

# Gender Inequalities in the Transition to College

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**Background:** *In terms of high school graduation, college entry, and persistence to earning a college degree, young women now consistently outperform their male peers. Yet most research on gender inequalities in education continues to focus on aspects of education where women trail men, such as women's underrepresentation at top-tier institutions and in science and engineering programs. The paucity of research on the realms where women outpace men, namely college enrollment and completion, constitutes a major gap in the literature.*

**Purpose:** *This article provides an overview of gender inequality in the transition to college and in college experiences by examining the ways that women are advantaged in higher education and the arenas where they still trail men. It also discusses theoretical perspectives useful in assessing the causes of gender inequality and then suggests how future research could advance our understanding of the complex nature of gender inequality in higher education.*

**Research Design:** *The identification and critical review of research and theories that have been used or that could prove useful in assessing and explaining the complex patterns of gender inequalities in the transition to college and in higher education more generally.*

**Conclusions/Recommendations:** *Fruitful pathways for future research to advance understanding of the complex nature of gender inequalities in higher education include examining gender inequalities early in the educational life course, attending to gender differences within vulnerable segments of the population who may be particularly at risk for not attending higher education, and investigating how the structure and practices of schooling relate to gender differences in educational outcomes.*

One of the most striking features of statistics on college-going in recent years is the growing gap between men and women. In terms of high

school graduation, college entry, and persistence to earning a degree, young women consistently outperform their male peers. Trend statistics in the United States demonstrate a striking reversal of a gender gap in college completion that once favored males. In 1960, 65% of all bachelor's degrees were awarded to men, but women reached parity in 1982. From then onward, the proportion of bachelor's degrees awarded to women continued to climb; by 2003, women received 58% of all bachelor's degrees (National Center for Education Statistics [NCES] 2005) and constituted 55% of all college students.

The reversal from a male to female advantage in college enrollment and completion is an important topic of study both in its own right and because of its potential impacts on gender gaps in wages, labor force participation, and a host of other labor market outcomes (Bernhardt, Morris, and Handcock 1995). The rising proportion of college-educated women relative to men could also alter trends in educational assortative mating as more women marry down, delay marriage, or forgo marriage altogether (Lewis and Oppenheimer 2000). These changes, in turn, may impact family formation and parenting (Bianchi and Casper 2000).

Changing gender inequalities in higher education raise important questions for policy makers, researchers, and educators who want to understand how to improve the educational attainment of all youth and for institutions of higher education striving to respond to their students' needs. For example, the female advantage in college enrollment is causing concern among college administrators, who worry that the gender imbalance is detrimental to campus diversity (Thompson 2003), and among admissions officers, who are considering affirmative action for male applicants (Greene and Greene 2004).

Over a decade ago, Jacobs (1996) noted that the literature on gender inequality in education "often treats all aspects of education as disadvantaging women" (156). This tendency remains true today; most research addresses aspects of education where women trail men, such as women's underrepresentation at top-tier institutions and in science and engineering programs. The paucity of research on realms where women outpace men, namely college enrollment and completion, constitutes a gap in the literature. This article provides an overview of gender inequalities in the transition to college and in college experiences by examining the ways that women are advantaged in higher education and the arenas where they still trail men. It also discusses theoretical perspectives useful in assessing the causes of gender inequality and then suggests how future research could advance our understanding of the complex nature of gender inequality in higher education.

## THE TRANSITION FROM HIGH SCHOOL TO COLLEGE AND BEYOND

From early childhood through adulthood, education plays a central role in individuals' lives. Gender inequalities in early and middle childhood are likely linked to gendered experiences and educational inequalities occurring later in life; thus, they are important topics for future research. Because this article primarily focuses on the transition from high school to college, it excludes a discussion of gender differences from the earliest stages of life through the adolescent years.

### HIGH SCHOOL COMPLETION

In the United States, the first step to gaining access to postsecondary education is the completion of high school, but a substantial number of youth do not do so. Since 1990, the status dropout rate—the percentage of people aged 16–24 who are not enrolled in high school and have not earned a high school diploma, GED, or other certificate of completion—for females has been lower than rate for males. In 2004, 11.6% of males aged 16–24 were dropouts, compared with 9% of females (NCES 2005).

High school dropout rates vary widely by race, ethnicity, and immigrant status (Grodsky and Jackson 2009), but the male dropout rate is higher than the female rate within all ethnic groups. In 2004, male dropout rates for whites, blacks, and Hispanics were 7.1%, 13.5%, and 28.5%, respectively, compared with female rates of 6.4%, 10.2%, and 18.5%, respectively (NCES 2005). The high dropout rates for Hispanics, as well as the larger gender gap in dropout rates for this group, are especially striking and surely play some role in the low college enrollment rates of Hispanic males. Foreign-born youth are especially vulnerable to dropping out of high school for reasons such as language difficulties, lower rates of parental education, and poor quality schooling in their country of birth (Hirschman 2001; Driscoll 1999). While only 8% of the nation's teens are foreign born, nearly 25% of high school dropouts are foreign born, of whom roughly 40% are recent immigrants who interrupted their schooling before coming to the United States (Fry 2005)

