Employment and Wage Prospects of Black, White, and Hispanic Women: Evidence from the 1980s and Early 1990s

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This research was supported by the Russell Sage Foundation, the W.T. Grant Foundation, and the National Science Foundation (SBR-9601995). The usual disclaimers apply.

Draft: March, 1999
April, 1999

Introduction

Since the mid-1970s, the U.S. experienced substantial changes in the industrial composition of employment and wages owing to energy price shocks, increased international competition, and technological change (Hyclak, 1996, Levy and Murnane, 1992). As the share of total manufacturing employment declined and service employment expanded in both absolute and relative terms, wage inequality increased, particularly between college and high school educated workers (Katz and Murphy, 1992; Danziger and Gottschalk, 1993; Rasell, Bluestone and Mishel, 1997). Furthermore, changes in the legal and institutional structure of U.S. labor markets, including a decline in the share of the labor force that is unionized and changes in the enforcement of affirmative action laws, constrained employment options for unskilled and semi-skilled workers (Freeman, 1993).

There is growing evidence that the consequences of these macro-economic trends were not uniform among race/ethnic and age groups (Hotz, et. al., 1995; Bound and Freeman, 1992; Acs and Danziger, 1993; Blau and Kahn, 1997). For example, real wages declined more steeply for younger that older workers (Katz and Murphy, 1992; Bound and Johnson, 1992). Reversing a long-run trend, the black-white differentials in employment rates and market earnings widened during the 1980s, with the largest disparities for young men—especially those lacking high school diplomas (Bound and Freeman, 1992). Acs and Danziger (1993) find that during the 1980s, the annual earnings of men between the ages of 25 and 34 declined more rapidly for Hispanics than for either whites or blacks. Average wages for male entry level high school graduates were 27 percent lower in 1995 than in 1979, but for women 19 only percent lower (Mishel, Bernstein and Schmitt, 1997). For women Blau and Kahn (1997) find relative

improvements in the gender wage gap during the period of rising inequality because demand shifts favored women overall. However, a rising supply of female labor partly offset the favorable demand shifts, yielding net supply changes that were deleterious for women.

As important, labor market conditions became more geographically heterogeneous during this period (Blanchard and Katz, 1992; Clark, 1993). Cain and Finnie (1990) and Bartik (1993) argue that differences in demand across local labor markets decisively influence in the labor market success of different demographic groups, but the range of groups they considered excluded Hispanics and women. Similarly, Freeman (1990) shows that youth residing in labor shortage areas experienced greater earnings increases as they aged compared to youth who resided in labor shortage areas. He includes that strong labor market conditions raise the starting prospects of young workers as well as their longitudinal earnings profile.

Because young workers who began their labor force careers during the early to mid-1980s experienced highly tumultuous markets, a detailed examination of <u>how</u> local labor market conditions influence early labor market experiences experience is warranted. First, given the paucity of studies about young women's labor force activity, it is important to address how their employment and wage outcomes compare with those of young men. It is conceivable that young women are more responsive to changes in labor market conditions because their labor market behavior is less normatively proscribed than that of men (Tienda, Donahoe and Tsay, 1998; Ahituv, Tienda and Tsay, 1998). Rasell, Bluestone and Mishel (1997) show that adult women experienced less severe wage declines than men during the 1980s, but it is unclear whether this applies to young as well as to mature women. Blau and Kahn's (1997) finding that macro economic trends favored unskilled over skilled women raises the importance of studying the impact of market conditions on young women's labor market outcomes during the early life

course, when they make crucial investment decisions that can reverberate throughout their adult life.

Hence, a second reason to examine the impact of labor market conditions on employment and wage prospects of young women is to ascertain the sensitivity of their employment and wages to fluctuations in local labor market conditions. For example, Lynch (1989) claims that the recession of the early 1980s had a profound impact on the labor market prospects of young men, and she also documented large race differences in the effect of local demand conditions on male re-employment probabilities. Trejo (1997) also finds that geographic location accounted for 25 percent of the white-Mexican male wage gap (favoring third generation Mexicans) in 1979 and 8 percent in 1989. Neither study considers the responsiveness of young women to changing labor market conditions.

Finally, given the rising returns to skill during the 1980s and early 1990s, it is important to consider whether and how labor market conditions may influence young women's human capital investment decisions over the early life course. Tight, dynamic markets may propel young women into the labor force, thereby allowing them to accumulate valuable work experience. However, if such decision-making comes at the expense of pursuing additional schooling, these decisions may be deleterious in the long run. Consistent with the premises of human capital theory, it is most advantageous for young women to invest maximally in schooling and/or to acquire work experience *prior* to their entry to full-time employment. Both types of human capital investment—increases in graded schooling and acquisition of work experience—will improve their employment prospects and the wage rates they obtain upon finding a job.

Because returns to formal schooling have risen in post-1973 labor markets, employment and wage returns to returns to experience should be lower than returns to education (see Hotz, et al., 1998).

Of course, for young women more than is true for men, family formation choices are highly influential in determining employment and wage outcomes. Understanding how marriage and fertility influence employment outcomes during the early life course is complicated because the timing of births influences *both* decisions about school continuation and whether to enter the labor force at a given age. Therefore, it is necessary to consider jointly the inter-relationship among fertility, schooling, and employment decisions to appreciate how minority and nonminority women responded to changing economic opportunities.

Accordingly, in this initial foray, we address several questions germane to understanding the employment and wage prospects of young women in the context of the school to work transition. First, how do young women's human capital investment decisions differ among black, white and Hispanic young women? Second, how different are young women's family formation decisions along race and ethnic lines, and what implications do these differences have for labor force behavior? Third, are the employment returns to early investment decisions similar for education and experience? Finally, how sensitive are young women's labor force decisions to local market conditions?

The remainder of the paper is organized as follows. Section 2 describes the National Longitudinal Survey of Youth (NLSY), and definitions of key variables used in the empirical analysis. Section 3 provides a statistical portrait of the work and schooling experiences of these youth from the time they are 17 until age 28. In Section 4, we develop the analytical framework

and econometric specification used to estimate the effects of local labor market conditions, human capital and fertility on young women's employment behavior and wages. After presenting the empirical results in Section 5, the conclusion (Section 6) highlights key findings and outline directions for further research.

Data

The data for our analysis is drawn from the National Longitudinal Survey of Youth (NLSY). The NLSY consists of longitudinal data on a nationally representative sample of U.S. youth between the ages of 13 to 20 as of January 1, 1978. The original sample consisted of a national probability sample of 6,111 men and women in this age range, plus 5,296 individuals from randomly selected oversamples of black, Hispanic, and economically disadvantaged white youth.[1] Beginning in 1979, in-person interviews were conducted annually, and by 1993, the last year we analyze, just over 10 percent of the original sample had been lost to attrition.

In this paper, we use data for women drawn from the national probability sample and the black and Hispanic oversamples for the 1979-93 period. The inclusion of these two oversamples enhances our ability to draw reliable inferences for the black and Hispanic minority groups. We also restrict our analysis to respondents who were between the ages of 13-16 in 1978 and who would be between 28-31 at the 1993 interview. This restriction was made to ensure that we obtained as complete information as possible on all early employment experiences for these young men and women. Except for youth that participate in informal, but remunerated work prior to the legal age for work (i.e., 14), this sample selection criterion enables us to obtain

[1] The original NLSY also contained an oversample of youth who were enlisted in the military as of 1979. This sample was only followed until 1984 and then dropped from the study. Because of this limitation, we did not include any observations from this oversample in our analysis.

prospective information on the entire process of school departure and labor market entry. Given these sample restrictions, our analysis sample consists of 2,477 young women, including 1,204 whites, 762 blacks, and 511 Hispanics.

Labor Market Outcomes

The NLSY contains detailed educational, employment and military service histories it provides. Each annual interviews gathered retrospective weekly employment histories that included, among job attributes, occupation, industry, typical hours worked and hourly rates. During the initial interview and attempt was made to gather retrospective information for jobs held prior to 1979, but this information is incomplete (left censored). Missing retrospective employment data is a trivial problem for the 13 to 16 year olds included in our sample who were just beginning their labor market careers when they were first interviewed.

To examine the determinants of young women's employment and wages, we use information from the NLSY work and schooling histories to construct a year-by-year classification of their youth's primary activity.[2] Starting from age 13, each respondent was coded as participating in one of the following four, mutually-exclusive activities:

(1) *Enrolled in School*;[3]

(2) Part-Time Work Only;[4]

(3) *First Full-Time Employment*; and

[2] Women who were in the military were classified as employed full-time if they were not enrolled in school. However, this group comprises a tiny share of all respondents (Kilburn, 1993).

[3] These respondents may also work, but not full-time, which means that schooling is their primary activity.

[4] This category characterizes youth, at age *t*, who: (i) were not enrolled in school and worked less than 35 hours per week, on average; and/or (ii) did not start an employment spell that lasted at least 50 weeks of a consecutive 52-week period.

(4) *Homemakers*.[5]

In assigning respondents to one of these mutually exclusive activity states, we first determined whether they had begun their first spell of full-time employment. The latter was defined as the first spell in which youth were employed in one or more jobs for 50 weeks out of a consecutive 52-week period, and averaged at least 35 hours per week of work during this period. For respondents who did not fit in this activity state, we examined their schooling attendance and employment during the calendar year to see if they fit in activities (1), (2), or (4); activity (4) served as a residual category. Wage rates are available for jobs associated with states (1), (2), and (3). Because we consider whether school is the dominant state, we do not estimate a wage equation for state (1).

Human Capital Measures

We derive two indicators of human capital and measure both indicators from a life cycle perspective. Because youth acquire education differently over their early life course (Tienda and Ahituv, 1996; Hotz and Tienda, 1999; Ahituv, Tienda and Hotz, 1998), for each age we constructed a measure of the grades completed in school. To assess the influence of accumulated work experience on subsequent labor market outcomes, we use the detailed work history data to construct measures of the number of weeks worked full-time and part-time at each age. We also chart the age-specific accumulation of education using the educational history, and ascertain whether the highest level is less than high school, high school graduation (or GED), or a bachelor's degree.

[5] This category includes a tiny share of women who were neither working or attending school and had no children.

As a part of a U.S. Department of Defense initiative, all respondents in the NLSY were administered the Armed Services Vocational Aptitude Battery (ASVAB) in 1980. This battery tested a range of aptitudes, including reading comprehension, word knowledge, mathematical knowledge and numerical operations, as well as a number of other skills. The sum of the scores on the word knowledge, arithmetic reasoning, paragraph comprehension and (one-half of the) numeric operations batteries comprise the Armed Forces Qualification Test (AFQT), which we use to assess the eligibility of individuals seeking to enlist in the U.S. armed services.

