

**Do Gains in Parental Resources Explain the Growing  
Female Advantage in U.S. Higher Education?**

Claudia Buchmann, Thomas A. DiPrete, and Troy A. Powell

Duke University

February 1, 2003

Paper to be presented at the meeting of the Research Committee 28 (Social Stratification) of the International Sociological Association in Tokyo, Japan, March 3, 2003. Direct correspondence to Claudia Buchmann, Department of Sociology, Duke University, P.O. Box 90088, Durham, NC 27708-0088 or via email to [cbuch@soc.duke.edu](mailto:cbuch@soc.duke.edu)

## **Do Gains in Parental Resources Explain the Growing Female Advantage in U.S. Higher Education?**

Claudia Buchmann, Thomas A. DiPrete, and Troy A. Powell

### Abstract

Recent evidence suggests that females in the United States have made substantial gains in all realms of education and now attend and complete college at higher rates than males. This paper examines the extent to which the emerging gender gap in higher education can be explained in part in terms of family-level status transmission. We formulate the hypothesis that women have benefited differentially from the overall rise in educational and socioeconomic resources available to American families. After providing a theoretical justification for this hypothesis, we test the hypothesis using data from the General Social Survey for the years between 1972 and 2000. While most of the female gains are unexplained by family-level variables, we find that the effects of parental cultural capital on higher educational attainment of daughters are larger than the comparable effects for sons. Because the educational (and specifically the higher educational) attainment of parents has risen substantially across 20<sup>th</sup> century birth cohorts, the female advantage at the individual level produces a female-favorable trend in higher educational attainment. Female-specific returns to parental cultural capital are even larger for college completion than for post-secondary enrollment. Much of the female-specific gain can be traced to rising rates of college completion by mothers, but our results show that daughters differentially benefit from higher levels of father's education as well.

## **Do Gains in Parental Resources Explain the Growing Female Advantage in U.S. Higher Education?**

Recent evidence suggests that females in the United States have made substantial gains in all realms of education and now generally outperform males on several key educational benchmarks. According to a recent study commissioned by Congress, “in school and in college, females are now doing *as well as or better than* males on many of the indicators of educational attainment, and the large gaps in educational attainment that once existed between men and women have in most cases been eliminated” (Bae et al. 2000:2). In 1972, more males than females enrolled in college (53% versus 46%); by 1997 the reverse was true, with 70% of females enrolling in college compared to 64% of males. Women are also more likely than men to persist in college, obtain degrees, and enroll in graduate school (Bae et al. 2000:7-8). The U.S. Department of Education predicts this “new gender gap” in college enrollment and completion will increase over the next decade. While this trend toward female advantage in higher education has attracted the attention of college administrators, policymakers and the media (see e.g., Koerner 1999), very little work has been done either at a theoretical or empirical level to explain this emerging trend.

This paper focuses on the question of whether the emerging gender gap in higher education can be explained in part in terms of family-level processes. We formulate the hypothesis that women have benefited differentially from the overall rise in educational and socioeconomic resources available to American families. After providing a theoretical justification for this hypothesis, we test the hypothesis using data from the General Social Survey for the years between 1972 and 2000. While most of the female

gains are unexplained by family-level variables, we find that the effect of parental cultural capital on higher educational attainment of daughters is larger than are comparable effects for sons. Because the educational (and specifically the higher educational) attainment of parents has risen substantially across 20<sup>th</sup> century birth cohorts, the female advantage at the individual level produces a female favorable trend in higher educational attainment. Female-specific returns to parental cultural capital are even larger for college completion than for post-secondary enrollment. Much of the female-specific gain can be traced to rising rates of college completion by mothers, but our results show that daughters differentially benefit from higher levels of father's education as well.

### **Gender Differences in Educational Attainment**

While some early research examined gender differences in educational attainment (Alexander and Eckland 1974; Hout and Morgan 1975), the bulk of recent research on the status attainment process has focused on gender differences in occupational attainment and earnings (Reskin 1990; DiPrete and Grusky 1990; England 1992; Bernhardt et al. 1995), rather than gender differences in educational attainment. Jacobs (1996) attributes this neglect to the fact that gender was usually not a significant predictor of educational attainment. But recent evidence challenges this presumption and suggests that gender is becoming an increasingly important predictor of educational attainment in several industrialized countries. In the comparative volume on educational attainment by Shavit and Blossfeld (1993), studies of the U.S, Germany, Hungary, Poland, and Sweden found that women's mean educational attainment in recent cohorts has surpassed those of

men. Eurostat statistics (Eurostat 2002) meanwhile demonstrate that higher proportions of females than males have attained tertiary education across most of EU member countries. Similarly, recent research finds higher educational aspirations among females than males in several industrialized countries (Buchmann and Dalton 2002) and a substantial rise in the occupational aspirations of U.S women in recent decades (Shu and Marini 1998).

To our knowledge, no published studies have proposed and tested explanations for recent trends toward a female advantage in higher education in the United States. The few studies that have examined gender-specific trends in educational attainment focus on historical periods prior to the recent decades when trends in female advantage emerged (Walters 1986; Goldin 1995). Walters used time series models on aggregate data to argue that female gains in higher education enrollment between 1952 and 1980 were largely due to changes in the occupational distribution, but she reached the same conclusion about men's gains in higher education (which were also substantial during this period); she did not attempt to explain the emerging gender *gap* in higher education. It is actually rather surprising how little is known about the recent rising female advantage in higher education, despite its obvious importance both as an educational event and as a potential cause of future trends in labor market outcomes.

This paper redresses this lack of knowledge in two respects. First, we use GSS data to measure the overall trends in postsecondary educational attainment of males and females using age-cohort models. Second, while recognizing that much of the female-favorable trend might be explainable in terms of *system-level* growth in educational and employment opportunity for women (e.g., DiPrete and Grusky 1990), we propose an

additional explanation for gender gains that derives from *family-level* processes for the transmission of advantage across generations. Specifically, we assess the degree to which the emerging female advantage can be explained as a consequence of gender-specific effects of parental resources on educational attainment, coupled with the existence of strong positive trends in parental resources over the period of time when the gender gap became visible in American society. After assessing the portion of the trend that is explained by family-level processes, we consider additional plausible reasons for the new gender gap favoring females in American higher education.

Several theoretical perspectives regarding resource transmissions from parents to children are useful for predicting how family-level processes relate to changing gender differences in educational attainment. Family economy perspectives view educational attainment as a product of family decision making, in which the household considers both issues of efficiency and equity to determine the optimal distribution of educational resources among children (Becker 1991; Becker and Tomes 1979; Behrman, Pollak and Taubman 1986). If wealth maximization is the major consideration governing family investments in schooling, especially under conditions of scarcity, then differences in returns to schooling for males and females would lead to differential educational investments in sons and daughters, which would ultimately translate into gender-inequality in educational attainment. In cases where labor markets and family systems privilege males, a family's first priority should be the education of sons (Papanek 1985).

The most obvious and compelling prediction of the "*wealth maximization*" perspective is that increasing returns to female schooling should lead families to invest greater resources in education for their daughters. Whether this theory also makes

predictions about the relationship between the *level* of parental resources and the relative size of the investment in sons and daughters at any given market condition is a more subtle question that depends upon the relationship between the linearity in the perceived (by parents) returns to the parental investment in children as a function of the size of this investment. If the returns do not vary by the investment size, then the extent to which parents favor sons over daughters will not depend upon the level of parental resources. However, if rational parents perceive diminishing returns to investments in sons or daughters, then better endowed parents would rationally devote a relatively larger share of their investments toward their daughters than less well-endowed parents, even if the gender-specific returns to schooling are held constant. Such a nonlinear investment model would imply that the gap between female and male educational outcomes would be lower for highly endowed parents than for less-well endowed parents. Consistent with this argument, studies in developing countries find that girls' education responds more strongly to increasing wealth than does boys (Knodel and Jones 1996; Schultz 1995).

Cultural capital perspectives maintain that values related to parental education but unrelated to economic considerations or wealth maximization may also shape preferences for educating sons and daughters. Patriarchal norms promote preferential treatment of sons. For example, studies in East Asia find that patriarchal norms promote the education of sons at the expense of daughters (Brinton 1993; Greenhalgh 1985). Under conditions of patriarchy, the preference for educating sons may hold, regardless of increases in family resources. For example, Greenhalgh (1985) finds that as East Asian societies have become wealthier, parental bias toward investing in sons' education has become stronger. Conversely, according to what might be termed the "*education egalitarianism*

*hypothesis*,” parents who hold egalitarian values may strive to ensure that sons and daughters are educated equally. At least in the American context, parents’ level of patriarchal versus egalitarian views should vary according to their level of education. Several studies document an association of more egalitarian sex role attitudes among individuals with higher levels of education (Thornton, Alwin and Camburn 1983; Thornton and Freedman 1979). Likewise, parents with more education should hold gender-egalitarian views and be more inclined to value education for both their sons and their daughters. Conversely uneducated parents are more likely to hold traditional “gender-inegalitarian” views about the value of education for their children. Cultural capital arguments also maintain that highly-educated parents are more able to create a home environment that promotes educational success and high levels of educational attainment for their children (Crook 1995).