### TRANSITION TO COLLEGE

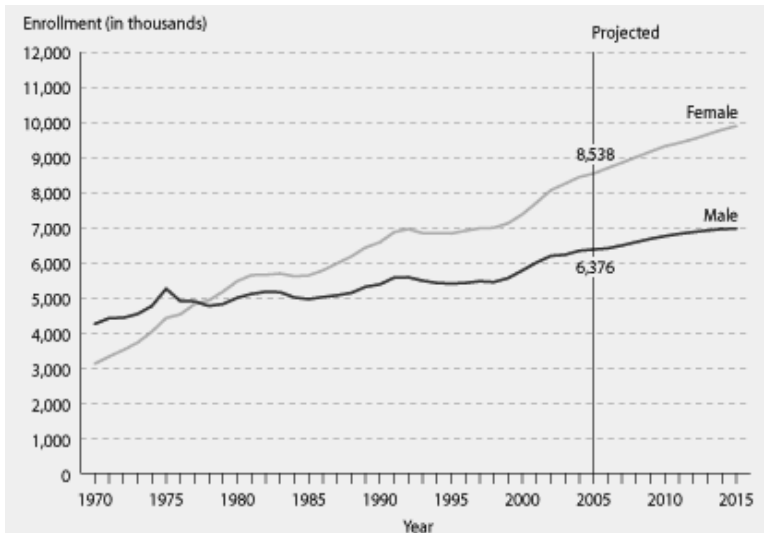
Among students who do complete high school, many factors are related to whether they enroll in college and to the great variations in their postsecondary experiences. Research indicates that students who enroll in college directly after high school have higher rates of overall college enrollment, persistence in college, and graduation (Horn and Premo

1995; Bozick and DeLuca 2005). While men used to be more likely than women to enroll in college directly after high school, since 1996, the reverse has been true; in 2000, 66% of women, compared with 60% of men, did so (Freeman 2004).

Data from the National Educational Longitudinal Study (NELS) of the high school class of 1992 indicate that the female advantage in immediate college enrollment holds for all socioeconomic status (SES) groups, though it is smaller for those of high SES backgrounds. Inspecting bivariate relationships between SES, race, and enrollment, King (2000) found that low-SES white and African American students were half as likely as their upper SES peers to make the transition to college immediately after high school. But in another analysis of the same data, Bozick and DeLuca (2005) showed that after controlling for academic achievement and SES, Hispanics and blacks are *more* likely than whites to enroll in college immediately after completing high school (but recall the high dropout rates of Hispanics). Males are substantially more likely to decline to enroll or to delay enrollment in college than females, net of controls. Not surprisingly, students from higher socioeconomic backgrounds are significantly more likely to enroll in college immediately after high school than their disadvantaged counterparts.

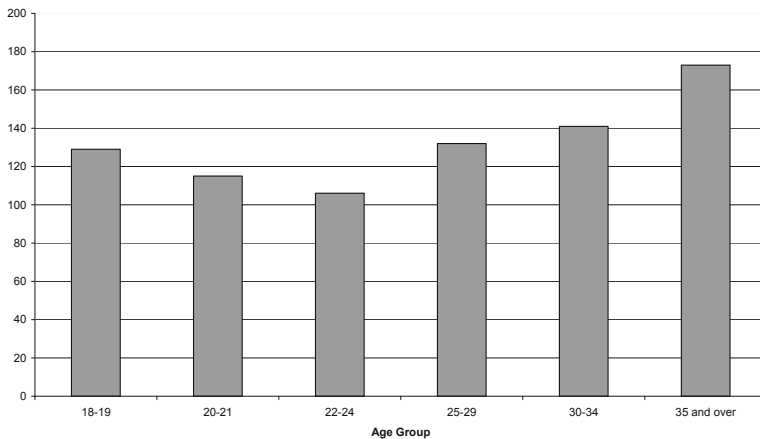
The proportion of both men and women enrolling in college has increased since the 1970s, but, as Figure 1 shows, the increase for women

Figure 1. Male and female undergraduate enrollment in degree granting postsecondary institutions, with projections, 1970–2015



has been much more substantial (NCES 2006). In 2004, women constituted 55.6% of all students in institutions of higher education and 57.2% of all students at degree-granting institutions (NCES 2005, table 170). In addition to being more likely to enter college immediately after completing high school, women are more likely than men to return to college after age 30. In fact, more women than men attend college in every age group. According to October Current Population Survey (CPS) data of the U.S. Census, for every 100 18–19-year-old men enrolled in college in the year 2000, there were 129 women enrolled; among those age 35 and older, there were 173 women enrolled in college per 100 men (see Figure 2; Sum et al. 2003).

**Figure 2. Number of women enrolled in college per 100 men in 2000, by age group**



## COLLEGE EXPERIENCES AND PERSISTENCE TO DEGREE

Once enrolled, women are more likely than men to persist in college to obtain a degree, as evidenced by the fact that women currently earn 58% of all bachelor's degrees awarded in the United States. The female advantage exists for all racial groups, but there are important variations by race and ethnicity in the size of the gap: Women earn 67% of all bachelor's degrees awarded to blacks; the figures are 61% for Hispanics, 61% for Native Americans, 54% for Asians, and 57% for whites (NCES 2004, table 263). Note that the especially large gender gap for blacks constitutes a continuation of a long-favorable female trend. As early as 1954, when the great majority of black college students were enrolled in historically black

colleges and universities (HBCUs), women constituted 58% of students enrolled in HBCUs.

Women also earn their degrees in a more timely manner than men, and this difference relates to their higher rates of overall degree receipt. Analysis of the Beginning Postsecondary Student Survey found that among students who entered college in the 1995–1996 academic year, by 2001, 66% of women had completed a bachelor's degree, compared with 59% of men. While 50% of black and Hispanic women had completed a BA or BS degree in this period, only 37% of black men and 43% of Hispanic men had done so (Freeman 2004).