Family Background and Family Status

NLSY interviews obtained detailed information about family background, comprehensive measures of the respondent's aptitudes in various cognitive skills, and the respondent's place-of-residence. We used the residence codes to assign data on the local labor market conditions for each respondent. Information gathered in the baseline (1979) interview was used to construct several family background variables. These include the income of respondents' parents in 1978, the highest grades completed by the respondent's mother and father, and whether or not the respondent lived in a female headed household at the age of 14.[6] From the birth histories available in the NLSY, we construct a measure of cumulative fertility by age, which essentially denotes the number of children ever born at each age.

Labor Market Conditions

To assess the effects of labor market conditions on the employment prospects and wages

[6] Family income and parental education contain large amounts of missing data. Family income can be missing for one of two reasons: either the parents of NLSY respondents did not provide this information when they were interviewed in 1979 or the respondent was no longer living in the parent's household in 1979. Given our decision to focus on the youngest age cohorts in the NLSY, the latter problem accounts for a relatively small part of this missing data. Presumably, the incidence of missing data for father's education among black and Hispanic males reflects the fact that respondents knew little about their frequently absent fathers. Our statistical models include flags for missing values and do not compromise sample sizes or introduce biases in the parameter estimates.

of young workers, we used information available on the county and state in which respondents resided at the time of each annual interview to construct time-varying indicators. Specifically, we constructed two indicators of local labor market conditions: the county average income per worker (expressed in constant 1982 dollars) and the county annual percentage rate of growth in total employment. These time-varying indicators of labor market conditions were constructed from annual, county-level data on employment and average earnings that is distributed by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce.[7] We do not use the state unemployment rate data available in the GEOCODE supplement to the NLSY because this variable contains an unusual amount of missing information.

Early Work and Family Experiences of Young Women

In this section, we address the first two questions posed at the outset by describing race and ethnic differences in young women's transition from school to work, and their family formation patterns. After depicting race and ethnic variation in pathways from school to work, and group differences in the acquisition of human capital, we compare patterns of marriage and fertility of black, white and Hispanic women from ages 16 to 28.

Young Women's Transition from School to Work during the 1980s and early 1990s

Attaining full-time employment represents a successful culmination of the transition from school to work (Ahituv, et al., 1998; Coleman, 1984). Ahituv and associates (1998) find that there are multiple pathways from school to work that roughly correspond to race and ethnic groups. Table 1 depicts the transition from full-time school enrollment to full-time employment by allocating young women at every age into four mutually exclusive activity states: (1) full-time

[7] The measures on industry-specific employment and wage income per worker are drawn primarily from information obtained from state unemployment insurance programs for all major industries at both county and state levels of aggregation.

school enrollment; (2) part-time employment; (3) full-time employment; and (4) homemaking. At age 17, school enrollment is the modal activity for all demographic groups, although by that age almost 30 percent of Hispanic women have left school compared to 21 percent of whites and 16 percent of blacks. Overall, black and white women are more similar to each other in their school leaving patterns, but Hispanic women are more similar to black than white women in their full-time age-employment profiles. By age 28, approximately 90 percent of white women had held a full time job compared to 80 percent of Hispanic and 76 percent of black women (Tienda, et al., 1998). Because of women's intermittent work activity, the proportions actually working full time at age 28 were considerably lower. Among 28-year olds, two-thirds of white women were working full time compared to just over half of black and Hispanic women.

Table 1 About Here

As observed for young men (Ahituv, et al., 1998), Hispanic women enter the labor force on a part-time basis at younger ages than either white or black women. White and Hispanic women are about equally likely to work full time at age 17, but only about half as many black women work full time at this age. This suggests that, like their male counterparts, young black women experience greater difficulty securing employment during adolescence. By age 19, when the majority of young women have left school, about one-third of white women and one-quarter of Hispanic women work full-time compared to only 14 percent of black women. The Hispanic-black gap in full-time employment results partly because larger shares of black women remain enrolled in school up to age 20 whereas Hispanic women withdraw from school at a faster rate. However, this does not explain the large race gap in the timing of arrival to full-time employment because even larger shares of white women prolong schooling than their black counterparts and they enroll at later ages. The white advantage in full-time employment that emerges at age 17

widens through late adolescence and early adulthood, and narrows after the childbearing years, but persists throughout the early life course.

At least four reasons can be proffered to account for race and ethnic differences in the timing of arrival to full-time employment. One is that black, white and Hispanic women pursue distinct investment profiles in the transition from school to work (Ahituv, et al., 1998). In other words, young women's decisions about school continuation and labor force entry have direct and lasting consequences for their arrival to full-time employment and the wages they can command as young adults. A second reason is Hispanics enjoyed more favorable labor market conditions than either blacks or whites because, as disproportionate "sunbelt" dwellers, Hispanics were relatively shielded from the industrial decline that diminished job opportunities in the rustbelt states during the late 1970s and throughout the 1980s. Third, race and ethnic differences in the timing of births and marriage may contribute to the observed differences in full-time employment. A fourth explanation for these differences is that black women experience more intense labor market discrimination than Hispanics.

Figure 1 addresses the first reason by plotting the age-specific educational attainment of young women by race and ethnic group membership. These trends are based on all young women in the sample, regardless of when and if they attained full-time employment prior to age 27. The well-known differentials in educational attainment by race and Hispanic origin are clearly evident: namely whites attain the highest level of education at all ages, followed by black women and Hispanics attain the lowest education levels (see Cameron and Heckman, 1991, 1993; Hotz and Tienda, 1998; Ahituv, et al., 1997). This finding is consistent with the activity state distributions reported in Table 1, which show that Hispanics have the fastest rates of school departure while whites exit school at much slower rates.

Figure 1 About Here

Educational differentials widen appreciably after age 18 owing to differences in the likelihood of college attendance of minority and nonminority groups, coupled with disturbingly high dropout rates among Hispanics (Tienda and Ahituv, 1996; Ahituv, Tienda and Tsay, 1998). By age 24-25, when most young women had completed their formal schooling (unless they pursued post-graduate training), white women averaged almost one more year of school than Hispanics and approximately half a year more than blacks. The race gap increased slightly by age 27 owing to the greater propensity of white women to pursue post-graduate training. However, group differences in the acquisition of labor market experience throughout the early life course also contribute to rising educational inequities by age if this form of human capital acquisition comes at the expense of additional schooling.

As suggested by Table 1, young women accumulate unequal amounts of part-time and full-time work experience in the transition from school to work because of differences in the timing of labor force entry (Hotz and Tienda, 1998). Figure 2 summarizes race and ethnic differences in accumulated work experience for young women from ages 17 to 28. In contrast to the trends in educational attainment, which showed Hispanic women to be most disadvantaged, during the 1980s Hispanic women acquired more work experience than their black counterparts, but less than whites. This is evident in the location of the work experience curve for blacks below the white and Hispanic curves throughout the age range considered. Moreover, the ethno-racial experience gaps increased over time. At age 18, white women averaged .7 years more work experience than their black age counterparts and .4 years more than Hispanics. By age 22, the comparable differentials were 1.6 and .9 years for blacks and Hispanics, respectively. And, by the end of the observation period, white women averaged 2.3 years more experience than

blacks and 1.5 years more than Hispanics.

Figure 2 About Here

On balance, women's transition from school to work roughly parallels that of young men inasmuch as there appear to be three general profiles. The experience of whites is characterized by prolonged schooling and early entry into the workforce, which eventuates in higher stocks of human capital in the form of *both* work experience and graded schooling. Hispanic women leave school early and enter the labor force at younger ages than blacks, but their age-specific labor force participation rates trail those of whites at every age. Thus, while Hispanics acquire more labor force experience than black women, they achieve lower levels of education than either blacks or whites. Black women's modal pathway from school to work involves delayed labor market entry, implying acquisition of less work experience than either Hispanic or white women, along with prolonged schooling. As such, black women should be more advantaged in their adult labor market standing than Hispanics because they acquire more education during a time that returns to skill rose rapidly.

Young Women's Family Formation

A second reason for the unequal labor force experiences of black, white and Hispanic women is their different patterns of family formation, namely the timing of marriage and births. Group differences in the timing and number of births directly influence women's labor force behavior, but fertility is also influenced by employment behavior and educational attainment (Ahituv, Tienda and Tsay, 1998). Figure 3 portrays the cumulative proportions married at specific ages for black, white and Hispanic women, and Figure 4 depicts the cumulative proportions with at least one child at specific ages. The most striking message about marriage behavior is that black women are appreciably less likely than either whites or Hispanics to marry

at any age, and that Hispanic women enter marriage at a faster pace than either blacks or whites until about age 22, when the white-Hispanic marriage rates converge. Thereafter, the cumulative proportion of white women married surpasses that of Hispanics. By age 28, 81 percent of white women had ever married compared to 73 percent of Hispanics and only 53 percent of black women. Marriage behavior influences women's labor force activity in two ways. First, it enables them to remain at home if their spouses income is sufficient to meet needs and preferences. Second, it increases the risk of childbearing, other things equal.

Figure 3 About Here

Just as there are race and ethnic differences in the probability of marriage, childbearing by age differs among black, white and Hispanic women. Figure 4 displays the cumulative proportion of women with at least one child by age. Although childbearing at age 16 is typically uncommon, black girls are twice as likely as Hispanics and four times as likely as whites to have their first child at this age. During the teen years, childbearing among Hispanics rises steeply so that by age 20, 36 percent of Hispanic women had born at least one child compared to 40 percent of black women and only 19 percent of white women. The black and Hispanic cumulative fertility curves remain above that of white women throughout the life course, despite the fact that proportion of black married women remains lower throughout.[8] Thus, white women's high rates of labor force participation as young adults also reflect their lesser family constraints relative to their minority counterparts as well as the higher stocks of work experience accumulated as a result. By age 27, only 56 percent of white women had born at least one child compared to 70 percent of black and Hispanic women.

[8] In addition to a higher pace of fertility during adolescence and young adulthood, black and Hispanic women bear more children at every age such that the curves reflecting the tempo of fertility are quite similar to those reflecting the timing.

