of participation in sports actually increases their likelihood of graduation relative to women. This surprising finding regarding the positive effects of sports participation on graduation may reflect a high proportion of students who participate recreationally and whose few hours spent playing sports are less likely to compete with time devoted to academic studies compared to the time requirements of intensive varsity sports. Future data with more detailed information on the amount of time spent on extracurricular activities could test for nonlinear effects of sports participation on graduation. I do not find effects of college major on the gender gap in college graduation.

Experiences in the family and work trajectories do not significantly affect the gender gap in college graduation. Although early marriage and childbearing decrease the likelihood of graduation and working while enrolled increases the likelihood, these factors do not significantly account for why women are more likely than men to graduate from college. The life course perspective highlights not only the effects of early experiences on later outcomes, but also the multiple trajectories in people's lives that influence outcomes in one another. This study finds that although college-age

experiences in the education, family, and work trajectories all shape the likelihood of college graduation, it is primarily experiences within the education trajectory that affect the gender gap in graduation.

Although a five to ten percentage point difference in the number of Bachelor's degrees awarded to men and women may sound small in magnitude, there are no indicators that the trend towards higher female graduation rates is slowing or reversing and so the magnitude of the gender gap may continue to grow. A relatively more highly educated female population has serious consequences for college admissions practices, marital formation, childbearing, and labor market participation. Given the persistence of educational homogamy, a growing gender gap in college graduation would result in an increasingly limited pool of marriage partners for women. The desire to maintain gender balance on college campuses could result in more widespread use of male admissions' preferences that would alter access to college as well as the level of academic preparation among college students. Although policies and programs aimed to reduce gender gaps in educational attainment must certainly target early stages in the educational trajectory where significant gender differences arise, this study suggests that efforts must also target consequential gender differences in college experiences.

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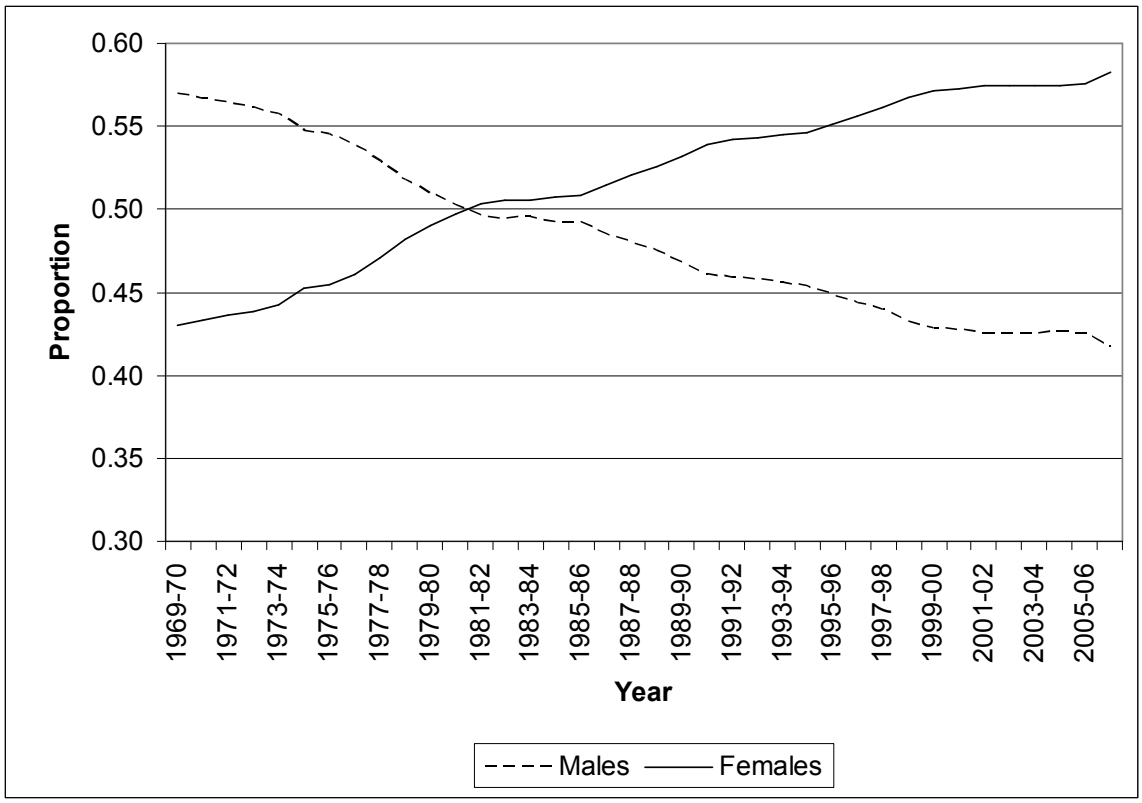

Figure 1. Percentage of Bachelor's Degrees Awarded to Men and Women, U.S., 1970-2006
Source: Data from the U.S. Department of Education. 2007. *Digest of Education Statistics*.