Socialization arguments emphasize the importance of role modeling, such that children model their own educational and occupational aspirations and attainment based on the examples of their parents. Proponents of this view often argue that role modeling is sex specific, such that girls look to their mothers and boys to their fathers as they develop their educational and occupational aspirations (Downey and Powell 1993). While the phenomenon of sons following in their fathers’ footsteps is well-documented (Blau and Duncan 1967; Hout 1988), some research also has noted the importance of mother’s occupation for the formation of occupational aspirations (Shu and Marini 1998) and occupational attainment of daughters (Goldthorpe 1980; Rosenfeld 1978). According to the *sex-role socialization hypothesis*, 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. A more subtle version of the sex-role socialization hypothesis is that daughters are socialized by their mother's employment patterns as well as by their mother's educational attainment. According to the "*sex-role socialization via work orientation hypothesis*," daughters would be socialized into having a stronger work orientation and a stronger desire for education in households where the mother is well educated, work-oriented, and employed in a higher status occupation than in households where equally well-educated mothers have weaker career orientations. Finally, there is a family-structure version of the sex-role socialization hypothesis. According to the "*sex-role socialization via family structure hypothesis*," boys differentially benefit from the presence of a father, and differentially suffer from the absence of a father in the household (e.g., Powell and Parcel 1997, Sommers 2000). But, while some researchers favor one or another of these sex-role socialization hypotheses, others are skeptical. Kalmijn (1994) and Korupp et al. (2002) maintain that the effects of mother's education and occupation are as important for sons as for daughters. Similarly, McLanahan and Bumpass (1988) maintain that in father-absent households, it is the daughters who suffer special harm; by marrying earlier to fill the void created by the absent father, their educational attainment is depressed (see also Powell and Downey 1997; Krein and Beller 1988 for equivocal findings concerning the sex-role socialization via family structure hypothesis). The debate regarding sex-role socialization hypothesis is not resolved.

Each of these perspectives implies that gender-specific trends would be due in part to the transmission of resources from parents to children, although the perspectives differ in the specifics of the predicted relationship. The major implication of the wealth

maximization hypothesis is the predicted presence of a three-way interaction between family resources, gender, and cohort. As female returns to education rise, parents have incentives to increase their relative investments in their daughters, which should produce the indicated three way interaction (see the Appendix for a more formal justification). The more subtle (nonlinear) form of the wealth maximization hypothesis predicts that the relative investment in sons and daughters should vary at any point in time with the level of parental resources. Therefore, trends in parental resources should generate trends in the gender-gap in educational attainment.

The education egalitarianism hypothesis similarly predicts that rising levels of parental resources (in this case, specifically educational resources) should favor women by increasing the proportion of women who are raised in gender-egalitarian households that use their cultural capital for the benefit of daughters as well as sons. The sex-role socialization hypothesis predicts that mother's education has stronger effects on female educational attainment than does father's educational attainment (and *mutas mutandis*, the same for sons). Therefore either unequal gender advantages from sex-role socialization, or differential trends in mother's and father's educational attainment, or the two factors working simultaneously will produce gender-specific trends in educational attainment. Sex-role socialization arguments emphasizing work patterns predict that a female-advantage in education can arise from rising levels of mother's employment and occupational status to the extent that these factors differentially benefit daughters. Sex-role socialization arguments emphasizing family structure predict that the rising proportion of mother-only households in the U.S. (Cancian and Reed 2001) creates a

male-disadvantaged educational trend to the extent that sons suffer greater educational disadvantage than daughters in households that are missing a father.

## **Data and Methods**

This paper uses the General Social Survey (GSS) to examine recent trends in college enrollment and completion for males and females, to test the general hypothesis that trends in parental resources form one component of the explanation for the female-favorable trend in higher education, and, to the extent possible, to evaluate the plausibility of the wealth maximization, education-egalitarianism and sex-role socialization versions of the parental resource approach. The GSS is a repeated cross-section survey administered to a nationally representative sample of the U.S. population. The 23 annual Gender Social Surveys administered between 1972 and 2000<sup>1</sup> provide information on the educational attainment of respondents, the education attainment of their fathers and mothers, socioeconomic status of their fathers, and several other measures of family background (National Opinion Research Center [NORC] 2003). The availability of data from 1972 to 2000 makes the GSS valuable for examining trends in higher education by gender during the period when the shift from a male advantage to a female advantage in college enrollment occurred. The sample is restricted to respondents between the ages of 18 and 35 that were born after 1940. Separate analyses are conducted on whites and blacks.

---

<sup>1</sup> Since the GSS was not administered in 1979, 1981, 1992, 1995, 1997, or 1999 there are a total of 23 waves of data over this 29-year interval. Surveys were not conducted in 1979, 1981, and 1992 because of funding shortages. Beginning in 1994 the GSS switched to a biennial design such that the survey was administered every other year with roughly double the usual sample size, so no surveys were administered in 1995, 1997, or 1999 (Inter-university Consortium for Political and Social Research [ICPSR] 2003).

The two dependent variables in the analyses are post-secondary attendance and college completion. Attendance is a dichotomous variable defined as any respondent reporting 13 or more years of education. This measure has a few limitations. Completion is a dichotomous variable defined as the completion of at least a four-year bachelor's degree program. Independent variables include several measures of family background as well as measures for cohort, age and sex. The respondent's year of birth is used to create birth cohorts for these analyses. Our main focus in this paper concerns the linear trend of cohort, and so we present models that estimate the linear gender-specific cohort trends.<sup>2</sup> Age is measured as of the time of the survey, i.e. at the time the respondent reports his or her level of education. Our model allows nonlinear age effects as a cubic polynomial. Family background variables include measures parental education and occupational status as well as household structure. Note that the survey defines "mother" and "father" broadly. These measures are not limited to biological parents, but include stepparents, adoptive parents, and anyone functioning as the respondent's guardian. For the remainder of this paper we will use the term "father" to mean any male guardian, and "mother" to mean any female guardian, with the exception of the variable own parents present, which does make the distinction between the presence of a respondent's biological/legal parents versus other guardians.

Father's education and mother's education measure the years of education of the respondent's father and mother as reported by the respondent. Father's college degree and mother's college degree are dichotomous variables measuring whether a respondent's mother and father has 16 or more years of education. While data indicating the post-

---

<sup>2</sup> In supplementary models, we also specified quadratic and cubic cohort effects. These additions have only modest effects on the predicted patterns from our "full" model that is the basis of figures 1 and 2, and thus do not qualitatively change the conclusions that we reach about age trends.

secondary degree of the respondent's parents are available, we believe that a variable indicating 16 or more years of education provides a measure of the educational level equivalent to contemporary bachelor's degree but that is most comparable across the historical period covered by our analysis. Father's occupational status is the total socioeconomic index of occupational status (TSEI) developed by Stevens and Featherman (1981). TSEI scores are based on the occupational category of the respondent's father, which was obtained by the 1970 and 1980 Census three digit occupational classifications contained in the GSS data.<sup>3</sup>

In terms of household structure variables, father present is assigned a value of one if a father was present in the respondent's home when the respondent was 16 years old. Own parents present is coded one only if the respondents' biological/legal mother and father lived in the same household with the respondent when the respondent was 16 years old. Finally, siblings reports the number of siblings of each respondent. To eliminate a skewed distribution of this variable, all respondents reporting more than three siblings are assigned a value of three. Combined these variables offer a reasonable presentation of family resources that we can use to test the above hypotheses. Unfortunately, the GSS does not include data on family income and includes mother's employment or occupational status only in select years, so we cannot include these in our analyses.

In table 1, panel A presents the means and standard deviations of all variables for whites, by survey year grouped in three year intervals; panel B presents comparable information for blacks. For each three-year interval, columns 1-6 show the percent

---

<sup>3</sup> The 1970 Census occupational classifications were assigned TSEI scores based on the coding map in the appendix of Stevens and Featherman (1981). The TSEI scores for the 1980 Census occupational classifications were assigned using the code map in the appendix of Stevens and Cho (1985). The GSS utilizes the 1970 Census classifications in survey years 1972-1987 and the 1980 Census classifications in survey years 1988-2000.

attending post-secondary education and completing college as well as sex-specific attendance and completion rates. The remaining columns report the means and standard deviations of the family resource measures. Panel A demonstrates the well-known fact that educational attainment has been increasing in the past 30 years. It also provides further support for the assertion that white female higher educational attainment, which lagged behind that of males in the 1970s surveys, has reached or exceeded the white male rate in recent years. Panel A further reports a gradual decline in the proportion of respondents who have a father in the house, but dramatic gains in the proportion of respondents whose fathers (when present) and mothers have attained a college degree, and rising occupational status for fathers. The statistics presented for blacks in panel B are based on a smaller sample and bounce around more from year to year. Overall, they also show rising educational attainment of respondents, but the gender-specific trends differ from those of whites. While both males and females have experienced an increase in post-secondary attendance rates, there is no clear trend of a growing advantage for black females. Nor does there appear to be a linear increase in college completion for blacks. As with whites, the mothers and fathers of blacks are much more educated in the most recent GSS surveys compared to earlier surveys. Fathers are considerably less likely to be present in the black sample however, and the proportion of blacks with own parents present also decreases over time.