Figure 4 About Here

Local Labor Markets and Youth Employment during the 1980s and 1990s

Young women's decisions about whether to prolong schooling and enter the labor force or leave school and start a family also depend on labor market opportunities, which during the period under consideration were evolving rapidly. Between 1979 and 1993, there were two recessions, a rather severe one during the early 1980s and another during the early 1990s. Unemployment reached 21 percent for women in between 1982 and 1983 and nearly 10 percent for men (Donahoe and Tienda, 1999). Throughout the 1980s and early 1990s, when our cohort had largely completed the transition from school to work, female unemployment rates remained in the double digits.[9]

However, the national trends obscure regional variation in local labor markets, which is germane to our hypothesis that local conditions may be partly responsible for the salutary employment status of Hispanics, given their low educational attainment (Blanchard and Katz, 1992; Clark, 1993). In a recent paper (Ahituv, Tienda, Hotz and Bellessa, 1998) we show that during the recession of the early 1980s and until around 1985, when our cohorts were between the ages of 20 and 23, Hispanic youth resided in "better" labor markets than did either black or white youth. This reflects the fact that Hispanics disproportionately resided in California and that between 1975 and 1987, the labor market conditions in this state were consistently better than other regions of the U.S. We also showed that young blacks resided in counties with average labor incomes and employment growth rates significantly below counties where white and Hispanic youth resided. After 1985, when our cohort was approximately 20-23 years old,

[9] Despite the economic contraction during the early 1990s, industrial production recovered quickly and began one of the longest periods of sustained growth since World War II. These economic conditions were particularly favorable for young adults who had invested in post-secondary schooling. However, the period under analysis does not cover the recent high growth period.

white women enjoyed more favorable labor market conditions than either black or Hispanic young women.

Based on these trends, we expect that local labor market conditions will influence the timing of full-time employment for young women as well as decisions to prolong schooling. That is, the quality of the labor markets in which they resided may have "pulled" some women, especially white and Hispanic women, from school and into work at earlier ages than was true for blacks. That Hispanic women tend to enter the labor force at the expense of additional schooling while white women are more likely to combine school and work (Donahoe and Tienda, 1999) implies very different levels and forms of human capital accumulation. White women acquire education and work experience while Hispanics acquire work experience at the expense of formal schooling. Black women, on the other hand, acquire more graded schooling than Hispanics but less than whites, although they accumulate less work experience than Hispanics.

This points to the third and fourth questions raised in the introduction, namely whether the employment returns to early investment decisions differ by type of human capital and ethnic lines, and whether young women's labor force decisions are sensitive to local labor market conditions. Moreover, it is unclear whether returns to education and work experience are relatively uniform for minority and nonminority women because black and Hispanic women have relatively similar levels of full-time employment by age 25, despite their distinct human capital profiles and family formation patterns. To address these questions, we turn to a multivariate analysis.

Analytical Framework and Econometric Specification

In this section, we present the analytical framework of our empirical strategy. In our investigation, we observe women from ages 17 to 28, which spans the transition from school to

work. Assume that the beginning of each age women choose one of four mutually exclusive alternatives: (1) School as the major activity (may work part time); (2) Part-time employment (and no school attendance); (3) Full-time employment (may include part-time school attendance or training); and (4) Homemaking. Women choose the alternative that maximizes their expected present value stream of utility. Accordingly, at age *t* they choose state *k* from the set *J*={1,2,3,4}, such that

$$V_{itk} = \max_{j \in J} \{V_{itj}\}, \quad (1)$$

where V_{itj} denotes the expected lifetime value of individual *i* who chooses state *j* at age *t*. Note that if women's choices are governed by dynamic decision rules, the rewards from each choice have two implicit components: (a) the present utility, and (b) the option value of the human capital that she accumulates.

In addition to work choices, in period t each woman also chooses whether to conceive a baby. This decision will determine her potential labor force participation in the future. Note that the number of children in period t depends on previous fertility decisions, as well as her decision to continue in school. Thus, the relationship between present fertility and total fertility is similar to the relationship between investment and capital stock. Fertility decisions are closely related to work decisions. Time spent rearing children substitutes for market time (substitution effect), but at the same time, children's consumption raises the need for additional income (income effect). Previous studies (Hotz, Klerman and Willis 1997; Angrist and Evans 1998) found that the time (substitution) effect dominates the income effect, hence women with children will be less likely to enter the market to generate additional income, especially if they have a working spouse

whose earnings satisfy household consumption. Based on these results, we treat the number of children as an endogenous variable.

Because we are interested in estimating the returns to wage growth of earlier work experiences, we also specify econometric representations of the wage processes associated with the two alternative work states (Part- and Full-Time, respectively, for activity states 2 and 3). At this stage, we do not estimate the effect of the wage rate on the labor supply, but instead estimate the interrelationship between current work status and future wage rates.

The solution to a woman's optimization problem is our primary dependent variable. Note that although the solution is deterministic for each individual, it is probabilistic from our point of view, because we do not observe all the information women possess and use in making decisions about whether to work, continue in school, or become homemakers. Accordingly, the conditional

$$P\left(j_t = k \mid S(t)\right) = P\left(V_{itk} = \max_{j \in J}\{V_{itj}\} \mid S(t)\right), \quad (2)$$

probability of choosing state j can be written as: the conditional probability of being in given state is a function of a vector of state variables *S(t)*. This vector includes observable variables and a stochastic element, e_t, which is not observed. The sample likelihood is the product of the individual probabilities in (2) over *N* individuals and *T* years.

Given our focus on the relationships among work experience (human capital). childbearing and income, we adopt a "semi-reduced form" specification of the above conditional valuation functions. This approach allows us to address our basic questions without calculating the exact value functions. In other words, we do not impose a structural restriction on the

estimates, but rather utilize the econometric strategy to approximate the theoretical model that was formulated above.

Specifically, we consider linear specifications of the V_{itj}'s that depend on: (1) indicators of group membership and birth cohort, family background variables, and AFQT *(X_{it})*; (2) a vector of age-related variables measuring the accumulated amounts of the various work and schooling experiences at the beginning of the period *(Z_{it-1})*; (3) the number of children at the beginning of each age *(B_{it})*; and (4) a state-specific unobservable variable *(e_{itj})*. That is:

$$V_{itj} = X_{it} b_j^x + Z_{it-1} b_j^z + B_{it} b_j^y + e_{itj} \quad , \quad (3)$$

for all $j \in J$, where b_j's are vectors of parameters to be estimated for each work state.

The discrete-choice equations are estimated jointly with the two endogenous equations. As with the value function above, the econometric representation of births and wages are linear and are allowed to differ across the four states:

$$B_{itj} = X_{it} g_j^x + Z_{it-1} g_j^z + u_{itj}, \quad (4)$$

$$W_{itj} = X_{it} d_j^x + Z_{it-1} d_j^z + n_{itj}, \quad (5)$$

for each $j \in J$, and where B_{itj} denotes the number of children and W_{itj} denotes the log of hourly rate of pay adjusted for inflation. As explained below, the parameters of the model are identified with the assistance of exclusion restrictions on the *X* and *Z* matrices in equations (3), (4) and (5).

Using the data on the observed choices, estimation of the parameters in equations (3), (4) and (5) is complicated by three related problems. First, unless the stochastic components of the

V_{itj}'s , B_{itj}'s and W_{itj}'s are serially and contemporaneously uncorrelated (or stochastically independent), standard estimation methods will be subject to both endogeneity and selection bias. If the stochastic elements of the valuation functions (the e_{itj}'s) are correlated over time (as they would be if they contained person-specific, time-invariant components), the experience variables will not be orthogonal to the e_{itj}'s. This orthogonality condition is required by the standard estimation methods. Second, if the unobserved determinants of births and wages are correlated with the unobserved components of work-choice equations (e_{itj}), the standard methods of estimating the parameters in (3) are potentially subject to selection bias. Third, the birth variable in (3) will not be orthogonal to the e_{itj}'s if the e_{itj}'s and the u_{itj}'s are contemporaneously and serially correlated. Failure to account for these problems produces inconsistent estimates of the parameters of equations (3)-(5).

In order to minimize the intrusion of these sources of bias, it is necessary to account for the correlation structure of the stochastic elements in the estimation of equations (3) to (5). Following the approach of Heckman and Singer (1984), we hypothesize that the correlation structure of e_{itj} and u_{itj} can be characterized by a common factor structure. Thus, we assume that the stochastic elements can be written as the following linear combinations of a (common) person-specific stochastic component and idiosyncratic errors:

$$
\begin{aligned}
e_{itj} &= a_j^V x_i + w_{itj}^V \quad , \qquad (6)\\
u_{itj} &= a_j^B x_i + w_{itj}^B \\
n_{itj} &= a_j^W x_i + w_{itj}^W \quad ,
\end{aligned}
$$

In this set of equations x_i denotes a person-specific unobserved factor, a_j's are specific factor loadings for labor supply and capital accumulation, and w_{itj}'s denote idiosyncratic

disturbance terms. These latter two terms are assumed to be uncorrelated with x_i, but given the stochastic structure of equation (6), it follows that the e_{itj}'s and u_{itj}'s will be correlated across time and across states, i.e.,[10]

$$\text{Cov}(\varepsilon_{itj}, \varepsilon_{it'k}) = \alpha_j^V \alpha_k^V \text{Var}(\xi_i), \quad \text{for } t \neq t', \; j \neq k$$

$$\text{Cov}(\varepsilon_{itj}, u_{it'j}) = a_j^V a_j^W \text{Var}(\xi_i), \quad \text{for } t \neq t', \text{ and for all } j \qquad (7)$$

$$\text{Cov}(u_{itk}, u_{it'k}) = a_j^W a_k^W \text{Var}(\xi_i), \quad \text{for } t \neq t', \; k \neq j.$$

As is apparent from the above expressions, the signs of the covariances between the e_{itj}'s and u_{itj}'s are determined by the products of the corresponding factor loadings. Hence, the distribution of x_i (the unobserved heterogeneity) is identified from the correlation of the three working choices and the capital accumulation processes within and across time periods. Therefore, the entire process must be estimated jointly, using maximum likelihood methods. Assuming that the idiosyncratic disturbance terms (w_{itj}) are normally distributed with $E(w) = 0$, and following Heckman and Singer (1984), the distribution of x is estimated nonparametrically. Specifically, we use a simple three-point discrete distribution for ξ, and estimate the intermediate point as well as the probability mass at each point (the two extreme points are normalized to 0 and 1).

The structure of the econometric model is a combination of a discrete-choice multinomial probit model and a set of state-specific capital equations (similar to an endogenous switching regression model). The model is estimated by a conditional maximum likelihood (ML) strategy in which the likelihood function is conditional on the estimated distribution of ξ.