Table 1. Frequency of Independent Variables by Gender^
NELS Respondents who Entered PSE by 1994

		All	Female	Male	
	N	%	%	%	
Background and high school characteristics					
Race and ethnicity (reference=white)	8664				
Asian	363	4.2	3.7	4.7	*
Black	925	10.7	11.7	9.6	
Hispanic	807	9.3	9.3	9.4	
Am. Indian	91	1.0	1.4	.7	
SES composite (mean)	8534	.19	.14	.26	*
Intact family	8171	83.1	82.9	83.3	
GPA, 4.0 scale (mean)	6071	2.85	2.94	2.77	*
SAT score	8667	930	922	938	*
College prep curriculum	8526	51.8	52.1	51.5	
Entered PSE through 2 year school	8666	44.2	44.2	44.3	
College selectivity (mean)	8037	1.2	1.17	1.21	*
College-age experiences					
Took time off	8537	27.2	23.6	31.1	*
Attended part time	8540	37.0	33.9	40.4	*
Major: engineering, math, phy sci	8667	10.6	4.2	17.6	*
Major: education, health	8667	22.4	31.7	12.3	*
Social and academic clubs	6809	40.1	42.5	37.7	*
Sports	6812	38.5	29.1	48.2	*
College GPA	8037	2.62	2.72	2.50	*
Had children by 1994	8627	5.4	7.8	2.7	*
Married by 1994	8623	6.8	9.6	3.8	*
Worked while enrolled	8667	81.1	80.6	81.6	
N	8667	8667	4693	3974	

^ Percentages weighted

* Denotes significant gender difference at .05 level

Table 2. Logistic Regression of College graduation
NELS Respondents who entered PSE by 1994; N=8571; Exp (B)

	Model						
	1	2	3	4	5	6	7
Male	.87 **	0.79 ***	0.83 **	0.84 *	0.77 ***	0.93	0.89
Asian		1.52 ***	1.67 ***	1.66 ***	1.69 ***	1.82 ***	1.84 ***
Hispanic		0.74 **	0.92	0.91	0.94	1.01	1.03
Black		0.96	1.02	1.03	1.00	1.22	1.29
Am Indian		0.52	0.63	0.64	0.59	0.70	0.78
Intact family		1.20 *	1.12	1.13	1.12	1.08	1.07
SES		1.80 ***	1.88 ***	1.86 ***	1.84 ***	1.92 ***	1.88 ***
H.S. GPA		2.34 ***	2.15 ***	2.18 ***	2.09 ***	1.41 ***	1.34 ***
SAT score		1.15 ***	1.19 ***	1.19 ***	1.15 ***	1.04	1.02
College prep curriculum		1.66 ***	1.73 ***	1.73 ***	1.73 ***	1.89 ***	1.84 ***
1st PSE a two-year school		0.21 ***	0.21 ***	0.21 ***	0.22 ***	0.17 ***	0.18 ***
College selectivity		1.42 ***	1.29 **	1.29 **	1.28 **	1.40 **	1.43 **
Took time off			0.24 ***	0.24 ***	0.25 ***	0.27 ***	0.28 ***
Enrolled part time			0.48 ***	0.48 ***	0.50 ***	0.53 ***	0.51 ***
Major: engineering, math, phy sci				0.77 *	0.80 *	0.74 *	0.76 *
Major: education, health				0.88	0.87	0.79 *	0.80 *
Social and academic clubs					1.30 ***	1.26 **	1.19 *
Sports					1.43 ***	1.55 ***	1.49 ***
College GPA						3.68 ***	3.97 ***
Has children by 1994							0.31 ***
Married by 1994							0.21 ***
Worked while enrolled							1.51 ***
Log-Likelihood	-5924	-3908	-3536	-3532	-3505	-3174	-3092

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

Table 3. Logistic Regression of College graduation
NELS Respondents who entered four-year schools by 1994; N=4664; Exp (B)