One important question for research regards differences in the college experiences of men and women and their implications for the returns on education. For example, are women concentrated in less prestigious institutions and in less-remunerated fields of study? Do they achieve a similar return to the degree as men with similar qualifications? Are there variations in these experiences by class and race/ethnicity?

#### *Types of institutions attended*

Higher education institutions can be ranked with respect to their duration, rigor, and social status. Charles and Bradley (2002) refer to these distinctions as the “vertical dimension of gender segregation in higher education” (574). Gender differences in fields of study represent distinctions more of kind than of level, or the horizontal dimension of segregation. As college-going becomes ever more common among the U.S. population, the importance of the prestige of the institution attended increases apace (Kingston and Lewis 1990; Karen 2002). For example, research indicates that relative to degree holders from less prestigious institutions, bachelor's degree recipients from elite institutions garner higher earnings, are more likely to pursue graduate or professional education, and enjoy more successes in the world of work (Bowen and Bok 1998).

Historically, men and women have attended very different postsecondary institutions. Many of the most prestigious universities and colleges in the United States only began to admit women in the late 1960s (Jacobs 1999). Through the 1970s and 1980s, women gained greater access to elite schools (Karen 1991), but by the mid-1990s, women were still slightly more likely to attend less prestigious schools with lower tuition rates and fewer resources (Jacobs 1996, 1999; Davies and Guppy 1997). Jacobs (1999) attributes the small but persistent gender gap in institutional prestige to the relative scarcity of women in schools with large engineering programs and the greater tendency of women to enroll

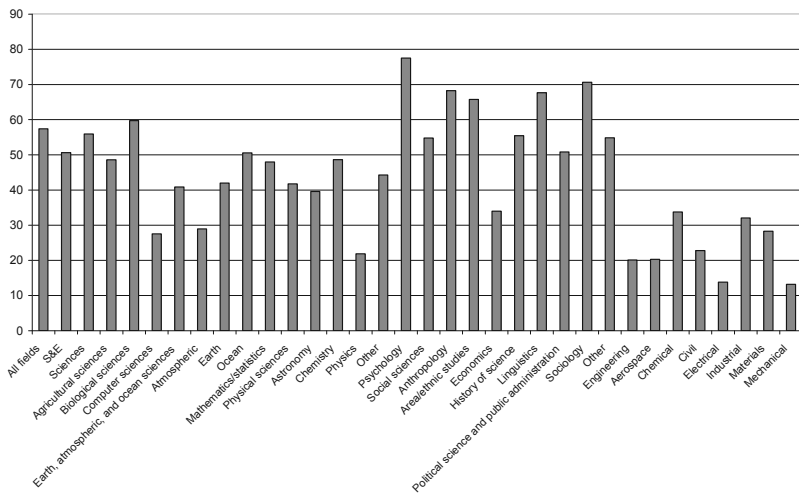
in school part time (higher-status schools are less likely to accept part-time students). At any rate, today, the degree of gender segregation in the types of institutions attended is smaller than the degree of gender segregation that exists across fields of study.

### *Fields of study*

Not long ago, women college students were concentrated in a very narrow range of fields of study. In the early 1960s, more than 70% of female undergraduates majored in only six fields: education, English, fine arts, nursing, history, and home economics (Jacobs 1996). The degree of gender segregation across majors can be measured by the index of dissimilarity, which captures the percentage of women who would have to change majors in order for there to be gender parity in the distribution of majors; 100% indicates complete segregation, and 0% indicates identical distributions for men and women (Jacobs 1995). In 1965, the dissimilarity index calculated across all fields of study indicated that 40% of women would have had to change major fields in order to achieve gender parity; by 1995, the dissimilarity index declined to 19% (Turner and Bowen 1999). Importantly, the declines in the gender segregation of major fields occurred most dramatically during the 1970s and slowed from the mid-1980s onward. According to Turner and Bowen (1999), a substantial movement of women out of education, coupled with a large influx of women into business programs, accounted for much of this reduction in the total dissimilarity index.

Gender desegregation in the fields of science and engineering has been less dramatic, but some changes are noteworthy. In these fields, gender segregation declined until 1975 but then increased and stabilized (Turner and Bowen 1999). Still, the number of women undergraduate science and engineering majors has increased consistently since 1966; by 2001, women garnered slightly more than half of all bachelor's degrees in science and engineering (National Science Foundation, Division of Science Resources Statistics 2004). Inspection of specific fields within the broad category of science and engineering reveals great variation in women's representation. Figure 3 shows that women now constitute the majority of students in the biological sciences and in the social sciences, with the exception of economics (National Science Foundation, 2004). They are approaching parity in chemistry but remain the minority in nearly all other sciences. Their underrepresentation in all fields within engineering is particularly striking and remains a cause for concern.

Figure 3. Female share of bachelor's degrees in various science and engineering fields, 2001



In a comprehensive book, Xie and Shauman (2003) assessed the most commonly asserted causes for women's underrepresentation. They concluded that it is not due to gender differences in math ability or math training in high school, as these gaps have closed. Nor is it due to girls' lower participation in high school math and science coursework (with the exception of physics). Male high school students are twice as likely as female students to expect to major in science and engineering in college; however, women, once in college, are more likely to change to a science major after beginning as a non-science major. Xie and Shauman concluded, therefore, that gender segregation within the sciences (e.g., biology vs. physics) and familial roles are the key barriers to women's successful career trajectories in science and engineering.