[10] The correlation between the e_{itj}'s and u_{itj}'s will have analog properties.

Empirical Results

In this section, we evaluate the relative impact of labor market conditions and accumulated human capital on the likelihood of choosing (full or part-time) employment or homemaking relative to remaining enrolled in school between ages 17 and 28. Black, white, and Hispanic women differ systematically in characteristics that influence their employment prospects, therefore it is necessary to model family background and initial skill endowments to address whether minority and nonminority women fared differently in the tumultuous labor markets of the 1980s, and to evaluate the effects of early investment decisions and market decisions on school, work and family choices.

Table 2 presents descriptive statistics for several measures of family background, number of siblings and AFQT score. Minority women are much more likely to come from economically disadvantaged homes compared to whites. Average family income of Hispanics was about 13 thousand dollars below that of whites, and roughly three thousand dollars higher than blacks. If black women represent the most economically disadvantaged family backgrounds, Hispanic women come from the most educationally disadvantaged backgrounds. Mothers of Hispanic women averaged 7.5 years of graded schooling, compared to 10 and 11.5 for blacks and whites, respectively. Also, black women were three times as likely as whites and about twice as likely as Hispanics to have been reared in a mother-only family. Many studies several studies show that differences in financial resources, parental education and family stability affect various outcomes of young women, including educational attainment (Kane, 1994), the likelihood that youth will work during adolescence (Mortimer and Finch, 1992; Schoenhals, Tienda and Schneider, 1998), and the odds of becoming an adolescent mother (Mclanahan and Sandefur, 1994). Whether these effects carry over into young adult labor force activities is an empirical question.

Table 2 About Here

Table 2 also reports young women's educational attainment and their mean AFQT scores along with their work experience.[11] Because numerous studies have demonstrated strong associations between AFQT scores and various labor market outcomes, we include the test score as a control in all statistical models, and interpret it as pre-market aptitude for market relevant skills (Neal and Johnson, 1996). As presaged by Figure 2, white women acquire considerably more work experience than minority women by age 28 (28 percent more than black women and 19 percent more than Hispanics). And not only are white women are more likely to be married at any age than their minority counterparts (Figure 3), but they also enjoy the benefit of higher spousal earnings. This could depress their labor supply, particularly during the prime reproduction years because they can afford to become homemakers, but whether they do so is an empirical question which depends on the relative magnitudes of the income and substitution effects.

Finally, there is evidence that Hispanic women lived in more dynamic labor markets than blacks, but not necessarily white women. This is because the average annual employment growth rate of their county of residence was 37 percent higher than blacks, but appreciably lower than whites. However, the average per worker incomes of labor markets where Hispanic women resided were actually lower, on average, than mean incomes where blacks and whites resided. Therefore, the effect of labor market conditions on young women's employment and wages is not

[11] There are appreciable race and ethnic differences in the performance on this test, but there is no agreement about the origin and meaning of the differences. Herrnstein and Murray (1994) claim that the AFQT measures innate ability (IQ) and that individuals' educational attainment has little influence on the score. However, Neal and Johnson (1996) reach a very different conclusion after re-analyzing the same data. They conclude that AFQT scores, particularly for young test takers (as for the NLSY respondents) measures youth's pre-market aptitude for skills relevant to labor market success.

obvious and requires empirical evidence, to which we now turn.

Empirical Estimates

In this section we present estimates for the econometric models of the employment and schooling choices made and wages received by young women during their transitions from school to work. In particular, we examine the effects of education, early work experiences, fertility, and labor market conditions on employment decisions and wages received by working women.

Table 3 About Here

Table 3 reports two sets of estimates for the parameters of the valuation functions associated with 3 of the 4 activity state (the "School Only" state is the omitted category), for the equation and for the (log) wage functions, and of the locations and points of support associated with the person-specific, common random factor, x.[12] In assessing the appropriateness of the two sets of estimates, one can consider the relative explanatory power of the model with versus without controls for unobserved heterogeneity using a likelihood ratio test. Based on this test, the improvement in the fit of the model is highly significant when the common factor structure is added to the model without heterogeneity.[13] With the exception of full-time work in the wage functions and part-time work in both the state valuation and wage functions, the factor loadings

[12] Since the locations of the points of support for the distribution of x are arbitrary, we restricted these values to lie in the interval [0,1].

[13] Under the null hypothesis that the addition of this unobserved factor does not improve the model, the difference in the values of the log-likelihoods for the two models has a chi-squared distribution with degrees of freedom equal to the number of additional parameters included in heterogeneity model. The value for the test statistic is 9040.8 with 12 degrees of freedom and the null hypothesis of no improvement of the model with heterogeneity over the model without heterogeneity is decisively rejected.

are all significantly different from zero for the model with heterogeneity.[14] Although we discuss the results from both of models below, the data strongly suggest that controlling for person-specific unobserved heterogeneity is necessary for obtaining consistent estimates of the parameters in the fertility and wage equations (and state-specific valuation functions) that characterize the employment and family formation behaviors of young women during the 1980s and early 1990s.[15]

Minority group status

Coefficients for minority group status are negative for all state choices, implying that black and Hispanic women are more likely than whites to remain enrolled in school as compared to working full- or part-time, or becoming full-time homemakers. This is consistent with results of Ahituv, Tienda and Tsay (1998), who find that minority women prolong schooling relative to white women with similar background characteristics. These results are unaltered by the inclusion of controls for unobserved heterogeneity, except that the point estimates change slightly. Note that all values of the factor loadings (a_j's) are positive and significant for full-time work activity, negative and significant for homemaking, and insignificant for part-time employment.[16] Although the point estimates on the family background and AFQT scores are similar whether or not unobserved heterogeneity is taken into account, this is not so for endogenous variables like wages and number of children.

[14] Recall that the products of factor loadings characterize the covariances between the state-specific and wage equation disturbance terms. Thus, the statistical significance of the factor loadings provides indicates the existence of significant correlations among the e_{itj}'s and u_{itjt}'s; it is the presence of such correlations which gives rise to the endogeneity of the experience variables in and and the problems of selection bias in the estimation of the work-schooling choices and the wage equations.

[15] In the interest of parsimony, we do not discuss the effects of family background and individual characteristics that were included as statistical controls.

Race and ethnic effects on family formation reveal a more complex pattern in that black women with children are more likely to remain in school, to work full or part-time, or to become full-time homemakers relative to white women with similar characteristics. However, the point estimates for employment activity are greatly attenuated once unobserved heterogeneity is taken into account, suggesting that black mothers who work differ from their nonworking counterparts in unmeasured ways that are systematically correlated with the decision to work. Hispanic women with children are less likely than white mothers to remain enrolled in school, but as likely either to join the labor force or become full-time homemakers. There is some evidence that Hispanic mothers are slightly more likely than white mothers to work full-time, but this effect is on the margin of statistical significance, and therefore tentative.

Consistent with expectations about the income and substitution effects of childbearing on women's labor supply, the number of children depresses women's full time employment activity. Larger families increase the odds that women work part-time relative to remaining enrolled in school, but raises even more the likelihood that they become full-time homemakers. However, the expected negative effect of fertility on the odds of full-time employment did not emerge until we accounted for unobserved, person-specific factors that influence both family formation and employment decisions.

Finally, we find trivial race effects on both full- and part-time wages irrespective of whether we take account of unobserved heterogeneity. Yet, we find rather substantial positive effects for Hispanic women, who earn 7 to l2 percent more than their statistically comparable white counterparts. This result is different from cross-section analyses, which seldom adequately

[16] The insignificant factor loading for part-time work may reflect the fact that we did not separate part-time workers who were enrolled in school from those who were not, hence the contrast with the school-only state may be less sharply defined because many women enrolled in school also work part-time.

represent the accumulation of human capital and selection into various work activity states over the life course with the precision possible with the NLSY. In light of the magnitude of the Hispanic effect on wages, we consider this result tentative until we can further scrutinize it against alternative specifications.

Human Capital Effects

The distinct pathways from school to work pursued by young women have direct implications for their educational attainment and accumulation of work experience, as we pointed out in the previous section. Turning to the human capital variables, our results are highly consistent with prior studies showing that higher levels of education raise the odds of working full-time, and to a lesser extent part-time, relative to remaining enrolled in school. Conversely, higher levels of education lower the likelihood that women will become full-time homemakers relative to prolonging their schooling further. These effects are robust to the inclusion of person-specific, unobserved factors. Also, higher levels of educational attainment are associated with lower fertility, but the magnitude of this effect is attenuated substantially for women who work part- or full-time once controls for unobserved heterogeneity are introduced. Substantively, this implies that educated mothers who work differ systematically from educated mothers who do not work in ways that are unmeasured by covariates included in the empirical model.

For (log) wages, each year of education completed is associated with a 2.8 to 3.1 percent return. These effects are consistent with results of cross-section analyses of female wages, and are robust to specifications that include and exclude controls for unobserved heterogeneity. Returns to part-time wages were slightly lower than returns to full-time wages, which is another widely replicated empirical result. Completion of high school or its GED equivalent produced no additional return to education above and beyond what women reaped from years of school

completed, but having achieved a college degree yielded an additional return of 21 percent for part-time employment and 13 percent for full-time work. These "sheep-skin" effects were unaltered by consideration of unobserved, person-specific factors.

The effects on employment and wage outcomes of work experience are highly differentiated according to whether experience was acquired on a full-time or part-time basis. For example, higher levels of acquired part-time work experience raise the odds of working in a subsequent year, but especially the odds of part-time employment. Because part-time employment also is associated with school enrollment (the school activity state includes part-time workers who are enrolled full-time), part-time work experience also increases the odds that women will continue in school. Full-time work experience has more pronounced effects on the likelihood of future full-time employment, but it also increases the odds of part-time work relative to remaining enrolled. But in sharp contrast to the positive effect of part-time experience on exclusive homemaking, full-time work experience significantly lowered the odds of remaining out of the labor force altogether.

Experience effects on wages present an altogether different picture. Essentially work experience acquired from part-time employment yields trivial returns for either full- or part-time employment. However, full-time work experience yields a whopping 4.7 to 5.1 percent return on wages received by part-time and full-time workers, respectively. Because the factor loadings were not statistically significant in the wage equation, these effects remain unchanged across specifications. Finally, the AFQT score yields positive wage returns that were somewhat higher for women employed full-time compared to those employed only part-time.