#### TABLE 1 ABOUT HERE

We use logistic regression to analyze trends in the probability of enrolling in post-secondary education and attaining a bachelor's level degree. Because Americans (perhaps especially women) often start and/or complete post-secondary education at later

ages, it is important to include both respondents of typical college age as well as older respondents. Even with 23 years of survey data available, it is also important to take account of the limitations on the combinations of age and cohort that can be observed. We limited our analysis to respondents who were born in 1940 or later, and who were no older than age 35 at the time of the survey. For the post-secondary attendance analysis, we limited the sample to those who were at least 18 as of the time of the survey. For the college completion analysis, we limited the sample to those who were at least 21 as of the time of the survey. With these exclusions, we can observe individuals at age 18 who were born between 1954 and 1982, individuals at age 21 who were born between 1951 and 1979, and individuals at age 35 who were born between 1940 and 1965. In other words, data support for the oldest cohorts in our analysis comes from those who were in their late twenties or early thirties in the first GSS surveys. For the youngest cohorts (those born in the late 1970s and early 1980s), we can only observe educational attainment through their early twenties. These limitations preclude a fully-interactive specification for age and cohort across the entire range of ages and cohorts found in our sample. Nonetheless respondents at any age covered by our analysis can be observed over a range of at least 23 cohorts, with coverage for 43 cohorts across some portion of the 18-35 age range studied in this paper. Thus we have substantial support in the data for estimates of the separate effects of age and cohort on educational attainment.<sup>4</sup>

We conduct two sets of analyses for this paper. The first and most pertinent set examines the unconditional probability of attaining the two educational levels that are the heart of our analysis. The unconditional probabilities show the overall gender-specific

---

<sup>4</sup> We conducted supplemental analysis that included an interaction for age\*cohort. Since the inclusion of the interaction did not substantively change the results, for clarity we present more simplified models without this interaction.

trends in attainment and thus are of primary interest here. To gain greater insight into how the overall trends arise, we also estimated conditional transition models that provide estimates of the probability of entering post-secondary education, conditional on finishing secondary school, and on the probability of completing college, given that one has entered post-secondary education. To conserve space, we do not report the results of the conditional transition models in detail in the current paper, but we comment on these results where appropriate in our discussion of the unconditional attainment models.

Our models presume that gender-specific trends in educational attainment are explainable in terms of age effects, cohort effects, and trends in cohort-specific variables (e.g., in father's education or mother's education). An alternative conceptualization would involve the modeling of trends as a function of period effects. At a theoretical level, we believe that such an alternative conceptualization is sensible. A man or woman's decision to enroll in higher education in young- and middle-adulthood is determined not only by his or her experiences during childhood, and not only his or her age, but also by contemporaneous features of the labor market and educational system at the time he or she is making such decisions. As a practical matter, however, we only present models with age and cohort effects in this paper because of the lack of information in the GSS on the *timing* of post secondary enrollment and completion. This lack of information means that we cannot specify period effects for enrollment or completion of higher education by those older than the minimum higher education entering and completion age.<sup>5</sup>

---

<sup>5</sup> The only way around this problem would be to focus on young adults but this would yield too few cases for analysis. Moreover, the conceptual distinction between cohort and period should be most revealing when examining middle-age adults.

## Results

In this section, we present descriptive models of the age and cohort effects, and then elaborate with interactions between gender and family resources. In the next section, we consider further refinements to adjudicate between the different versions of the family resource trend hypothesis that were developed in the theoretical section of this paper. Table 2 contains estimates of the post-secondary attendance model for whites. Model 1 reports estimates using a linear specification for cohort and a cubic polynomial for age, along with age and cohort interactions for females. These results provide clear evidence that female rates of post-secondary attendance have risen from the 1940 birth cohort through the 1982 cohort. The significant effect of cohort indicates that recent cohorts have greater odds of enrolling in post-secondary education than older cohorts. While the main effect for females is negative, the cohort effect for females is substantially larger than that for males, indicating that over time the initially lower odds of post-secondary attendance (i.e., in the 1940 cohort) have been erased. In the most recent cohorts, female odds of post-secondary education are greater than male odds.

### TABLE 2 ABOUT HERE

Model 2 includes father's education and mother's education as well as age and cohort measures, and adjusts the sample to exclude those respondents who did not have a father present in their household at age 16. Table 2 shows quite clearly what innumerable studies have already found -- that parental education is an asset that increases the probability of higher educational attainment. The coefficients of model 2 also show that females gained a greater advantage from parental education than did males. Finally, model 2 coefficients show a strong residual cohort trend that has propelled female

attainment higher relative to male attainment. Other results (not shown) further demonstrate that this female advantage from parental education is stable over time; interactions between father's or mother's education and birth cohort for females are not statistically significant.

In order to compare the effects of different family structures on the odds of post-secondary attendance, the sample for model 3 includes those individuals who had no father in their home at age 16. To reintroduce these respondents back into the sample for model 3, the values for father's education, father's college degree and father's occupational status for respondents with no father present at age 16 are set to zero. Thus, model 3 includes age, cohort and mother's education measures as well as variables indicating years of education, college degree, and occupational status for the father, if present in the household when the respondent was 16. Each of these variables is interacted with gender. Finally, model 3 includes the household structure variables: the dummy variable indicating whether the respondent's own mother and father were both living in the household at age 16, the dummy variable indicating whether a father (using the broad definition) was present in the household at age 16, and the number of siblings of the respondent.

Model 3 provides a more detailed picture of how parental resources affect educational attainment differently for males and females. The presence of a father and specifically the presence of one's own father and mother are assets for both sons and daughters. The linear specification of father's and mother's education has positive and significant effects for both sons and daughters, while the effect of father's education on daughters is significantly greater than its effect on sons. The elaboration of parental

education to allow for distinct effects of college completion does not add any significant explanatory power to the model, however. Siblings are a liability, as other researchers have also shown, and this liability does not appear to be strongly gendered. Finally, a significant residual cohort-gender interaction persists in favor of females despite the elaboration of the model.

The implications of these models for relative gender trends can be made apparent through a graphical presentation. Figure 1 contains four graphs that report predicted trends from these models. The top left graph (figure 1a) plots the predicted probabilities of college attendance from model 1 of table 2 for men and women at ages 20 and 35 across cohorts born between 1940 and 1980. Males born in 1940 had considerably higher probabilities of attending post-secondary education than females by age 20 (.291 probability of attending post-secondary education compared to a .189 probability of females) and this advantage was even stronger at age 35. However, the more steeply sloped female trend caused women to attain parity by roughly the 1965 birth cohort. By the 1970 birth cohort, women had passed men in their rates of college attendance at both ages 20 and 35. Women born in 1979 had a .54 probability of attending post-secondary education by age 20 compared to a .46 probability for men from the same birth cohort.

#### FIGURE 1 ABOUT HERE

Figure 1b is drawn from the coefficients of model 3, and shows the implications of the female advantage in family resource effects on the probability of post-secondary attendance. This graph shows illustrative predictions for the cohort midpoint in our data for 24 year-old males and females as a function of parents' education and the presence or absence of a father. To simplify the illustration, we present predictions as a function of

parental education under the special case where both parents have the same education if both are present. If no father is present, then the X-axis denotes the education of mother. Figure 1b shows that the presence of a father is an asset for post-secondary attendance rates of both sons and daughters if the father has more than about 10 years of schooling. It further shows that the predicted gap between male and female attainment varies by the level of parental education. At low levels of parental education, males have a relative advantage, but this advantage is eliminated at higher levels of parental education. In figure 1b, the cross-over point at which females are predicted to have a higher probability of post-secondary attendance than males only applies to the specific values of age and birth cohort used to construct this chart (the same is true for the absolute gap between male and female probabilities shown in this figure). However, the *relative* female advantage from having more highly-educated parents that is shown in figure 1b applies across the cohorts.<sup>6</sup> Furthermore, this relative advantage implies a trend advantage, because the educational and socioeconomic resources of the typical family were increasing across the approximately forty birth cohorts being studied in this paper.

Figure 1c shows the relative impact of the female advantage from more highly educated parents, and the residual trend favoring females on the overall female trend and the female-male trend gap. All lines in figure 1c begin at a common point for the 1940 birth cohort, which is the predicted probability of post-secondary attendance by age 20 for females. The bottom line (labeled “(1)”) shows how this probability is predicted from model 3 to have changed over 43 cohorts under two counterfactual assumptions: (1) no average gains in household composition, or in the educational and socioeconomic level of

---

<sup>6</sup> Recall that the cohort\*parental education\*gender interactions were not significant in more elaborated models not shown here.

families, and (2) females follow the same residual trend as males. The second line (labeled “(2)”) increments this trend with the effect on attainment of the trend in family structure and family resources, evaluated at the coefficients for males.<sup>7</sup> As can be seen, family resource trends alone would have raised the proportion of females attending college by the 1980 birth cohort from under 10% to about 20%. Note that not all of the family variables are generating a positive trend over time. Table 1 showed that the proportion of white respondents with a father present has been declining over time. Coupled with the positive effects of father present and own parents present, the trend in household composition would imply a negative trend in post-secondary attendance by itself. But, as line (2) makes clear, the positive trends induced by higher parental education and higher socioeconomic status of fathers offsets the negative trend induced by household composition. Line (3) adds the impact of the female residual trend. As can be seen, the female residual trend dramatically raises the probability that females in recent cohorts would attend post-secondary education. Line (4) adds the female trend advantage obtained from female-specific returns to parental and family structure variables. This increment is measurable but relatively small in comparison to the unexplained female residual.