Beyond studies that focus specifically on women in science and engineering, research attempting to understand the reasons for gender differences in major choices have tended to focus on either differences in skill, such as academic performance, or differences in preferences and socialization. For example, Turner and Bowen (1999) examined the degree to which gender differences in college major are associated with gender differences in precollege math performance as measured by math SAT scores. Based on their findings that differences in SAT scores account for less than half of the total gender gap in major choice, they maintained that differences in academic preparation constitute a small part of the explanation for the persistence of gender segregation in



majors; other forces, “including differences in preferences, labor market expectations, gender-specific effects of college experience and unmeasured aspects of academic preparation account for the main part of today’s gender gaps in choice of academic major” (309).

Other researchers have focused on the environment of undergraduate institutions in explaining students’ major choices. For example, Solnick (1995) found that women at women’s colleges were more likely to enter traditionally male-dominated fields than women enrolled at coeducational institutions and argued that cultural and academic environments in women’s colleges facilitate women’s entry into the sciences.

### GENDER DIFFERENCES IN COLLEGE OUTCOMES AND RETURNS TO POSTSECONDARY EDUCATION

Much research provides evidence of the beneficial effects of higher education for women’s wage labor opportunities, earnings, and standard of living. When considered without regard to major field, the earnings gain from a college degree relative to a high school degree is higher for women than it is for men (DiPrete and Buchmann 2006). At the same time, the gender gap in earnings is actually larger among college-educated workers. In 2004, among all workers over 25 years of age, women earned 78.7 cents to every dollar earned by men. Among college-educated workers over 25 years of age, women earn only 75.2 cents for every dollar earned by men (Bureau of Labor Statistics 2005).

To what degree can the gender gap in earnings among college-educated workers be explained by the gender segregation of college majors? Shauman (2006) found a link between major choice and earnings: 11–17% of the gap in the likelihood of employment in relatively high-paying occupations is due to gender differences in major choice. But she further found that women and men with a bachelor’s degree in the same major tend to enter different types of occupations. Gender differences in the distribution of workers across occupational characteristics, coupled with the differential remuneration of these characteristics, explained as much as 41% of the sex differences in the odds of employment in high-paying occupations.

With the important exception of the literature on wage returns, there is little research on the returns to education on a range of outcomes for women relative to men. The impact of education on union dissolution has received extensive attention in the demographic literature (Faust and McKibben 1999; Teachman, Tedrow, and Crowder 2000; Teachman 2002). Teachman (2002) documented a negative relationship between a

woman's education and divorce; the risk of divorce drops 6% for each additional year of schooling. This is due in part to the fact that more educated individuals marry at later ages and in part to marital homogamy. College-educated women are more likely to marry college-educated men, who have substantially lower rates of divorce than high school-educated men, perhaps because men with a college education are less likely to initiate divorce. Moreover, after 1980, divorce rates fell among college-educated women while they continued to rise for less-educated women (Martin 2004).

Higher educational attainment is also linked to fertility rates; college-educated women tend to have fewer children than women with a high school education or less. Moreover, college-educated women are much less likely to bear children outside of marriage than are less educated women (Ellwood and Jencks 2004; McLanahan 2004). Nonmarital child-bearing is a central predictor for a low standard of living for a woman and her children.

While some recent research has examined whether gender differences in the returns to a college degree are part of the explanation for the rising college enrollment and completion rates for women (see the next section), many questions remain for future research. For example, if returns to a college degree vary by the prestige of the institution attended, research should examine how gender differences in the status of the institution can explain gender differences in returns to a college degree, net of controls for field of study. Such differences may constitute one understudied source of the gender gap in wages.

In sum, we know that the gender gap in wages is due in part to the differences in the educational attainment rates of the economically active population of men and women. Thus, it is reasonable to expect that as the trend in higher rates of college completion for women continues, the female-male earnings gap will continue to decline over the next decade (see, e.g., Loury 1997). At the same time, since occupational sex segregation also contributes to the wage gap (Blau and Kahn 1997), the fact that gender segregation in fields of study and in occupations has been slower to decline (Bradley 2000; Bobbitt-Zeher 2007) suggests that the gender gap in earnings will not be completely eradicated. Bobbitt-Zeher (2007) found that even if college-educated men and women had similar education credentials, standardized test scores, and fields of study, the gender gap in wages would be reduced but remain substantial, underscoring the point that other non-education-related factors would also have to change before the wage gap would become negligible.

## EXPLAINING GENDER GAPS IN HIGHER EDUCATION

This section focuses on both individual and institutional explanations for the rising female advantage in higher education generally. Because of the small body of conclusive research in this area, I discuss the plausibility of a variety of explanations that have yet to be examined empirically, in addition to discussing the findings of existing research.

### INDIVIDUAL-LEVEL FACTORS

Status attainment and rational choice perspectives focus on primarily individual-level explanations for variations in postsecondary enrollment. Status attainment theory examines differences in access to resources, broadly defined, related to attending and completing college. Rational choice perspectives consider how incentives and constraints shape decisions regarding whether to pursue higher education: individuals consider both the costs and the benefits of attending college, and those for whom the benefits of attending college exceed the costs, including opportunity costs, should be those most likely to enroll.