Labor Market Conditions

The final question posed at the outset concerned the sensitivity of young women's labor

force decisions to local labor market conditions. Point estimates indicate zero effects of annual employment growth on women's labor force or homemaking activity relative to full-time school attendance, but residence in counties with higher incomes pulls women into the labor market relative to attending school, and deters them from full-time homemaking. These average worker income effects are especially pronounced for full-time work and robust across specifications with and without controls for heterogeneity. Similarly, higher worker average incomes are associated with positive wage returns to employed women, on the order of 2.3 percent for part-time workers and 3.2 percent for full-time workers.

Labor market conditions also influence women's employment behavior through their effects on fertility. That is, more favorable market opportunities, as indexed by average per worker incomes, lower the odds that women employed full or part-time will bear another child, but they increase the odds that enrolled women will bear a child. This reflects the opposite income and substitution effects in the relationship between women's employment and fertility. The magnitude and statistical significance of market effects on fertility are highly sensitive to the inclusion of statistical controls for unobserved heterogeneity. Thus, in addition to personal, human capital and labor market conditions, childbearing decisions are governed by unmeasured circumstances, such as family size preferences, early socialization experiences, and the proximate determinants of fertility (notably contraceptive practices, marital duration and the frequency of coitus).

Thus, there is suggestive, but not powerful evidence that the favorable labor market conditions influence young women's employment experiences. Equally, if not more important, are the human capital investment choices that generate their stocks of education and experience. To the extent that favorable economic conditions "pulled" these groups out of school and into the

labor market, the total effects of labor market conditions on employment outcomes may be stronger than the direct effects shown here. We will investigate the existence and magnitude of indirect effects in future analyses.

Conclusions

In this exploratory exercise we set out to address how young women's human capital investment decisions and family formation patterns differ among demographic groups as a backdrop for understanding the employment and wage returns to educational attainment and early work experience. We also sought to evaluate the sensitivity of young women's labor supply behavior to changing labor market conditions.

We find that the lower stocks of human capital accumulated by minority women, especially less formal schooling, derive from group differences in family background and other characteristics that are associated with school and work choices. Once these differences are taken into account, black and Hispanic women are more likely to prolong their investments in education relative to working or becoming homemakers. However, race and ethnic differences in family formation, which decisively influence work behavior during the early life course, also determine how much human capital is acquired during the early life course. Although black mothers are more likely than whites to remain enrolled in school, Hispanic mothers are less likely to do so, instead becoming full-time homemakers or entering the labor force. Race effects on wages were trivial, but Hispanic women earned 7 to 12 percent more than their white counterparts who were similarly endowed. As noted in the previous section, this result requires further investigation as it differs from most cross-section findings.

We find consistent positive effects of education on the likelihood that women will work full-time, negative effects on fertility, and approximately a 3 percent wage return for each year of

education completed, with the caveat that returns are slightly lower for part-time as compared to full-time workers. Furthermore, as suggested by numerous studies about the rising returns to skill during the 1980s, we find a substantial return to college degrees, but none for completion of high school or its GED equivalent. Finally, experience effects on subsequent employment and wages are differentiated according to full- and part-time. Specifically, we find trivial effects of experience acquired through part-time work on subsequent full-or part-time wages, but a whopping 5 percent wage return, approximately, on wages received by both full- and part-time workers. These results cast doubt on the received wisdom of urging youth to acquire work experience while they are enrolled in school. As we concluded for young men (Hotz, et al., 1998), perhaps the optimal life cycle earnings streams derive from maximizing formal schooling before acquiring work experience either on a full- or part-time basis.

In general, we find that average county-level per worker incomes DO influence the likelihood that young women will be employed either full- or part-time relative to full-time school enrollment in any given year, and that wages received by young workers also depend on the opportunities afforded by the markets in which they reside. However, employment outcomes are insensitive to changes in the annual employment growth rate, which is negatively associated with wage returns to full and part-time employment. This counter-intuitive effect warrants further investigation and may derive from two sources. One is that employment growth for young workers in recent years has occurred in low-wage industries, particularly services, as relatively well-paying manufacturing and other unionized jobs declined. Therefore, in future analyses we will specify separately the relative growth of high and low-wage industries in an attempt to decipher the source of the negative effect. A second reason has to do with the level of aggregation at which local market conditions are specified. We have opted to represent local

market conditions using counties rather than more conventional units for labor markets, such as SMSA's or PMSA's. However, doing so ignores the fact that women can commute across county lines for work. Therefore, in a future analysis we will compute a wider array of labor market characteristics using larger areal units to represent labor markets, and using county groups for nonmetropolitan areas (Schmitz and Gabriel, 1991).

Although we did not consider whether the employment and wage returns to early work experience differ among race and ethnic group, this represents another important extension of our work. This extension is promising because of the diverse pathways from school to work and family formation behavior of black, white and Hispanic women. This extension of our work will also allow us to consider more explicitly whether labor market conditions impacted demographic groups unequally, as suggested by Schmitz and Gabriel (1992) and Hyclak and Stewart (1995). Pursuing these extensions requires another set of interactions between education and labor market conditions over the early life course, which we plan to consider in our future work.

Table 1

Pathways from School to Work: Percent Distribution of Young Women Across Four States of Activity, by Age and Race/Ethnicity

Age	Hispanic (N=5724)				Black (N=8679)				White (N=13723)			
	School Enrollment	Part-time Work	Full-time work	Home-makers	School Enrollment	Part-time Work	Full-time Work	Home-makers	School Enrollment	Part-time Work	Full-time Work	Home-makers
17	70.1	13.2	6.0	10.6	84.2	4.7	2.8	8.3	78.8	10.1	7.1	4.0
18	44.0	28.7	14.5	12.8	56.2	18.0	7.4	18.5	46.3	27.5	19.0	7.2
19	24.3	32.9	23.9	18.9	34.3	27.5	13.6	24.6	32.7	27.7	30.9	8.8
20	17.0	31.4	34.4	17.2	24.4	30.5	19.2	25.9	27.4	27.3	37.6	7.7
21	14.2	30.1	34.2	21.4	16.9	27.7	28.0	27.3	24.4	24.1	41.0	10.5
22	10.0	27.4	41.0	21.6	11.4	32.1	33.7	22.9	12.3	27.0	49.3	11.5
23	6.4	28.8	42.3	22.5	6.8	30.3	39.8	23.1	7.1	25.3	57.3	10.3
24	3.9	24.7	47.6	23.8	4.2	25.9	48.3	21.7	4.8	23.2	61.6	10.5
25	3.9	26.9	50.5	18.7	3.5	25.8	50.2	20.5	3.9	22.3	63.2	10.6
26	4.4	21.7	53.4	20.6	3.2	24.4	53.8	18.7	3.6	24.3	60.4	11.8
27	4.3	23.6	51.3	20.9	2.7	24.9	54.2	18.1	3.2	24.7	61.0	11.2
28	4.7	21.7	53.2	20.4	3.5	23.7	53.2	19.7	2.9	22.7	60.9	13.5

Table 2.
Proportions and Means of Endogenous and Independent Variables at Age 28, by Race and Ethnicity [a]

	Hispanic	Black	White
Endogenous Variables			
Number of births	1.56	1.63	1.10
	(1.40)	(1.41)	(1.10)
Hourly Pay, $	6.85	5.73	7.17
	(4.72)	(3.98)	(4.91)
Independent Variables			
1. Human Capital and Scholastic Achievement			
Education (Years)	12.29	12.75	13.34
	(2.32)	(2.02)	(2.35)
Work Experience (Weeks)	347.10	305.71	426.27
	(186.95)	(174.42)	(158.53)
AFQT Score	57.96	51.34	75.59
	(18.89)	(17.10)	(17.57)
2. Family Background (1979)			
Number of Siblings	4.26	4.53	2.97
	(2.79)	(3.01)	(1.92)
Family Income, $	18,532.00	15,571.00	31,007.00
	(13,007.00)	(13,725.00)	(17,734.00)
Mother's Education (Years)	7.52	9.94	11.40
	(4.21)	(3.69)	(3.34)
% Mother Only Family	20.00	37.40	11.00
3. Personal Characteristic			
Age of Menarche	12.29	12.70	12.75
	(2.40)	(2.16)	(2.06)
Husband's Income, $	28,671.00	23,413.00	31,611.00
	(38,419.00)	(18,567.00)	(38,623.00)
% Ever birth	72.34	73.84	60.92
% Foreign Born	20.21	2.60	2.70
4. Labor Market Conditions			
Employment Growth	0.70	0.44	1.06
	(2.85)	(2.56)	(2.43)
Per Worker Income, $	13,736.00	14,064.00	14,264.00
	(3,891.00)	(3,323.00)	(3,484.00)

SOURCE: NLSY

[a] Standard deviations in parentheses

Table 3
Estimate of Activity States, Birth outcome, and Log of Hourly Wages Rates