Finally, figure 1d shows the same decomposition for age 35 females. Figure 1d tells the same story as figure 1c, except that all probabilities are shifted upward to reflect the positive advantage on post-secondary attendance of having an additional 15 years to make this transition.

---

<sup>7</sup> Each of the parental resource variables in the model were regressed on cubic polynomials in age and cohort. The predicted values of each of these variables was then entered into the prediction data set for each of the 40 cohorts and for the ages used in figures 1c and 1d.

Next we turn to the results of the analysis of college completion, which are presented in table 3. For models 1 and 2, the coefficients for the college completion models are very similar to the post-secondary attendance models. The model 3 coefficients, however, are different in several respects. First, the effects of presence of the biological mother and father become stronger. Second, the positive effect of parental education becomes more nonlinear, with college completion by mother or father having a significant positive effect over and above the positive effect of years of education. Third, daughters continue to receive a differential benefit from parental education. The benefit from father is on the linear education term (the insignificant negative interaction between female and father's college is not large enough to offset the overall favorable impact on females of having a highly educated father). Daughters gain a relative advantage over sons by having a highly-educated mother as well as a highly-educated father. The form of the effect is slightly different, however. The female advantage from mother's education comes from having mothers with at least 16 years of education. In contrast, the female advantage from father's education comes from a significantly more positive effect of overall years of father's education.

TABLE 3 ABOUT HERE

Figure 2 graphs the implications of the models of table 3 for gender trends in college completion. Figure 2a graphs just the residual trend from model 1 of table 3, and it shows a female disadvantage in college completion for the 1940 birth cohort followed by a catch-up around the 1965 birth cohort and then a surpassing of male achievement by the most recent cohorts. Women born in 1940 had a .11 probability of completing college by age 26 while the probability for men from the same birth cohort was .18. By

the time the 1974 birth cohort turned 26, the probability for women had increased to .22 and the probability for men remained .18.

The stronger interaction effects between gender and parental education imply a higher relative female advantage from having highly-educated parents, which is demonstrated in figure 2b. The stronger female advantage for college completion from having educated parents implies a stronger female trend advantage from the rising levels of parental education over time. Like figures 1c and 1d, figures 2c and 2d decompose the female trend into a baseline based on the male residual trend, an increment due to the male effect of rising parental resources, another increment due to the female-specific residual trend, and an increment due to the female-specific advantage of having a highly-educated father and mother. Figures 2c and 2d demonstrate that the female trend toward higher rates of college completion derives from higher parental resources as well as from residual female trends. The female gain relative to males is still mostly due to the female residual trend, but a higher proportion of the gain can be attributed to family effects, and especially parental education effects, for the case of college completion than for post-secondary attendance.

#### FIGURE 2 ABOUT HERE

The relatively small GSS samples provide less information about black male and female higher educational attainment. They provide some indication, however, that gender specific effects of parental resources on higher educational attainment may be different for blacks than for whites. We focus attention on model 2 of tables 4 and 5. These models show that the interactions between gender and father's education tend to be negative in the black model (with sons gaining a larger advantage from father's

education--when father is present--than daughters), but they do not attain statistical significance. Particularly for the case of college completion, we were not able to estimate the full model for the black sample, because the absence of a father in the household almost perfectly predicted that black daughters would not graduate from college in the GSS sample. Otherwise, the additional variables from the full model tended not to be significant in the relatively small GSS black sample. We conclude that GSS data do not have the sample sizes used to study the nature and causes of gender specific trends in higher education for blacks.

TABLES 4 and 5 ABOUT HERE

### **Adjudicating between Alternative Parental Resource Models**

The results show substantial support for the hypothesis that for whites in the United States, parental resource effects are producing a significant (though not a dominant) share of the observed female-favorable trend in higher education, especially in the case of college completion. How consistent are these empirical results with the predictions of the alternative justifications for the family resource trend hypothesis discussed earlier? The wealth maximization hypothesis differs from the other hypotheses in predicting three way trends between parental resources, gender, and time. In models not presented here, we elaborated the above specifications to include such three way interactions. In no instance, however, were these three way interactions statistically significant. It is possible that our sample sizes were not large enough to detect the three way interaction. It is also possible that wealth maximization is in fact a mechanism underlying the observed trends via the nonlinear version of this model that was discussed above. The lack of a significant interaction between the socioeconomic status of father's

occupation (which correlates reasonably well with father's income) tends to undermine even this more subtle form of the wealth maximization hypothesis. In short, wealth maximization does not appear to be the dominant mechanism explaining the family resource trend effects.

The sex-role socialization hypotheses receive only mixed support from our results. We do find that mother's college completion has considerably stronger effects on daughters' college completion than on sons' college completion. However, we also find that father's education matters more for daughters than for sons; it is the form of the interaction rather than the fact of an interaction that distinguishes mother and father effects on their same-sex children. While this evidence does not rule out the possibility of same-sex socialization, it is not strongly confirming either. The GSS data do not contain measures of mother's occupational status. However, we did include measures of mother's employment "at some time during the marriage" and gender, but found this interaction to be statistically insignificant. Moreover, we found no significant interaction between the presence of one's own mother and father and gender. Finally, while our model does show a significant interaction between father present and gender, this must be interpreted in light of the significant interaction between father's education and gender. This interaction really implies that the minimum education for a father to be an educational advantage is about the same for a son as for a daughter. In summary, our models do not show compelling support for the sex-role socialization hypothesis.

The hypothesis that enjoys the most consistent support from the empirical findings is the education-egalitarianism hypothesis that emerges from cultural capital theories. Females benefit from having more highly-educated parents, regardless of

whether the education belongs to the father or the mother. Furthermore, the resource advantage enjoyed by females applies most specifically to parental educational resources. In contrast, the socioeconomic status of father does not differentially affect daughter's educational attainment, when father's and mother's education is controlled. In short, the coefficient pattern in our models is very similar to what one would expect if education-induced egalitarianism was driving a portion of the female-favorable trend in higher educational attainment.

## **Conclusion**

Given the dearth of research on the trend toward a female advantage in higher education, this paper makes important contributions to the understanding of gender differences in educational attainment. It provides clear evidence of the trend toward rising rates of female participation in higher education over time in the United States. The initially lower odds of entry and completion of higher education for females relative to males have been reversed such that in recent cohorts, females' odds of post-secondary enrollment and college completion substantially exceed those for males. Moreover, we find that a measurable, albeit relatively small, portion of female gains in higher education is explained by rising parental resources, particularly rising parental education. The effect of parent's education on daughters' higher educational attainment is larger than the comparable effects for sons. Because the educational attainment of parents has increased substantially across 20<sup>th</sup> century birth cohorts, the female advantage at the individual level produces a female favorable trend in higher educational attainment. Female-specific returns to parental cultural capital are even larger for college completion than for post-secondary enrollment. Much of the female-specific gain can be traced to rising rates

of college completion by mothers, but our results show that daughters differentially benefit from higher levels of father's education as well.

While parental resources explain a portion of the gender gap in higher education, much of the female-favorable trend remains unexplained. Beyond the family processes explored in this paper, there are other plausible reasons for the growing female advantage in higher education. One possibility is that female-favorable trends in attainment are due to female-favorable trends in academic achievement, whereby girls are outperforming boys in school and engaging in behaviors that increase their likelihood of college enrollment. For example, Hedges and Nowell (1995) find 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 distinct female advantage on tests of reading and writing ability. Some research also suggests that compared to boys, girls possess higher levels of "non-cognitive" skills (paying attention, being organized) that facilitate academic achievement and increase their probability of college enrollment (Jacob 2002). Other evidence indicates that in the past decade or so, girls are taking more college preparatory courses and more Advanced Placement (AP) examinations than boys (Bae et al. 2000). These differences may provide girls with an edge in the college enrollment process.

It is also likely that rising opportunity in the labor market for females increases the career returns of college for women, thereby making college a more attractive option. This mechanism could express itself via a residual trend toward higher education for women, even after controlling for family background and school experiences. Because socioeconomic resources and academic performance in secondary school improve an

individual's prospects for entering and graduating from college, rising socioeconomic returns to college could also be responsible, in part for the possible improvements in the academic performance of females relative to males. As we continue our research we will examine all of these plausible explanations in order to understand one of the most important trends in American higher education.