#### *Effects of parental education*

A large body of research in the fields of sociology, much of it in the status attainment tradition (Blau and Duncan 1967; Sewell, Haller, and Portes 1969; Jencks 1972) and in economics (Becker 1991), demonstrates the importance of parental education and other family-related resources to an individual's educational attainment. Resources related to family background exert their influence at each level of educational attainment, partly through academic performance and partly through educational transitions. Resources such as financial capital, social capital, access to role models and mentors, access to information on the college admission process, individual attitudes (especially aspirations), and prior academic performance are likely all important in understanding disparities in the transition to college generally, and patterns of gender inequality specifically.

For enrollment in colleges and universities with noncompetitive admissions, financial resources, a high school diploma or GED, and the motivation to attend college may be prerequisites. But for access to more selective institutions with competitive admission processes, additional prerequisites are required that are related to high school course-taking and academic performance, scores on standardized achievement tests,

extracurricular activities, and other factors that admissions officers consider.

Even when girls and boys share the same household, family resources may not be equally distributed between sons and daughters. For example, socialization arguments emphasize the importance of role modeling: children model their parents as they determine their own educational and occupational aspirations and attainment. Some scholars have argued that role modeling is sex specific, with girls looking more to their mothers and boys more to their fathers as they develop educational and occupational aspirations (Downey and Powell 1993). According to gender role socialization arguments, after controlling for the overall educational level of the parents, daughters should do relatively better in households where the mother is better educated than in households where the father is better educated.

Using data from the General Social Surveys, Buchmann and DiPrete (2006) found that the relationship between family background and college completion changed for men and women over the second half of the 20th century. In cohorts born before the mid-1960s, daughters were able to reach parity with sons only in the minority of families where both parents were college educated. Parents with less education appeared to favor sons over daughters, and the gender gap in college completion favoring males was largest among these less-educated families. But this pattern changed for cohorts born after the mid-1960s; the male advantage declined and even reversed in households with less educated parents or those with an absent father. The significant change in the effects of family background over time produced a situation where the female advantage remained largest in families with absent or high school-educated fathers, but extended to all family types. Males, especially black males, gain a differential advantage when they have a father in the home with some college education but lose the advantage when their father has only a high school education or is absent. These results offer little support for the gender role socialization perspective, which predicts a larger or growing impact of maternal status on daughters as compared with sons. Rather, most of the shift stems from the growing vulnerability of boys with absent fathers or fathers with only a high school education.

Buchmann and DiPrete (2006) suggested (but could not test definitively) some explanations for the pattern they found. One potential source of change relates to a cultural shift in factors of family life that are linked to father's education. Back in 1940, a high school-educated father was rather high in the educational hierarchy of the American adult population, where, according to data from the General Social Survey, fewer than 20% of fathers had some college education. Many of these fathers

were first- or second-generation immigrants who, by many accounts, had a strong mobility orientation for their children (Hirschman 1983). In contrast, high school-educated fathers of the most recent cohorts are lower in the educational hierarchy and may differ in their mobility orientation from their counterparts from the 1940s.

### *Academic performance*

Gender differences related to academic performance and behaviors in high school also play some part in explaining gender differences in college enrollment and completion, as academic ability is highly predictive of college attendance (Baker and Velez 1996). Early research using survey data for high school students in the 1950s and 1960s found that girls received higher grades than boys, had higher class standing than boys, and, by the early 1970s, took as rigorous courses as did boys (Alexander and Eckland 1974; Alexander and McDill 1976; Thomas, Alexander, and Eckland 1979). In fact, much prior research on gender differences in educational attainment sought to explain the anomaly of women's lower rates of college enrollment and completion, in light of their superior academic performance relative to men (Alexander and Eckland 1974; Mickelson 1989; Jacobs 1996).

While girls have long been outperforming boys academically, it is possible that gender gaps in academic performance have grown over time. With data from six U.S. national probability samples from 1960 to 1992, Hedges and Nowell (1995) found a larger variance in test scores for males than females on some achievement tests, a gradual reduction of the male advantage in math and science tests, and no reduction in the female advantage on tests of reading and writing ability. To the best of my knowledge, there are not more recent analyses on changing gender differences in academic performance that update Hedges and Nowell's work, nor do we know whether there are variations in the gender gaps in test scores by race, ethnicity, immigrant status, or SES.

Girls have also come to outpace boys in terms of the number of college preparatory courses and the number of Advanced Placement (AP) examinations they take in high school (Bae et al. 2000; Freeman 2004). In 1998, female high school graduates were more likely than males to have taken biology and chemistry courses and were as likely to have taken other math and science courses. Since 1990, more females than males have taken AP examinations. Girls are also more involved in extracurricular activities than boys during their high school years, with the notable exception of participation on athletic teams (Bae et al. 2000).

These gender differences in high school behaviors are likely related to

the female advantage in college enrollment and completion, but the causal relationship is unclear and probably complex. For example, do female students' higher aspirations to attend college drive their greater college preparation efforts? Some evidence supports this argument. Data from the Monitoring the Future Study indicates that in 1980, more male than female high school seniors (60% vs. 54%) expected to graduate from a four-year college, but by 2001, 82% of female high school seniors, compared with 76% of male high school seniors, expected to do so (Freeman 2004). At the same time, other factors, such as developmental differences between boys and girls or sex-role socialization in early childhood, might also underlie both gender differences in high school behaviors and college enrollment. Extensively-detailed longitudinal data sets that follow the educational experiences of individuals from early childhood into young adulthood would make it possible for researchers to answer these questions definitively.