A. Activity States

	Without Heterogeneity			With Heterogeneity		
	Part Time Work	Full Time Work	Other	Part Time Work	Full Time Work	Other
α (factor loading)				.0152	.4566***	-.2928***
				(.0668)	(.0584)	(.0718)
Intercept	.0000	-7.7339***	-4.7478***	.0000	-8.3800***	-4.3343***
	(.4958)	(.5026)	(.5917)	(.5110)	(.5073)	(.6388)
Endogenous Variables						
Number Children	.1881***	.0559*	.3422***	.1840***	-.1821***	.4215***
	(.0331)	(.0311)	(.0355)	(.0435)	(.0392)	(.0448)
Minority Status						
Black	-.2522***	-.1303***	-.2727***	-.2545***	-.1514***	-.2681***
	(.0295)	(.0277)	(.0286)	(.0290)	(.0274)	(.0280)
Hispanic	-.1905***	-.0844**	-.2282***	-.1911***	-.0975***	-.2213***
	(.0299)	(.0270)	(.0294)	(.0295)	(.0266)	(.0289)
Human Capital and Scholastic Achievement						
Education _1	.0561***	.0933***	-.0500***	.0560***	.0870***	-.0443***
	(.0097)	(.0089)	(.0096)	(.0094)	(.0087)	(.0091)
Yrs.PT-Exp_1	.5727***	.4740***	.3176***	.5732***	.4713***	.3189***
	(.0179)	(.0169)	(.0168)	(.0180)	(.0171)	(.0170)
(Yrs. PT-Exp_1)^2	-.0589***	-.0490***	-.0452***	-.0590***	-.0486***	-.0453***
	(.0023)	(.0025)	(.0027)	(.0023)	(.0025)	(.0027)
Yrs.FT-Exp_1	.1841***	.5488***	-.0419**	.1836***	.5472***	-.0420**
	(.0162)	(.0155)	(.0027)	(.0162)	(.0156)	(.0166)
(Yrs. FT-Exp_1)^2	-.0127***	-.0351***	-.0003	-.0130***	-.0353***	-.0006
	(.0023)	(.0022)	(.0026)	(.0023)	(.0022)	(.0027)
AFQT Score	-.0121***	-.0072***	-.0179***	-.0120***	-.0069***	-.0181***
	(.0007)	(.0007)	(.0007)	(.0007)	(.0007)	(.0007)
Family Background (1979)						
Family Income	-.0028***	-.0007	-.0050***	-.0028***	-.0007	-.0052***
	(.0008)	(.0007)	(.0007)	(.0008)	(.0007)	(.0007)
Mother Education	-.0231***	-.0207***	-.0297***	-.0229***	-.0215***	-.0294***
	(.0039)	(.0037)	(.0036)	(.0038)	(.0037)	(.0036)
Mother Only Family	.0000	-.0623**	.0362*	.0000	-.0195	.0412*
	(.0265)	(.0294)	(.0236)	(.0262)	(.0245)	(.0233)
Personal Characteristics						
Husband's Income	-.0037***	-.0087***	.0012	-.0037***	-.0084***	.0012
	(.0007)	(.0007)	(.0010)	(.0007)	(.0007)	(.0010)
Foreign Born	.0000	.0000	.0000	.0000	.0000	.0000
	(.0380)	(.0359)	(.0371)	(.0380)	(.0358)	(.0369)
Age	.0632	.6479***	.5480***	.0616	.6883***	.5234***
	(.0465)	(.0463)	(.0543)	(.0472)	(.0462)	(.0569)
AgeSq	-.0017*	-.0140***	-.0100***	-.0016*	-.0145***	.0097***
	(.0010)	(.0010)	(.0012)	(.0010)	(.0010)	(.0012)
Age78_13	.0000	.0116	-.0147	.0000	.0153	.0207
	(.0293)	(.0273)	(.0281)	(.0292)	(.0274)	(.0286)
Age78_14	-.0149	-.0170	.0239	-.0143	-.0174	.0200
	(.0263)	(.0255)	(.0244)	(.0262)	(.0254)	(.0244)
Age78_15	.0000	-.0397*	.0144	.0000	-.0343	.0018
	(.0257)	(.0235)	(.0239)	(.0256)	(.0233)	(.0242)
Labor Market Conditions						
Emp Growth	.0000	.0000	.0000	.0000	.0000	.0000
	(.3317)	(.3258)	(.3440)	(.3315)	(.3258)	(.3433
Per Worker Income	.0062*	.0151***	-.0095**	.0064*	.0156***	-.0098**
	(.0034)	(.0030)	(.0032)	(.0034)	(.0029)	(.0032)

*p<.10 **p<.05 ***p<.01

Note: Standard errors are in parentheses. Included in the estimates (but not reported) are flags indicating missing values for mother's education, family income, and AFQT score. The variable "number of children" is unique to the activity states equation.

Continues

B. Birth Outcomes

	Without Heterogeneity				With Heterogeneity			
	School	Part Time Work	Full Time Work	Other	School	Part Time Work	Full Time Work	Other
α (factor loading)					.6807***	1.971***	2.099***	2.309***
					(.0140)	(.0176)	(.0108)	(.0232)
Intercept	-.4730**	-3.118***	-.3170	-6.549***	-1.076***	-3.777***	-1.751***	-8.255***
	(.2334)	(.7042)	(.5984)	(1.0349)	(.2153)	(.3764)	(.2393)	(.5319)
Minority Status								
Black	.0829***	.2630***	.3067***	.2696***	.0324**	.0686***	.0428***	.2129***
	(.0122)	(.0224)	(.0104)	(.0288)	(.0118)	(.0183)	(.0093)	(.0249)
Hispanic	-.0180	.1000***	.1284***	.1438***	-.0343**	-.0054	.0194*	.0061
	(.0139)	(.0233)	(.0115)	(.0288)	(.0118)	(.0202)	(.0100)	(.0269)
Human Capital and Scholastic Achievement								
Education _1	-.1439***	-.1820***	-.1324***	-.1891***	-.1287***	-.1106***	-.0629***	-.1172***
	(.0030)	(.0048)	(.0027)	(.0057)	(.0029)	(.0040)	(.0022)	(.0052)
AFQT Score	.0004	.0019***	-.0010***	.0045***	.0014***	.0009**	-.0004*	.0025***
	(.0003)	(.0005)	(.0003)	(.0007)	(.0003)	(.0004)	(.0002)	(.0006)
Family Background (1979)								
Number Siblings	.0063***	.0084**	.0197***	.0070**	.0015	.0000	.0096***	.0012
	(.0016)	(.0025)	(.0016)	(.0031)	(.0016)	(.0021)	(.0014)	(.0030)
Family Income	-.0009**	.0000	-.0016***	-.0038***	-.0006*	.0001	-.0013***	.0009
	(.0003)	(.0006)	(.0003)	(.0010)	(.0003)	(.0005)	(.0002)	(.0009)
Mother Education	-.0050**	-.0093**	-.0004	-.0069**	-.0041**	-.0085**	-.0059***	-.0094***
	(.0017)	(.0030)	(.0015)	(.0031)	(.0016)	(.0026)	(.0014)	(.0028)
Mother Only	-.0093	-.0650***	-.0016***	.0169	-.0225**		-.0006	-.0366*
Family	(.0104)	(.0176)	(.0003)	(.0214)	(.0102)		(.0083)	(.0188)
Personal Characteristics								
Age of Menarche	-.0031	-.0172***	.0115***	-.0753***	-.0067**	-.0194***	-.0055**	-.0376***
	(.0025)	(.0044)	(.0024)	(.0066)	(.0025)	(.0036)	(.0020)	(.0055)
Foreign Born	-.1124***	-.2833***	-.1945***	-.0818**	-.1213***	-.1777***	-.1562***	.0268
	(.0186)	(.0428)	(.0188)	(.0378)	(.0175)	(.0302)	(.0169)	(.0333)
Age	.0907***	.4004***	.1049**	.7449***	.1238***	.3357***	.1427***	.6833***
	(.0212)	(.0600)	(.0492)	(.0891)	(.0195)	(.0307)	(.0199)	(.0458)
AgeSq	.0017***	-.0047***	.0003	.0119***	.0007*	-.0036***	-.0008*	-.0101***
	(.0005)	(.0013)	(.0010)	(.0019)	(.0004)	(.0007)	(.0004)	(.0010)
Age78_13	.0453***	-.0021	.0056	.1859***	.0473***	.0301*	-.0122	.2249***
	(.0126)	(.0222)	(.0117)	(.0283)	(.0129)	(.0197)	(.0101)	(.0261)
Age78_14	.0180*	.0241	-.0024	.1694***	.0157*	.0136	-.0238**	.1874***
	(.0110)	(.0198)	(.0097)	(.0232)	(.0105)	(.0161)	(.0084)	(.0212)
Age78_15	.0113	-.0093	-.0010	.0779**	.0141	.0591***	.0046	.1998***
	(.0106)	(.0202)	(.0097)	(.0248)	(.0102)	(.0158)	(.0082)	(.0205)
Urban	.0002	-.0334*	-.0303***	-.1153***	.0238**	-.0028	-.0190**	.0779***
	(.0137)	(.0206)	(.0110)	(.0253)	(.0118)	(.0164)	(.0092)	(.0214)
Labor Market Conditions								
Per Worker Income	.0043**	-.0215***	-.0214***	.0127***	.0040**	-.0077**	-.0058***	.0008
	(.0016)	(.0030)	(.0014)	(.0032)	(.0015)	(.0023)	(.0011)	(.0027)

*p<.10 **p<.05 ***p<.01

Note: Standard errors are in parentheses. Included in the estimates (but not reported) are flags indicating missing values for mother's education, family income, and AFQT score. The variables "age of menarche", "number of siblings", and "urban" are unique to the birth equation.

Continues

C. Hourly Wage Rates

	Without Heterogeneity		With Heterogeneity	
	Part Time Work	Full Time Work	Part Time Work	Full Time Work
α (factor loading)			-.0148	.0094
			(.0141)	(.0079)
Intercept	.6204**	-.8053***	.6317**	-.8147***
	(.2729)	(.2104)	(.2735)	(.2139)
Minority Status				
Black	-.0208*	-.0021	-.0192	-.0032
	(.0135)	(.0059)	(.0135)	(.0059)
Hispanic	.0755***	.1155***	.0762***	.1149***
	(.0134)	(.0067)	(.0134)	(.0067)
Human Capital and Scholastic Achievement				
Education _1	.0277***	.0304***	.0272***	.0306***
	(.0040)	(.0019)	(.0040)	(.0020)
High School or GED	-.0054	.0052	-.0054	.0050
	(.0099)	(.0056)	(.0099)	(.0056)
Bachelor's Degree or More	.2182***	.1348***	.2173***	.1350***
	(.0225)	(.0081)	(.0225)	(.0081)
Yrs.PT-Exp_1	-.0165*	.0022	-.0161*	.0020
	(.0091)	(.0039)	(.0091)	(.0040)
$(\text{Yrs. PT-Exp\_1})^2$	.0018*	-.0036***	.0017*	-.0036***
	(.0011)	(.0007)	(.0011)	(.0007)
Yrs.FT-Exp_1	.0474***	.0510***	.0471***	.0512***
	(.0068)	(.0043)	(.0069)	(.0043)
$(\text{Yrs. FT-Exp\_1})^2$	-.0017*	-.0023***	-.0017*	-.0023***
	(.0009)	(.0005)	(.0009)	(.0005)
AFQT Score	.0019***	.0034**	.0013***	.0034***
	(.0003)	(.0002)	(.0003)	(.0002)
Family Background (1979)				
Family Income	.0013**	.0012***	.0013**	.0012***
	(.0004)	(.0002)	(.0004)	(.0002)
Mother Education	.0002	.0003	.0002	.0002
	(.0019)	(.0009)	(.0020)	(.0009)
Mother Only Family	.0261**	.0088*	.0265**	.0088*
	(.0114)	(.0057)	(.0114)	(.0058)
Personal Characteristics				
Foreign Born	.0484**	-.0159*	.0477**	-.0156*
	(.0190)	(.0083)	(.0189)	(.0083)
Age	-.0036	.0930***	-.0038	.0934***
	(.0244)	(.0180)	(.0244)	(.0183)
AgeSq	.0002	-.0016***	.0002	-.0016***
	(.0005)	(.0004)	(.0005)	(.0004)
Age78_13	-.0428**	-.0063	-.0431**	-.0063
	(.0137)	(.0062)	(.0138)	(.0063)
Age78_14	-.0164	-.0392***	-.0164	-.0392***
	(.0124)	(.0054)	(.0124)	(.0054)
Age78_15	-.0300**	-.0210***	-.0305**	-.0210***
	(.0124)	(.0053)	(.0125)	(.0054)
Labor Market Conditions				
Emp Growth	-.2739*	-.4824***	-.2707*	-.4844***
	(.1764)	(.0988)	(.1770)	(.0996)
Per Worker Income	.0227***	.0322***	.0226***	.0322***
	(.0017)	(.0006)	(.0017)	(.0006)

*p<.10 **p<.05 ***p<.01

Note: Standard errors are in parentheses. Included in the estimates (but not reported) are flags indicating missing values for mother's education, family income, and AFQT score. The variables "high school or GED" and "bachelor's degree or more" are unique to the wage equation.