## References

- Alexander, Karl L. and Bruce E. Eckland. 1974. "Sex Differences in the Educational Attainment Process." *American Sociological Review* 39:668-82.
- Bae, Yupin, Susan Choy, Claire Geddes, Jennifer Sable, and Thomas Snyder. 2000. *Trends in Educational Equity of Girls and Women*. Washington, D.C.: National Center for Education Statistics.
- Becker, Gary. 1991. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- Becker, Gary S. and Nigel Tomes. 1979. "An Equilibrium Theory of the Distribution of Household Income and Intergenerational Mobility." *Journal of Political Economy* 84:S279-88.
- Behrman, Jere, Robert A. Pollak and Paul Taubman 1986. "Do Parents Favor Boys?" *International Economic Review* 27:31-52.
- Bernhardt Annette, Martina Morris, and Mark S. Handcock. 1995. "Women's Gains or Men's Losses: A Closer Look at the Shrinking Gender Gap in Earnings." *American Journal of Sociology* 101:302-28.
- Blau, Peter M. and Otis D. Duncan. 1967. *The American Occupational Structure*. New York: Wiley.
- Brinton, Mary. 1993. *Women and the Economic Miracle: Gender and Work in Postwar Japan*. Berkeley, CA: University of California Press.
- Buchmann, Claudia and Ben Dalton. 2002. "Interpersonal Influences and Educational Aspirations in 12 Countries: The Importance of Institutional Context." *Sociology of Education* 75:99-122.
- Cancian, Maria and Deborah Reed. 2001. "Changes in Family Structure and Implications for Poverty and Related Policy." Pp. 69-161 in *Understanding Poverty*, edited by Sheldon H. Danziger and Robert H. Haveman. Cambridge, MA: Harvard University and Russell Sage Foundation.
- Crook, Christopher J. 1995. "The Role of Mothers in the Educational and Status Attainment of Australian Men and Women." *Australian and New Zealand Journal of Sociology* 31:45-73.
- DiPrete, Thomas A. and David B. Grusky. 1990. "Structure and Trend in the Process of Stratification for American Men and Women." *American Journal of Sociology* 96:107-43.

Downey, Douglas B. and Brian Powell. 1993. "Do Children in Single-Parent Households Fare Better Living with Same-Sex Parents?" *Journal of Marriage and the Family* 55:55-71.

England, Paula. 1992. *Comparable Worth: Theories and Evidence*. New York: Aldine de Gruyter.

Eurostat. 2002. *The Life of Women and Men in Europe: A Statistical Portrait*. Luxembourg: Eurostat.

Goldin, Claudia. 1995. "Career and Family: College Women look to the Past." National Bureau of Economic Research (NBER) Working Paper no. 5188.

Goldthorpe, John H. 1980. *Social Mobility and Class Structure in Modern Britain*. Clarendon Press.

Greenhalgh, Susan. 1985. "Sexual Stratification: The Other Side of 'Growth with Equity' in East Asia." *Population and Development Review* 11:265-214

Hedges, Larry V. and Amy Nowell. 1995. "Sex Differences in Mental Test Scores, Variability, and Numbers of High Scoring Individuals." *Science* 269:41-45.

Hout, Michael. 1988. "More Universalism, Less Structural Mobility: The American Occupational Structure in the 1980s." *American Journal of Sociology* 83:1358-1400.

Hout, Michael and William R. Morgan. 1975. "Race and Sex Variations in the Causes of the Expected Attainments of High School Seniors." *American Journal of Sociology* 81:364-94.

Inter-university Consortium for Political and Social Research. 2003. *About GSS: Introduction to the GSS*. Retrieved January 31, 2003, from <http://www.icpsr.umich.edu:8080/GSS/about/gss/about.htm>.

Jacob, Brian A. 2002. "Where the Boys Aren't: Non-cognitive skills, Returns to School and the Gender Gap in Higher Education." *Economics of Education Review* 21:589-98.

Jacobs, Jerry A. 1996. "Gender Inequality and Higher Education." *Annual Review of Sociology* 22:153-85.

Kalmijn, Matthijs. 1994. "Mother's Occupational Status and Children's Schooling." *American Sociological Review* 59:257-75.

Knodel, John and Gavin W. Jones. 1996. "Post-Cairo Population Policy: Does Promoting Girls Schooling Miss the Mark?" *Population and Development Review* 22:683-702.

Koerner, B.I. 1999. "Where the Boys Aren't." Cover Story. *U.S. News and World Report* (February 8, 1999) 126:46-55.

Korupp, Sylvia, Harry B. G. Ganzeboom, Tanja Van Der Lippe. 2002. "Do Mothers Matter? A Comparison of Models of the Influence of Mothers' and Fathers' Educational and Occupational Status on Children's Educational Attainment." *Quality and Quantity* 36:17-42.

Krein, Sheila Fitzgerald and Andrea H. Beller. 1988. "Educational Attainment of Children from Single Parent Families: Differences by Exposure, Gender and Race." *Demography* 25:221-34.

McLanahan, Sara and Larry Bumpass. 1988. "Intergenerational Consequences of Family Disruption." *American Journal of Sociology* 94:130-52.

National Opinion Research Center [NORC]. 2003. *General Social Survey: GSS Study Description*. Retrieved January 31, 2003 from <http://www.norc.uchicago.edu/projects/genSOC1.asp>.

Papanek, Hanna. 1985. "Class and Gender in Education-Employment Linkages." *Comparative Education Review* 29:317-46.

Powell, Brian and Douglas B. Downey. 1997. "Living in Single-Parent Households: An Investigation of the Same-Sex Hypothesis." *American Sociological Review* 62:521-39.

Powell, Mary Ann and Toby L. Parcel. 1997. "Effects of Family Structure on the Earnings Attainment Process: Differences by Gender." *Journal of Marriage and the Family* 59:419-33.

Reskin, Barbara F. 1990. *Job Queues, Gender Queues: Explaining Women's Inroads into Male Occupations*. Philadelphia: Temple University Press.

Rosenfeld, Rachel. 1978. "Women's Intergenerational Occupational Mobility." *American Sociological Review* 43:36-46.

Schultz, T. Paul. 1995. "Investments in the Schooling and Health of Women and Men: Quantities and Returns. Pp 15-50 in *Investments in Women's Human Capital*, edited by T. Paul Schultz. Chicago: The University of Chicago Press.

Shavit, Yossi and Hans-Peter Blossfeld. 1993. *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Boulder: Westview.

Shu, Xiaoling and Margaret Mooney Marini. 1998. "Gender-Related Change in Occupational Aspirations." *Sociology of Education* 71:44-68.

- Sommers, Christina H. 2000. *The War Against Boys: How Misguided Feminism is Harming our Young Men*. New York: Touchstone.
- Stevens, Gillian and David L. Featherman. 1981. "A Revised Socioeconomic Index of Occupational Status." *Social Science Research* 10:364-95.
- Stevens, Gillian and Joo Hyun Cho. 1985. "Socioeconomic Indexes and the New 1980 Census Occupational Classification Scheme." *Social Science Research* 14:142-68.
- Thornton, Arland, Duane F. Alwin and Donald Camburn. 1983. "Causes and Consequences of Sex-Role Attitudes and Attitude Change." *American Sociological Review* 48:211-227.
- Thornton, Arland and Deborah Freedman. 1979. "Changes in the Sex-Role Attitudes of Women, 1962-77: Evidence from a Panel Study." *American Sociological Review* 44: 831-42.
- Walters, Pamela B. 1986. "Sex and Institutional Differences in Labor Market Effects on the Expansion of Higher Education, 1952-1980." *Sociology of Education* 59:199-121.

## Appendix

### A Formalization of the Wealth Maximization Hypothesis and its Implication for Gender Trends in Higher Educational Attainment.

In this formalization, we make the simplifying assumption that the wealth maximization hypothesis holds in its linear form. Let  $I_F$  be the average investment in daughters, and let  $I_M$  be the average investment in sons. Then the total average investment by the parents in sons and daughters can be expressed as  $I_T = I_M + I_F$ . Parents divide their investment between sons and daughters by allocating “p” of their total investment to daughters and “1-p” to sons. i.e.,

$$\begin{aligned} I_F &= pI_T \\ I_M &= (1-p)I_T \end{aligned}$$

Investments in children are not observable in survey data; they must be inferred from parental resources, which are observable. Assume that observable parental resources (“R”) have a simple linear relationship to investments, i.e.

$$I_T = kR$$

Educational attainment (y) is assumed to be a linear function of parental investments, i.e.

$$\begin{aligned} \hat{y}_F &= \alpha_F + \beta I_F = \alpha_F + [pk\beta]R \\ \hat{y}_M &= \alpha_M + \beta I_M = \alpha_M + [(1-p)k\beta]R \end{aligned} \tag{1}$$

A regression of educational attainment on R will give  $pk\beta$  for females and  $(1-p)k\beta$  for males. If we assume that returns to education for males are higher than for females, it follows that rational parents would chose p to be smaller than 0.5 and thus 1-p would be greater than 0.5. This implies that the returns to parental resources would be greater for males than for females.

Finally, assume that over time (measured, for example, in terms of birth cohorts), that the relative returns to education for females rose relative to the returns for males. Assuming for this illustration that a linear approximation was reasonable, this trend would imply that p would vary across birth cohorts, e.g.,

$$p = \gamma_0 + \gamma_1 t$$

Plugging this in to equation (1) gives

$$\begin{aligned} \hat{y}_F &= \alpha_F + \beta I_F = \alpha_F + [\gamma_0 k\beta]R + [\gamma_1 k]Rt \\ \hat{y}_M &= \alpha_M + \beta I_M = \alpha_M + [(1-\gamma_0)k\beta]R - [\gamma_1 k]Rt \end{aligned}$$

As can be seen, the implication of changing investment patterns over time in response to changes in labor market structure is that resource effects vary by gender and that the interaction between resources and gender varies across birth cohorts.