Other research indicates that girls, compared with boys, possess higher levels of "noncognitive" abilities, such as attentiveness and organizational skills, that facilitate academic achievement and increase their probability of college enrollment (Jacob 2002). For example, teachers consistently rate girls as putting forth more effort and as being less disruptive than boys in high school (Downey and Vogt Yuan 2005).

Females' better academic performance in college does play a large role in producing the female advantage in college completion. In their analysis data from the National Educational Longitudinal Study (NELS) of the high school class of 1992, Buchmann and DiPrete (2006) found that while girls performed better in eighth grade and high school in terms of GPA and high school rank, their performance did not translate into higher rates of enrollment in four-year colleges. But they found that, especially for white women, superior academic performance in college was strongly related to women's greater likelihood of completing college. This relationship remained net of controls for a wide range of factors, including high school behaviors, college major, and the selectivity of the institution attended.

### *Incentives and returns to college*

Differences in the returns to attending and completing college also may play an important role in shaping individual decisions about how much education to acquire. In light of the research that documents high returns to college education in terms of earnings and marital status as well as in other realms, one plausible reason for the rising rates of women's college enrollment and completion is that the returns to

college have been rising more for women than for men. Some research that has examined this question found no evidence of a female-favorable trend in the wage returns to higher education, however (Averett and Burton 1996; Perna 2003; Charles and Luoh 2003). Women's wage returns to higher education have indeed increased, but male returns have increased even more rapidly because of declining opportunities for high-wage, male-dominated manufacturing jobs for high school-educated workers.

Most recently, DiPrete and Buchmann (2006) argued that wage returns constitute too narrow a basis for evaluating the relative returns to higher education for men and women. They therefore assessed whether the growing female advantage in college completion is related to changes in the returns to higher education for women and men in terms of wages, the probability of getting and staying married, the family standard of living, and insurance against poverty. Conducting a trend analysis of the value of higher education for each of these outcomes measured against the baseline value of a high school education using 39 years of data from the Current Population Survey (CPS), they found that standard-of-living and insurance-against-poverty returns to higher education for women appear to have risen faster than for men. Thus, it is plausible that the female-favorable trend in college completion may be related at least in part to gender-specific changes in the value of higher education.

DiPrete and Buchmann (2006) noted that such gender-specific incentives are only part of the explanation for the female-favorable trend in higher education. Gender-specific trends in the value of education would likely have to persist for some time before they would become the basis for educational decisions; the initial female-specific rise may have had other causes. Furthermore, there is no reason to believe that the same explanation would apply across the socioeconomic hierarchy or across different racial or ethnic groups. The literature has demonstrated that many individual factors predict the likelihood of college attendance, and many of them begin shaping an individual's educational career at an early age, before he or she is aware of even the gross characteristics of labor or marriage markets, let alone trends in these markets. Trends in incentives nonetheless can have a powerful affect on the margin and thus may well be an important cause of the growing female advantage in college completion.

Although the value of a college education has not risen as fast for men as for women, DiPrete and Buchmann (2006) showed that the returns have indeed risen for men. The returns to education in the labor market have risen for men, and the earnings value of a spouse to men has risen as female earnings have risen and the financial vulnerability of men to

divorce has risen (McManus and DiPrete 2001). Arguably, one puzzling aspect of the reversal of the gender gap in college completion is the slow pace of growth in men's rates of college completion even in the face of rising returns to college for men. Research suggests a socialization-based disadvantage for males that is relatively stronger in families with less-educated or absent fathers (Buchmann and DiPrete 2006). But whether this disadvantage plays out through a lack of knowledge about the value of postsecondary education and the way to convert it to success in the labor market, through a lower priority placed on education relative to other perhaps short-term goals, or through some other mechanism is not yet clear.

### INSTITUTIONAL-LEVEL FACTORS

Institutional-level factors also likely shape gendered patterns of college access and success. They include sociocultural changes in gender roles and expectations about life course trajectories for women and men and declining gender discrimination in the labor market. Shifts in the structure of the labor market and occupational sex segregation also impact individual incentives to attend college, as do changes in institutions of higher education themselves, such as the growth of community colleges, the rising costs of higher education, and changes in financial aid regulations. We also need to consider the role of institutions such as the military that may compete with higher education for young adults, especially young men, in shaping gender-specific patterns of participation in higher education.

#### *Gender role attitudes*

In the United States, there have been large changes in gender role attitudes in recent decades, with the clear trend of a declining number of Americans expressing support for traditional gender roles and a far greater number expressing more egalitarian views (Brewster and Padavic 2000; Brooks and Bolzendahl 2004). Changes in gender role attitudes are also related to the rising college attendance of young women, but in complex ways and coupled with other factors (DiPrete and Buchmann 2006; Goldin 2006). Goldin's research examines women's changing expectations regarding their labor force participation, social norms concerning women's families and careers, and factors related to women's life satisfaction over the last century in detail. For example, Goldin, Katz, and Kuziemko (2006) showed that young women's rising expectations for future employment encouraged them to attend and complete college,



but they also noted that the median age of first marriage among college graduates rose by several years in recent decades. As they married later, women could take college more seriously and form their identities before getting married and having a family (Goldin 2006). Women's access to reliable contraception in the form of the birth control pill positively impacted their college attendance and a host of related factors, including their age at first marriage, professional labor force participation, and age at first birth (Goldin and Katz 2002; Goldin 2006).