Figure 1: Age-Specific Educational Attainment by Race and Ethnicity

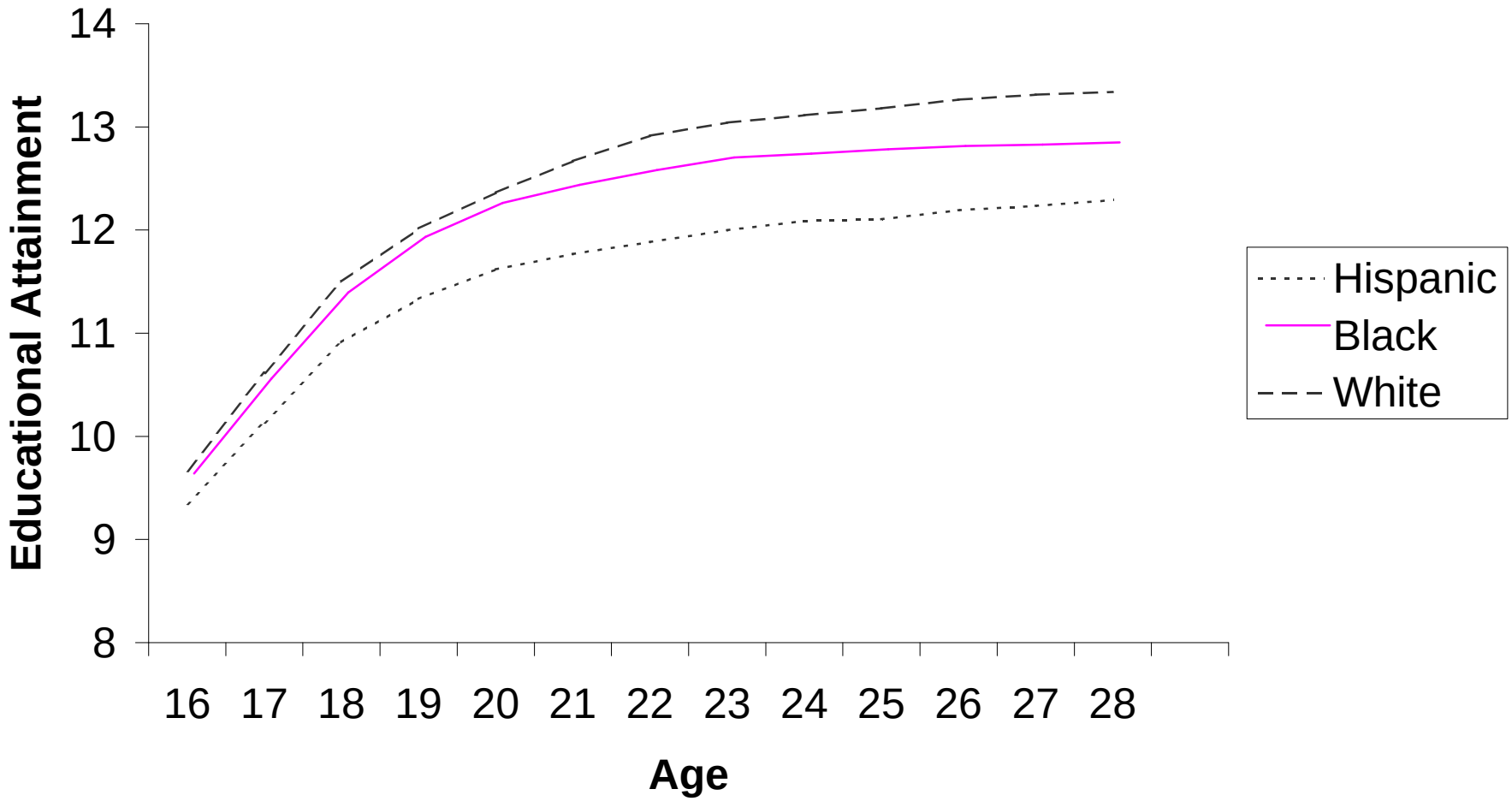


Figure 2: Age-Specific Work Experience, by Race and Ethnicity

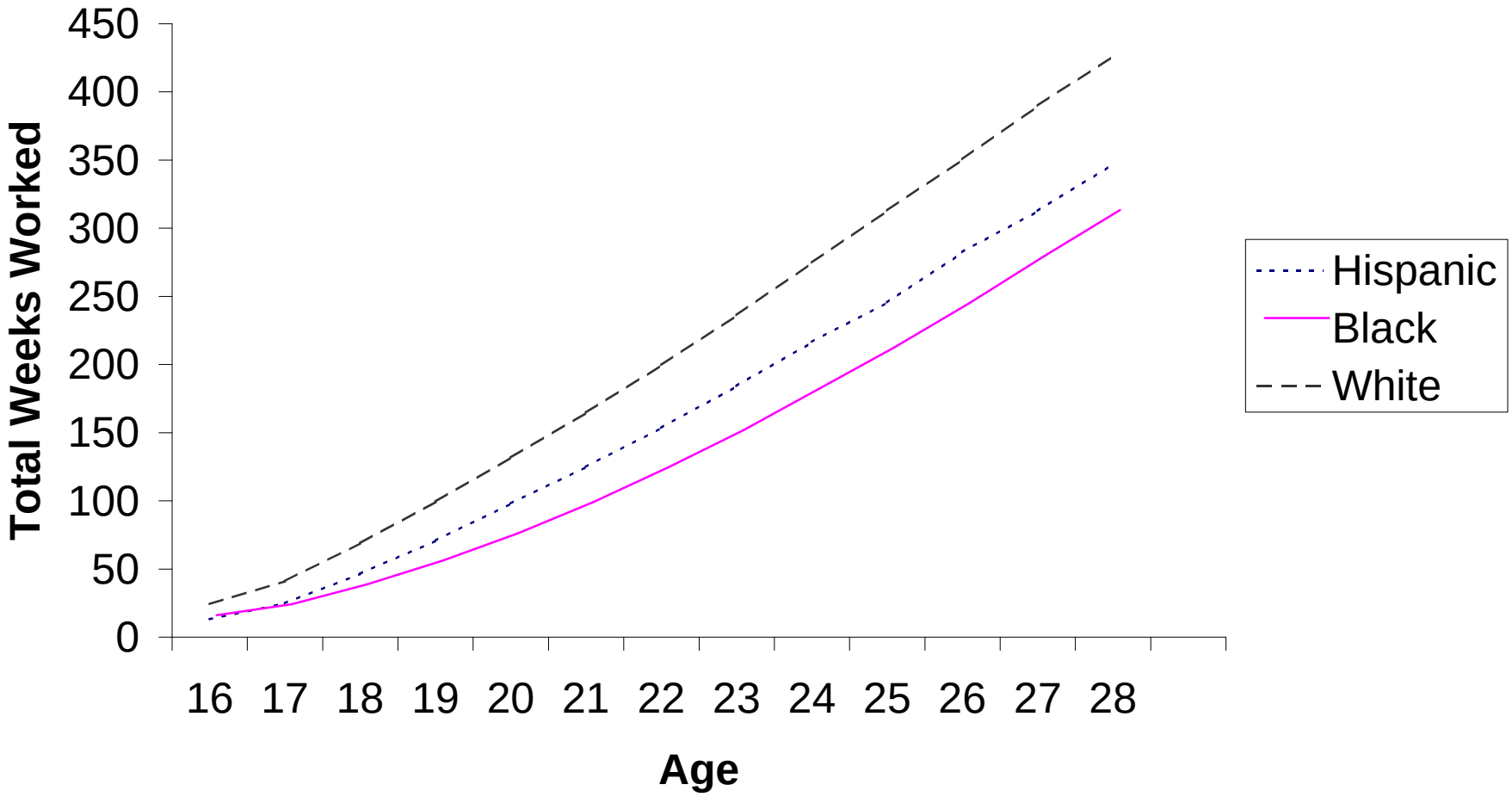


Figure 3: Age-Specific Cumulative Proportion Ever Married by Race and Ethnicity