**Table 1, Panel A. Descriptive Statistics for Post-Secondary Attendance, College Completion and Family Resources for Whites 18-35 Years Old, Survey Years 1972-2000**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>
	Post- Secondary Attendance	Post-Sec Attendance, Males	Post-Sec Attendance, Females	College Completion	College Completion, Males	College Completion, Females	Father's Education	Mother's Education	Father w/ College Degree	Mother w/ College Degree	Father's Occupational Status	Own Parents Present	Father Present	Siblings
1972-1974	<b>0.42</b> (0.49)	<b>0.48</b> (0.50)	<b>0.37</b> (0.48)	<b>0.20</b> (0.40)	<b>0.23</b> (0.42)	<b>0.17</b> (0.37)	<b>10.86</b> (3.86)	<b>11.08</b> (3.15)	<b>0.14</b> (0.34)	<b>0.08</b> (0.27)	<b>34.96</b> (18.22)	<b>0.81</b> (0.40)	<b>0.90</b> (0.30)	<b>2.24</b> (0.96)
1975-1977	<b>0.40</b> (0.49)	<b>0.47</b> (0.50)	<b>0.35</b> (0.48)	<b>0.19</b> (0.39)	<b>0.23</b> (0.42)	<b>0.16</b> (0.36)	<b>10.72</b> (3.79)	<b>10.88</b> (3.10)	<b>0.12</b> (0.33)	<b>0.07</b> (0.26)	<b>33.38</b> (17.41)	<b>0.80</b> (0.40)	<b>0.90</b> (0.30)	<b>2.31</b> (0.92)
1978-1980*	<b>0.42</b> (0.49)	<b>0.49</b> (0.50)	<b>0.36</b> (0.48)	<b>0.20</b> (0.40)	<b>0.24</b> (0.43)	<b>0.16</b> (0.37)	<b>11.22</b> (3.83)	<b>11.27</b> (3.04)	<b>0.16</b> (0.37)	<b>0.09</b> (0.28)	<b>34.91</b> (17.81)	<b>0.78</b> (0.42)	<b>0.88</b> (0.33)	<b>2.34</b> (0.90)
1981-1983*	<b>0.42</b> (0.49)	<b>0.44</b> (0.50)	<b>0.41</b> (0.49)	<b>0.19</b> (0.39)	<b>0.21</b> (0.41)	<b>0.17</b> (0.38)	<b>11.53</b> (3.78)	<b>11.54</b> (3.09)	<b>0.18</b> (0.38)	<b>0.11</b> (0.31)	<b>35.70</b> (18.99)	<b>0.78</b> (0.41)	<b>0.88</b> (0.32)	<b>2.36</b> (0.87)
1984-1986	<b>0.50</b> (0.50)	<b>0.49</b> (0.50)	<b>0.50</b> (0.50)	<b>0.22</b> (0.42)	<b>0.24</b> (0.43)	<b>0.21</b> (0.41)	<b>12.00</b> (3.59)	<b>11.94</b> (2.84)	<b>0.21</b> (0.41)	<b>0.13</b> (0.33)	<b>38.50</b> (19.35)	<b>0.77</b> (0.42)	<b>0.88</b> (0.32)	<b>2.33</b> (0.88)
1987-1989	<b>0.51</b> (0.50)	<b>0.53</b> (0.50)	<b>0.51</b> (0.50)	<b>0.24</b> (0.43)	<b>0.25</b> (0.43)	<b>0.24</b> (0.43)	<b>12.46</b> (3.83)	<b>12.20</b> (2.98)	<b>0.26</b> (0.44)	<b>0.15</b> (0.36)	<b>39.22</b> (20.07)	<b>0.76</b> (0.43)	<b>0.86</b> (0.34)	<b>2.27</b> (0.89)
1990-1992*	<b>0.55</b> (0.50)	<b>0.55</b> (0.50)	<b>0.55</b> (0.50)	<b>0.23</b> (0.42)	<b>0.20</b> (0.40)	<b>0.26</b> (0.44)	<b>12.62</b> (3.56)	<b>12.28</b> (2.72)	<b>0.24</b> (0.43)	<b>0.14</b> (0.35)	<b>39.21</b> (19.76)	<b>0.73</b> (0.44)	<b>0.86</b> (0.35)	<b>2.31</b> (0.88)
1993-1995*	<b>0.58</b> (0.49)	<b>0.59</b> (0.49)	<b>0.57</b> (0.50)	<b>0.28</b> (0.45)	<b>0.29</b> (0.46)	<b>0.27</b> (0.44)	<b>12.74</b> (3.61)	<b>12.54</b> (2.68)	<b>0.26</b> (0.44)	<b>0.16</b> (0.36)	<b>39.01</b> (20.20)	<b>0.70</b> (0.46)	<b>0.84</b> (0.37)	<b>2.18</b> (0.91)
1996-1998*	<b>0.59</b> (0.49)	<b>0.59</b> (0.49)	<b>0.58</b> (0.49)	<b>0.25</b> (0.43)	<b>0.24</b> (0.43)	<b>0.25</b> (0.43)	<b>13.18</b> (3.44)	<b>12.86</b> (2.71)	<b>0.31</b> (0.46)	<b>0.19</b> (0.39)	<b>40.11</b> (20.37)	<b>0.65</b> (0.48)	<b>0.81</b> (0.39)	<b>2.16</b> (0.92)
1999-2000**	<b>0.61</b> (0.49)	<b>0.61</b> (0.49)	<b>0.61</b> (0.49)	<b>0.27</b> (0.45)	<b>0.26</b> (0.44)	<b>0.28</b> (0.45)	<b>13.12</b> (3.30)	<b>12.89</b> (2.92)	<b>0.29</b> (0.45)	<b>0.22</b> (0.41)	<b>38.76</b> (20.38)	<b>0.65</b> (0.48)	<b>0.81</b> (0.39)	<b>1.98</b> (0.95)

\* these years contain averages of 2 waves of data over the three year period, the GSS was not conducted in 1979, 1981, 1992, 1995 or 1997

\*\* this two year period contains only one wave of data, the GSS was not conducted in 1999

**Table 1, Panel B. Descriptive Statistics for Post-Secondary Attendance, College Completion and Family Resources for Blacks 18-35 Years Old, Survey Years 1972-2000**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>
	Post- Secondary Attendance	Post-Sec Attendance, Males	Post-Sec Attendance, Females	College Completion	College Completion, Males	College Completion, Females	Father's Education	Mother's Education	Father w/ College Degree	Mother w/ College Degree	Father's Occupational Status	Own Parents Present	Father Present	Siblings
1972-1974	<b>0.30</b> (0.46)	<b>0.37</b> (0.48)	<b>0.25</b> (0.43)	<b>0.09</b> (0.28)	<b>0.11</b> (0.32)	<b>0.07</b> (0.26)	<b>8.62</b> (4.08)	<b>9.74</b> (3.66)	<b>0.04</b> (0.20)	<b>0.06</b> (0.25)	<b>24.72</b> (13.83)	<b>0.56</b> (0.50)	<b>0.70</b> (0.46)	<b>2.60</b> (0.85)
1975-1977	<b>0.30</b> (0.46)	<b>0.26</b> (0.44)	<b>0.33</b> (0.47)	<b>0.08</b> (0.27)	<b>0.06</b> (0.24)	<b>0.09</b> (0.29)	<b>8.76</b> (3.51)	<b>9.65</b> (3.42)	<b>0.02</b> (0.13)	<b>0.04</b> (0.20)	<b>24.08</b> (10.12)	<b>0.51</b> (0.50)	<b>0.71</b> (0.46)	<b>2.65</b> (0.79)
1978-1980*	<b>0.34</b> (0.47)	<b>0.36</b> (0.49)	<b>0.32</b> (0.47)	<b>0.15</b> (0.35)	<b>0.18</b> (0.39)	<b>0.12</b> (0.33)	<b>9.18</b> (3.89)	<b>10.47</b> (3.09)	<b>0.05</b> (0.22)	<b>0.04</b> (0.20)	<b>24.88</b> (11.70)	<b>0.57</b> (0.50)	<b>0.67</b> (0.47)	<b>2.64</b> (0.81)
1981-1983*	<b>0.36</b> (0.48)	<b>0.32</b> (0.47)	<b>0.38</b> (0.49)	<b>0.09</b> (0.29)	<b>0.06</b> (0.25)	<b>0.11</b> (0.31)	<b>9.68</b> (3.93)	<b>10.46</b> (3.33)	<b>0.07</b> (0.25)	<b>0.06</b> (0.24)	<b>26.14</b> (12.16)	<b>0.54</b> (0.50)	<b>0.62</b> (0.49)	<b>2.69</b> (0.71)
1984-1986	<b>0.37</b> (0.48)	<b>0.33</b> (0.47)	<b>0.39</b> (0.49)	<b>0.10</b> (0.30)	<b>0.12</b> (0.33)	<b>0.09</b> (0.28)	<b>10.07</b> (3.39)	<b>10.97</b> (2.82)	<b>0.04</b> (0.20)	<b>0.05</b> (0.21)	<b>26.60</b> (12.57)	<b>0.55</b> (0.50)	<b>0.66</b> (0.47)	<b>2.59</b> (0.85)
1987-1989	<b>0.48</b> (0.50)	<b>0.45</b> (0.50)	<b>0.50</b> (0.50)	<b>0.11</b> (0.32)	<b>0.15</b> (0.36)	<b>0.09</b> (0.29)	<b>10.77</b> (4.22)	<b>11.01</b> (3.48)	<b>0.13</b> (0.33)	<b>0.10</b> (0.30)	<b>31.06</b> (17.77)	<b>0.48</b> (0.50)	<b>0.61</b> (0.49)	<b>2.56</b> (0.86)
1990-1992*	<b>0.35</b> (0.48)	<b>0.27</b> (0.45)	<b>0.40</b> (0.49)	<b>0.07</b> (0.25)	<b>0.05</b> (0.22)	<b>0.08</b> (0.27)	<b>10.36</b> (3.68)	<b>11.39</b> (3.16)	<b>0.08</b> (0.27)	<b>0.11</b> (0.31)	<b>27.14</b> (13.06)	<b>0.46</b> (0.50)	<b>0.63</b> (0.48)	<b>2.60</b> (0.78)
1993-1995*	<b>0.49</b> (0.50)	<b>0.50</b> (0.50)	<b>0.48</b> (0.50)	<b>0.09</b> (0.29)	<b>0.07</b> (0.26)	<b>0.10</b> (0.31)	<b>11.38</b> (3.00)	<b>12.19</b> (2.84)	<b>0.09</b> (0.29)	<b>0.13</b> (0.33)	<b>28.54</b> (14.83)	<b>0.44</b> (0.50)	<b>0.60</b> (0.49)	<b>2.47</b> (0.82)
1996-1998*	<b>0.47</b> (0.50)	<b>0.51</b> (0.50)	<b>0.45</b> (0.50)	<b>0.14</b> (0.34)	<b>0.12</b> (0.33)	<b>0.14</b> (0.35)	<b>12.14</b> (3.19)	<b>12.46</b> (2.75)	<b>0.15</b> (0.36)	<b>0.13</b> (0.34)	<b>29.83</b> (17.47)	<b>0.36</b> (0.48)	<b>0.50</b> (0.50)	<b>2.45</b> (0.90)
1999-2000**	<b>0.41</b> (0.49)	<b>0.44</b> (0.50)	<b>0.39</b> (0.49)	<b>0.09</b> (0.28)	<b>0.13</b> (0.34)	<b>0.07</b> (0.25)	<b>12.02</b> (3.50)	<b>12.19</b> (2.99)	<b>0.13</b> (0.34)	<b>0.13</b> (0.34)	<b>28.56</b> (16.28)	<b>0.39</b> (0.49)	<b>0.52</b> (0.50)	<b>2.46</b> (0.89)