### *Labor markets*

Important changes in the labor market in recent decades also have undoubtedly impacted women's choices to attend college. Between the 1970s and 1990s, the gender wage gap declined. While women in all segments of the earnings distribution saw increases in their wages, women with high levels of human capital (in terms of education and labor force experience) saw the greatest increase (Spain and Bianchi 1996; Morris and Western 1999). Moreover, research indicates that returns to labor force experience increased by a larger amount for women than for men during this period (Blau and Kahn 1997) because of rising levels of women's human capital and because of the passage and enforcement of antidiscrimination laws (Goldin 2006). Occupational sex segregation also fell between 1970 and 1990, although the rate of decline slowed in the second decade (Morris and Western 1999). This means that more women entered prestigious and often better-paid positions in occupational sectors such as law, business, and the sciences (Goldin 2006). All these factors are related to women's rapidly rising rates of college enrollment and completion from the 1980s onward; however, we still need to understand why the college enrollment and completion rates of men have grown much more slowly, especially in light of the fact that returns to higher education have risen for men, albeit not as rapidly as for women (DiPrete and Buchmann 2006).

### *Educational institutions and environments*

Changes in higher education institutions also may have altered the access or pathways to college in gender-specific ways. The second half of the 20th century witnessed the dramatic expansion of both the community college system and the four-year college system. If community college serves as a springboard to enrollment in and graduation from a four-year college, the expansion of the community college system may have been responsible, in part, for the female-favorable trend in college comple-

tion. But Buchmann and DiPrete (2006) found little evidence that community colleges serve as a pathway to increased college completion for women. Via a decomposition analysis, they showed that while females enroll in two-year colleges at a slightly higher rate than males, the female advantage in two-year college attendance has only a small impact on their advantage in four-year college completion.

Other major changes in higher education have been the rising cost of tuition, declining levels of grant-based financial aid, and increases in student loans (Alon 2007). cursory evidence suggests that women receive as much financial support from their families for college as do men (Jacobs 1999), but it is possible that changes in financial aid and the increasing cost of college are affecting men and women differently. This is an important topic for further research.

There is an ongoing, contentious debate about whether male and female teachers have biases in how they treat boys and girls in the classroom. Research based on classroom observation in the early 1990s talked about *How Schools Shortchange Girls* (American Association of University Women 1992) and maintained that teachers favored boys, called on them more frequently, and were more likely to praise them (Sadker and Sadker 1994; American Association of University Women 1992), only to be followed more recently by arguments that schools favor girls and contribute to a *War Against Boys* (Sommers 2000).

Unfortunately, empirical evidence on whether teachers are gender biased and whether such bias plays a role in causing gender differences in educational outcomes is quite limited. In their review of small-scale studies of teachers' gender bias in college classrooms, Jones and Dindia (2004) concluded that evidence supports the idea that the teacher's gender does shape gender equity in postsecondary classrooms. Most recently,

Dee (2005, 2006) examined whether a teacher's gender shapes gender differences in achievement among middle school students. Using NELS data, he found that in the subjects of science, social studies, and English, having a female teacher instead of a male teacher raised the achievement of girls by 4% of a standard deviation and lowered the achievement of boys by roughly the same amount, producing an overall gender gap of 8% of a standard deviation (Dee 2006). He argued that these estimates suggest that the effects of a year with a teacher of a particular gender are quite large relative to the gender gaps in achievement found in the National Assessment of Educational Progress (NAEP). Dee (2006) noted that although the adverse effects of teacher gender have an impact on both boys and girls, the effect falls more heavily on the male half of the population in middle school, since most middle school teachers are female. Dee's findings are sure to generate much-needed future research

on the role of gender in teacher-student interactions in the classroom. For example, while Dee offers some potential explanations for his findings, definitive assessments of why teacher gender matters for students' achievement are important tasks for future research.

*Military service: Competing with or enhancing college enrollment?*

Finally, we must assess the degree to which the military competes with higher education for young adults, especially young men. The armed forces of the U.S. military recruit about 200,000 enlisted personnel each year, almost all of whom are high school graduates. In 2004, there were 1.4 million active duty personnel, or about one half of 1% of the total population. The size of the military population has not fluctuated much in the past 20 years; since 1975, it has constituted less than 1% of the total population. Eighty-five percent of active duty personnel in the armed forces are men (Segal and Segal 2004). Because the population of enlisted personnel is disproportionately young (with more than 50% under the age of 25), the military may compete with college as a destination for young adults, especially young men. It is too simplistic, however, to view military enlistment and college enrollment as mutually exclusive events. Many young people who enlist after high school cite the educational benefits available to them, either during or after their military service, as a primary motivation to enlist (Segal and Segal 2004). Thus, for some, military service may make enrolling in college possible, albeit at a later point in life.

Further, the armed forces commissions 15,000–20,000 officers each year, and nearly all officers are college graduates; about 40% received their commission through participation in a college or university Reserve Officer Training Corps (ROTC) program (Segal and Segal 2004). For this group, military enlistment occurs after completing college.

Nonetheless, research finds that men who serve in the military receive less education than those who do not serve (Cohen, Warner, and Segal 1995; MacLean 2005). In a study of high school graduates who served in the armed forces during the peacetime cold war, MacLean (2005) found that veterans were less likely to get a college education than were nonveterans at all levels of SES. Even among men who reported that they planned to go to college, military service reduced the odds of postsecondary education. This finding accords with the idea that military service may compete with higher education for young men who enter military service after completing high school. To the best of my knowledge, no research has examined the relationship between military service and educational attainment for women, and questions remain about whether

the effects of military service found for older cohorts remain the same for military personnel today, especially during the period of the war in Iraq. These are important questions for future research. It would also be informative for future research to map out the trajectories of young people who enlist in the military and examine precisely the range and degree to which military service alters college enrollment pathways.