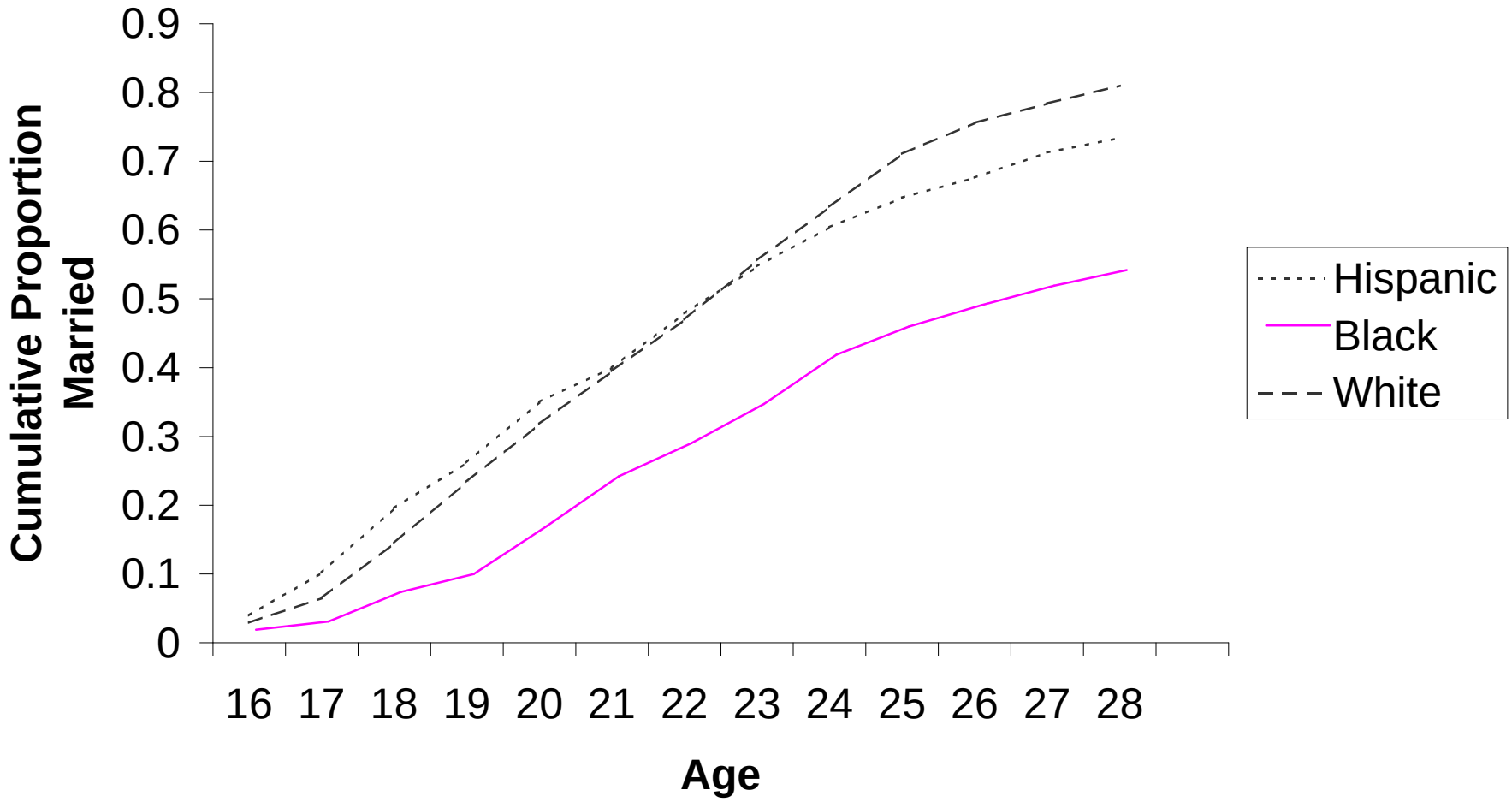


Figure 4: Age-Specific Cumulative Proportion with Child, by Race and Ethnicity

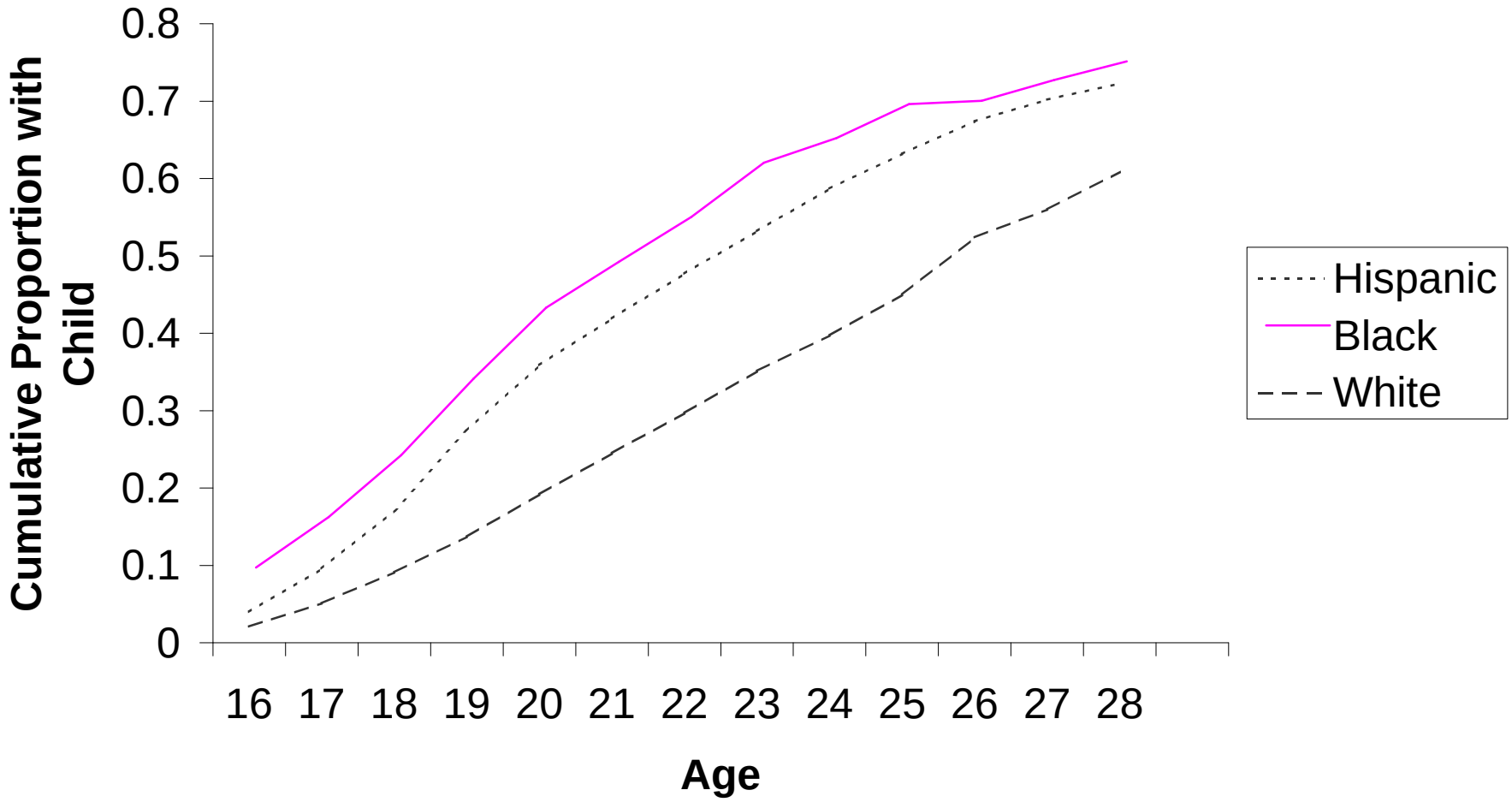
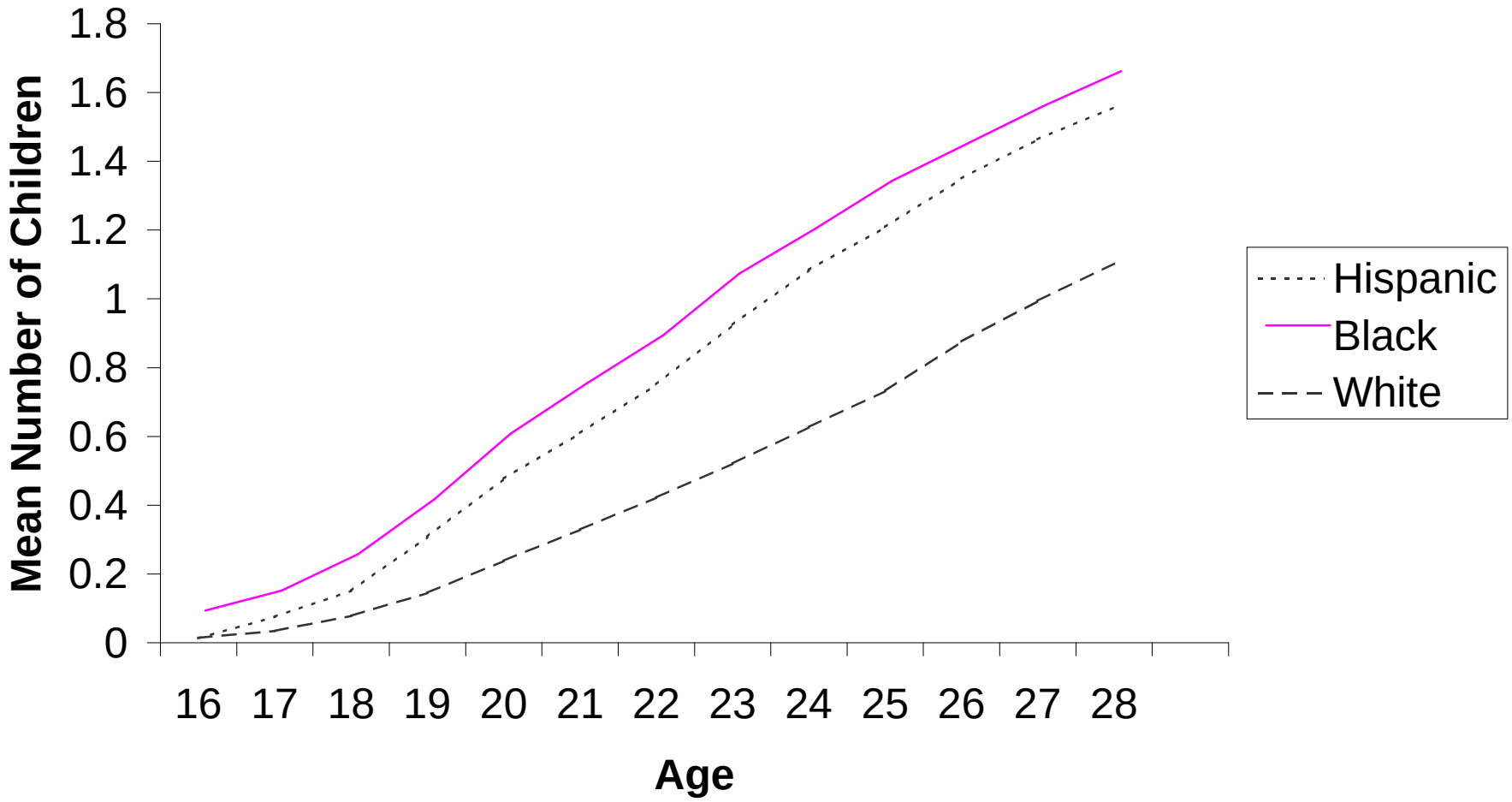


Figure 4a: Age-Specific Mean Number of Children by Race and Ethnicity



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