\* these years contain averages of 2 waves of data over the three year period, the GSS was not conducted in 1979, 1981, 1992, 1995 or 1997

\*\* this two year period contains only one wave of data, the GSS was not conducted in 1999

**Table 2. Logistic Coefficients of Post-Secondary Attendance for Whites 18-35 Years Old, Survey Years 1972-2000**

	1		2		3	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Female	-.220 **	(.056)	-.773 *	(.308)	-.368	(.353)
Cohort	.020 **	(.003)	-.004	(.004)	-.003	(.004)
Cohort*Female	.024 **	(.005)	.028 **	(.006)	.031 **	(.006)
Age	-.024	(.014)	-.019	(.017)	-.004	(.017)
Age*Female	-.015	(.020)	-.005	(.024)	-.027	(.023)
Age2	-.013 **	(.001)	-.014 **	(.002)	-.016 **	(.002)
Age2*Female	.002	(.002)	.001	(.002)	.003	(.002)
Age3	.003 **	(.000)	.003 **	(.000)	.003 **	(.000)
Age3*Female	.0003	(.0004)	.0001	(.0005)	.0004	(.0005)
Father's Education			.174 **	(.013)	.109 **	(.017)
Father's Education*Female			.042 *	(.018)	.049 *	(.024)
Mother's Education			.149 **	(.018)	.128 **	(.020)
Mother's Education*Female			.011	(.025)	.001	(.027)
Father's College Degree					.156	(.135)
Father's College*Female					-.100	(.191)
Mother's College Degree					.289 *	(.144)
Mother's College*Female					.154	(.203)
Father's Occupational Status					.017 **	(.003)
Father's Status*Female					-.002	(.004)
Own Parents Present					.268 *	(.123)
Own Parents Present*Female					.096	(.167)
Father Present					-1.835 **	(.239)
Father Present*Female					-.498	(.331)
Siblings					-.291 **	(.037)
Siblings*Female					.041	(.051)
Constant	.383 **	(.041)	-3.314 **	(.219)	-.684 **	(.262)
N	11,801		9,118		10,305	
d.f.	9		13		25	

Note: Robust standard errors are in parentheses.

\* p<.05    \*\* p<.01

**Table 3. Logistic Coefficients of College Completion for Whites 18-35 Years Old, Survey Years 1972-2000**

	1		2		3	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Female	-.167 **	(.068)	-1.378 **	(.371)	-.173	(.489)
Cohort	.002	(.004)	-.024 **	(.005)	-.021 **	(.005)
Cohort*Female	.026 **	(.006)	.022 **	(.007)	.026 **	(.007)
Age	.018	(.020)	.041	(.023)	.049 *	(.022)
Age*Female	-.041	(.028)	-.045	(.032)	-.051	(.031)
Age2	-.043 **	(.003)	-.046 **	(.004)	-.048 **	(.004)
Age2*Female	.003	(.004)	.001	(.005)	.002	(.005)
Age3	.006 **	(.001)	.005 **	(.001)	.006 **	(.001)
Age3*Female	.001	(.001)	.001	(.001)	.001	(.001)
Father's Education			.174 **	(.015)	.079 **	(.021)
Father's Education*Female			.040	(.021)	.076 *	(.031)
Mother's Education			.150 **	(.020)	.142 **	(.027)
Mother's Education*Female			.057	(.029)	-.009	(.037)
Father's College Degree					.334 *	(.148)
Father's College*Female					-.176	(.210)
Mother's College Degree					-.030	(.159)
Mother's College*Female					.591 **	(.222)
Father's Occupational Status					.016 **	(.003)
Father's Status*Female					-.007	(.004)
Own Parents Present					.469 **	(.167)
Own Parents Present*Female					.372	(.233)
Father Present					-1.707 **	(.305)
Father Present*Female					-.991 *	(.440)
Siblings					-.247 **	(.042)
Siblings*Female					.030	(.059)
Constant	-.760 **	(.050)	-4.686 **	(.260)	-2.286 **	(.350)
N	10,742		8,335		9,384	
d.f.	9		13		25	

Note: Robust standard errors are in parentheses.

\* p<.05    \*\* p<.01

**Table 4. Logistic Coefficients of Post-Secondary Attendance for Blacks 18-35 Years Old, Survey Years 1972-2000**

	1		2		3	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Female	-.032	(.139)	.777	(.714)	-.148	(.758)
Cohort	.025 **	(.009)	-.021	(.015)	-.006	(.012)
Cohort*Female	-.0004	(.0115)	.018	(.019)	.006	(.015)
Age	.006	(.039)	-.011	(.057)	.025	(.046)
Age*Female	-.009	(.049)	-.021	(.072)	-.058	(.059)
Age2	-.010 *	(.004)	.0002	(.0060)	-.009	(.005)
Age2*Female	.0002	(.0049)	-.008	(.007)	-.0005	(.0059)
Age3	.001	(.001)	.002	(.001)	.001	(.001)
Age3*Female	.0004	(.0010)	.001	(.002)	.001	(.001)
Father's Education			.175 **	(.046)	.122 *	(.052)
Father's Education*Female			-.095	(.055)	-.108	(.061)
Mother's Education			.111 **	(.049)	.103 *	(.047)
Mother's Education*Female			.045	(.062)	.055	(.057)
Father's College Degree					1.111	(.655)
Father's College*Female					-.271	(.846)
Mother's College Degree					.437	(.423)
Mother's College*Female					-.177	(.547)
Father's Occupational Status					-.003	(.010)
Father's Status*Female					.027	(.014)
Own Parents Present					-.114	(.423)
Own Parents Present*Female					.113	(.497)
Father Present					-.612	(.690)
Father Present*Female					.307	(.826)
Siblings					-.174	(.105)
Siblings*Female					-.110	(.139)
Constant	-.180 **	(.111)	-3.196 **	(.578)	-1.240 **	(.614)
N	1,935		919		1,503	
d.f	9		13		25	

Note: Robust standard errors are in parentheses.