### IMPLICATIONS AND FUTURE RESEARCH

The terrain of gender inequality in the transition to college has been the site of much change, with young women gaining advantages over young men in ways that could not have been anticipated just two decades ago. Females are less likely to drop out of high school than males. Men are now more likely than women to forgo college or delay college enrollment. Once enrolled in college, women tend to get better grades and have higher rates of persistence to obtain a degree. The advantages to females in all these domains are largest among blacks, Hispanics, and Native Americans. Males still retain a slight advantage in the prestige of the colleges they attend. After declining steadily in the 1970s and early 1980s, the gender segregation of major fields stabilized such that today, more men than women still attain degrees in the most lucrative fields, especially in engineering.

The future promises to bring more change than stability to the arena of gender inequality in the transition to college. It remains to be seen, for example, whether women will achieve parity with men in terms of the prestige of the institutions of they attend. The degree to which higher rates of college completion among women will reduce the gender wage gap also remains to be seen, as current evidence on this issue is mixed. Throughout this article, I have highlighted some of the potential pathways for future research to advance our understanding of the complex nature of gender inequalities in higher education: Why have men's rates of college completion apparently not kept pace with the rising returns to college for men? Among men who do enroll in college, what factors lead many of them to delay enrollment for more than a year after high school? How have gender gaps in academic performance changed in the past decade since Hedges and Nowell (1995) analyzed this question? What are the patterns of gender differences in test scores for different race, ethnic, immigrant, and SES groups today? In addition to these and other pressing research questions, I believe that there are three related domains of research that would prove especially useful in advancing our understanding of gender inequalities in the transition to college.

First, future research needs to examine gender inequalities in educa-

tion early in the life course: female-favorable trends in college enrollment and completion and possible female-favorable trends in high school performance are likely partly due to gender differences in childhood experiences. For example, gender differences in problem behaviors or academically productive use of time in early to middle childhood may be linked to later differences in cognitive performance in elementary school. If so, these factors may be one of the root causes of female advantages in high school performance, either alone or in interaction with particular parenting styles. Richly detailed data pertaining to these issues are available through two new longitudinal data sets, the Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K) and the Early Childhood Longitudinal Study of children born in 2001 (ECLS-B). These data sets allow researchers to examine a wide range of factors, including children’s health, development, care, and education during the formative years, from birth through kindergarten entry and into the elementary and middle school years. I expect that they will be used extensively to investigate questions pertaining to gender differences in early childhood experiences. Their release coincides with recent important knowledge advances in biology, psychology, and other arenas (Kimura 1999; Halpern 2000; Cahill 2005; Spelke 2005) that shed light on gender differences in cognitive and motor skills development and noncognitive abilities in early childhood. More than ever, the study of gender differences in early childhood must be an interdisciplinary enterprise, with connected efforts by social scientists, policy makers, biologists, and child development specialists.

Second, future research must investigate gender differences by race, ethnicity, SES, and immigrant status. Such research should attend to gender differences within vulnerable segments of the population who may be particularly at risk for not attending higher education. A rare example of such work is Lopez’s (2003) ethnographic study of 66 low-income second-generation Dominican, West Indian, and Haitian young adults who grew up in New York City during the 1970s–1990s. Through her interviews, Lopez found that the discriminatory treatment that these young men experienced in their schools and communities generally led them to doubt their ability to succeed in school and overcome society’s negative stereotypes of them. She also demonstrated how gendered norms within their families, which provided strong social controls and responsibilities for daughters but more lax regulations and too much independence for sons, could put sons and daughters within the same family on very different educational pathways. Other important evidence on how gender differences may be conditioned by race and SES comes from the work of Entwisle, Alexander, and Olson (2007) who found that in the beginning

of first grade, the early reading skills of boys from disadvantaged backgrounds were weaker than those of their female counterparts, but among nondisadvantaged elementary school students, boys' and girls' reading skills were about the same. These studies should serve as exemplars for future research.

Third, there is a great need for research on how the structure and practices of schooling relate to gender differences in educational outcomes. For example, the National Association for Single-Sex Public Education reported that, as of April 2006, at least 223 public schools in the United States were offering gender-separate educational opportunities, up from just 4 in 1998. Most of these cases involved coeducational schools with single-sex classrooms, but 44 were wholly single-sex schools (Dee 2006). It would not be surprising to learn that this rise in single-sex schooling has developed in response to growing public concern about boys' poor academic performance, as reflected by magazine covers, bestselling books, and television programs, such as the PBS program based on the bestselling book, *Raising Cain: Protecting the Emotional Lives of Boys* (Kindlon and Thompson 2000). While single-sex schooling may well be a reasonable policy response to the underachievement of boys, implementing such massive changes in our educational system without a careful empirically based assessment of the consequences of such changes is risky and irresponsible.

In sum, understanding the nature, causes, and consequences of the changing gender gaps in the transition to college and beyond is an important task for future research. The rapidly shifting terrain of gender inequalities in higher education raises important questions for policy makers, researchers, and educators who want to understand how to improve the educational performance and attainment of all youth—males and females alike—and for institutions of higher education striving to respond to the needs of their students. Clearly, much work remains to be done.

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