	Model						
	1	2	3	4	5	6	7
Male	.78 ***	0.734 ***	0.781 **	0.761 **	0.674 **	0.842 **	0.821 **
Asian		1.399 *	1.478 *	1.465 *	1.511 *	1.665 *	1.649 *
Hispanic		0.662 **	0.859	0.854	0.892	0.933	0.928
Black		1.028	1.134	1.129	1.129	1.531	1.573
Am Indian		0.815	1.219	1.219	1.177	2.051	1.94
Intact family		1.212	1.175	1.179	1.182	1.134	1.151
SES		1.744 ***	1.813 ***	1.814 ***	1.704 ***	1.638 ***	1.603 ***
H.S. GPA		2.101 ***	1.914 ***	1.917 ***	1.868 ***	1.047	1.062
SAT score		1.167 **	1.2 **	1.197 **	1.19 **	1.06	1.047
College prep curriculum		1.425 ***	1.453 ***	1.451 ***	1.423 ***	1.552 ***	1.539 ***
College selectivity		1.465 ***	1.372 **	1.358 **	1.307 **	1.487 **	1.466 **
Took time off			0.191 ***	0.191 ***	0.194 ***	0.212 ***	0.217 ***
Enrolled part time			0.454 ***	0.453 ***	0.468 ***	0.498 ***	0.492 ***
Major: engineering, math, phy sci				1.048	1.071	1.14	1.149
Major: education, health				0.89	0.884	0.76	0.767
Social and academic clubs					1.511 ***	1.51 ***	1.464 ***
Sports					1.551 ***	1.77 ***	1.731 ***
College GPA						6.095 ***	6.291 ***
Has children by 1994							0.414 *
Married by 1994							0.196 ***
Worked while enrolled							0.973
Log Likelihood	-2853	-2363	-2058	-2056	-2025	-1711	-1686

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

Appendix A. Logistic Regression of College graduation
NELS Respondents who entered PSE by 1996; N=8966; Exp (B)

	Model						
	1	2	3	4	5	6	7
Male	.88 **	.79 ***	.84 **	.84 *	.78 ***	.92	.88
Asian		1.53 ***	1.66 ***	1.65 ***	1.69 ***	1.80 ***	1.85 ***
Hispanic		.73 **	.89	.89	.91	.97	1.00
Black		.95	1.00	1.01	1.00	1.22	1.29
Am Indian		.52	.62	.63	.61	.72	.82
Intact family		1.20 *	1.11	1.12	1.12	1.09	1.07
SES		1.86 ***	1.96 ***	1.94 ***	1.86 ***	1.95 ***	1.90 ***
H.S. GPA		2.32 ***	2.16 ***	2.18 ***	2.12 ***	1.46 ***	1.36 ***
SAT score		1.13 ***	1.15 ***	1.15 ***	1.15 ***	1.04	1.02
College prep curriculum		1.71 ***	1.79 ***	1.80 ***	1.77 ***	1.93 ***	1.87 ***
1st PSE a two-year school		.20 ***	.20 ***	.20 ***	.21 ***	.17 ***	.17 ***
College selectivity		1.44 ***	1.34 **	1.34 **	1.28 **	1.40 **	1.45 **
Took time off			.25 ***	.25 ***	.25 ***	.28 ***	.28 ***
Enrolled part time			.49 ***	.49 ***	.50 ***	.53 ***	.50 ***
Major: engineering, math, phy sci				.79 *	.80 *	.75 *	.77 *
Major: education, health				.87	.87	.79 *	.81 *
Social and academic clubs					1.31 ***	1.27 **	1.19 *
Sports					1.43 ***	1.54 ***	1.47 ***
College GPA						3.45 ***	3.83 ***
Has children by 1994							.32 ***
Married by 1994							.20 ***
Worked while enrolled							1.77 ***

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

Appendix B. Propensity-Score Adjusted Logistic Regression on College Graduation
NELS Respondents who entered PSE by 1994; N=8571; Exp (B)

	Model						
	1	2	3	4	5	6	7
Male	.88 **	.81 ***	.86 *	.87 *	.80 *	.97	.92
Asian		1.22	1.32 *	1.31 *	1.36 *	1.42 **	1.44 **
Hispanic		.59 ***	.72 **	.71 **	.74 **	.77 **	.79 **
Black		.88	.91	.92	.92	1.12	1.18
Am Indian		.48 *	.58	.59	.57	.67	.72
Intact family		1.22 *	1.14	1.14	1.14	1.10	1.09
SES		1.57 ***	1.65 ***	1.63 ***	1.58 ***	1.62 ***	1.59 ***
H.S. GPA		2.18 ***	2.03 ***	2.05 ***	2.00 ***	1.33 ***	1.27 ***
SAT score		1.11 ***	1.13 ***	1.13 ***	1.13 ***	1.02	1.00
College prep curriculum		1.48 ***	1.54 ***	1.55 ***	1.53 ***	1.65 ***	1.62 ***
1st PSE a two-year school		.23 ***	.24 ***	.24 ***	.26 ***	.20 ***	.21 ***
College selectivity		1.47 ***	1.36 ***	1.36 ***	1.31 **	1.44 **	1.47 **
Took time off			.24 ***	.24 ***	.24 ***	.27 ***	.28 ***
Enrolled part time			.49 ***	.49 ***	.51 ***	.54 ***	.52 ***
Major: engineering, math, phy sci				.80 *	.80 *	.75 *	.76 *
Major: education, health				.87	.86 *	.78 *	.80 *
Social and academic clubs					1.28 **	1.23 **	1.17 **
Sports					1.40 ***	1.52 ***	1.47 ***
College GPA						3.82 ***	4.11 ***
Has children by 1994							.30 ***
Married by 1994							.21 ***
Worked while enrolled							1.41 ***

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