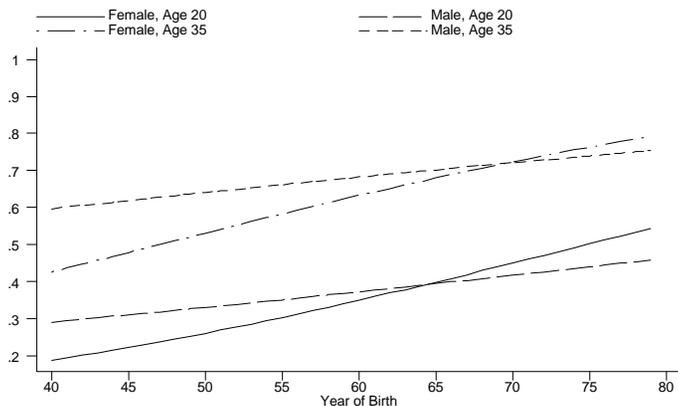
\* p<.05    \*\* p<.01

**Table 5. Logistic Coefficients of College Completion for Blacks 18-35 Years Old, Survey Years 1972-2000**

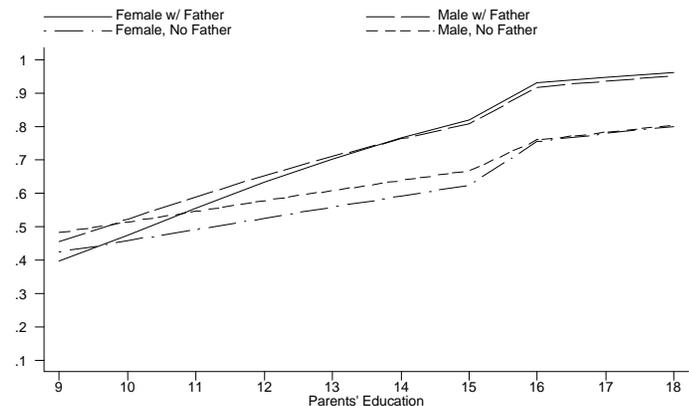
	1		2		3	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Female	.050	(.241)	-.078	(1.098)	-.220	(1.312)
Cohort	-.003	(.015)	-.046 *	(.021)	-.030	(.017)
Cohort*Female	.005	(.019)	.016	(.027)	.008	(.023)
Age	-.029	(.075)	-.056	(.094)	-.060	(.082)
Age*Female	-.023	(.099)	.008	(.128)	.003	(.110)
Age2	-.037 **	(.013)	-.025	(.016)	-.041 **	(.016)
Age2*Female	-.005	(.016)	-.012	(.019)	-.003	(.018)
Age3	.007 **	(.002)	.007 *	(.003)	.008 **	(.003)
Age3*Female	-.001	(.003)	-.001	(.004)	-.001	(.003)
Father's Education			.098	(.067)	-.003	(.069)
Father's Education*Female			-.015	(.081)	-.014	(.072)
Mother's Education			.104	(.081)	.119	(.093)
Mother's Education*Female			.039	(.098)	.051	(.107)
Father's College Degree					.219	(.653)
Father's College*Female					.050	(.862)
Mother's College Degree					.010	(.636)
Mother's College*Female					.155	(.766)
Father's Occupational Status					.018	(.013)
Father's Status*Female					.009	(.016)
Own Parents Present					.757	(.560)
Own Parents Present*Female					-.387	(.633)
Father Present					-.663	(.607)
Siblings					-.180	(.150)
Siblings*Female					-.079	(.189)
Constant	-1.860 **	(.194)	-4.010 **	(.809)	-2.952 **	(1.127)
N	1,728		832		1,342	
d.f	9		13		24	

Note: The Father Present\*Female interaction is not included in this table because it nearly perfectly predicts college completion. Robust standard errors are in parentheses.

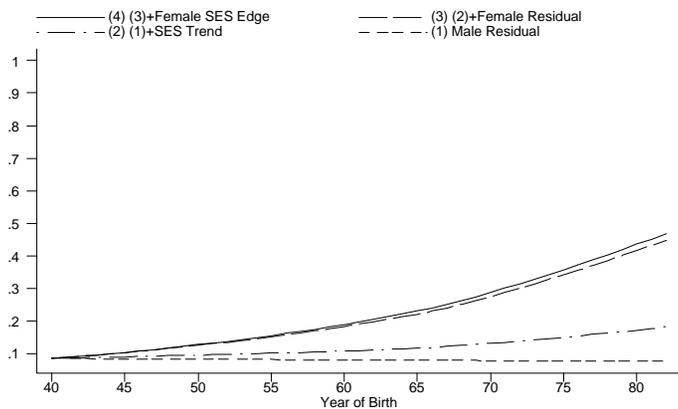
\* p<.05    \*\* p<.01



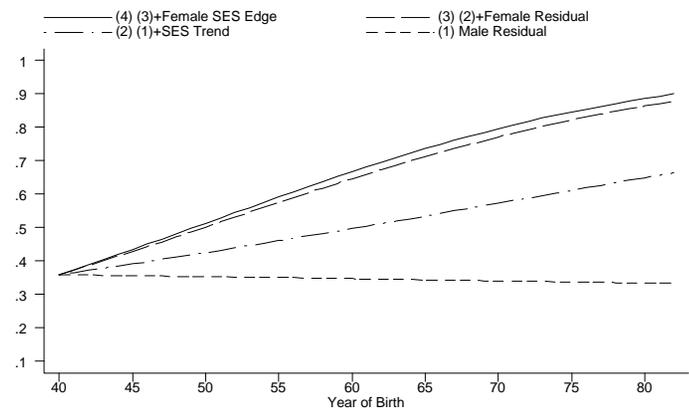
1a. Trends in Post-Secondary Attendance for Whites



1b. Post-Secondary Attendance by Parents' Education for Whites

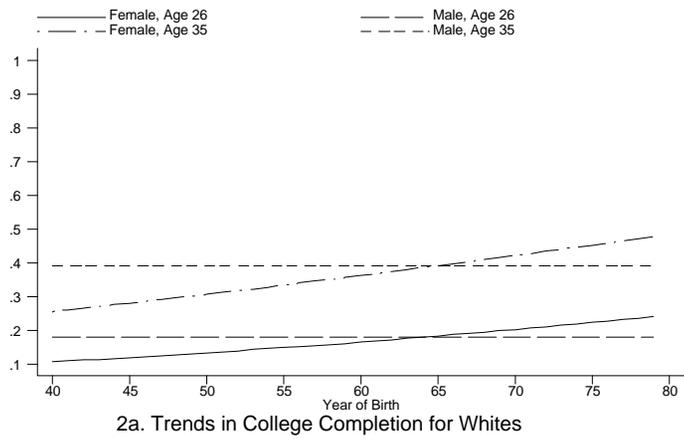


1c. Age 20 Female Trends from 1940 Values under Four Assumptions

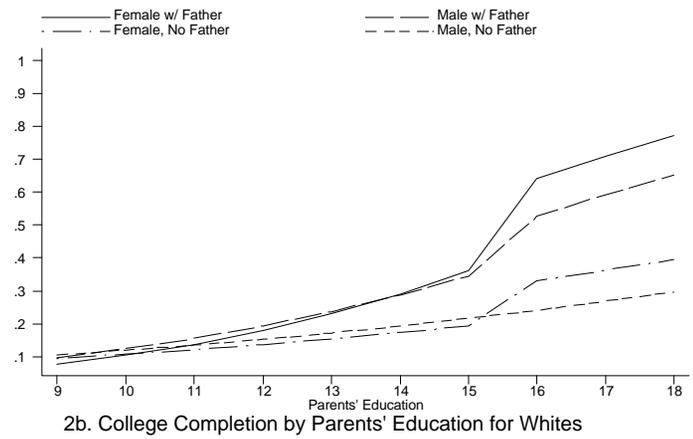


1d. Age 35 Female Trends from 1940 Values under Four Assumptions

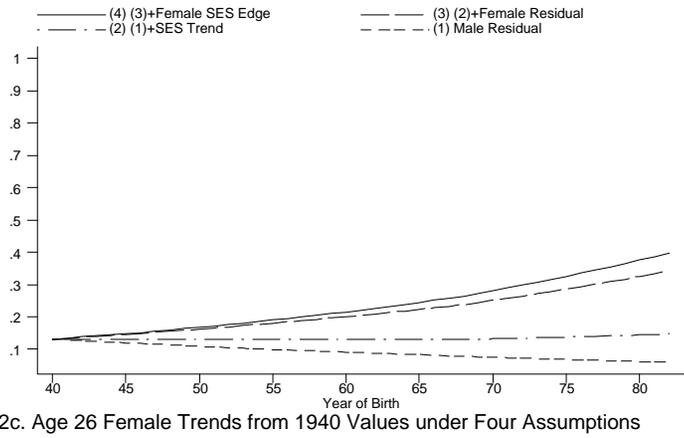
Figure 1. Post-Secondary Attendance for Whites



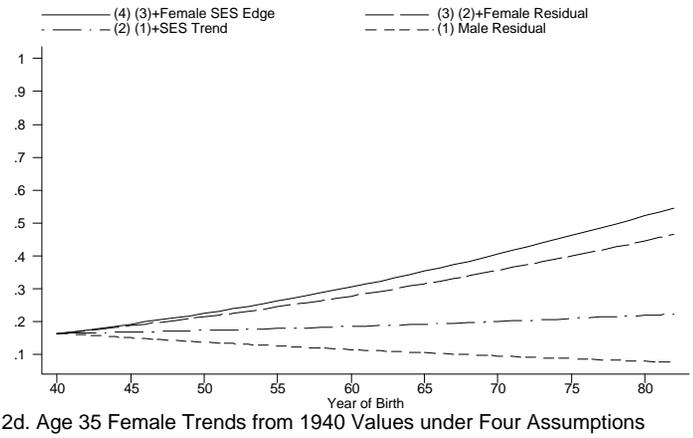
2a. Trends in College Completion for Whites



2b. College Completion by Parents' Education for Whites



2c. Age 26 Female Trends from 1940 Values under Four Assumptions



2d. Age 35 Female Trends from 1940 Values under Four Assumptions

Figure 2. College Completion for Whites