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Linking Intergenerational Associations of Status Attainment and Family Formation:

The Early Transition to Adulthood among American Youth*

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Linking Intergenerational Associations of Status Attainment and Family Formation: The Early Transition to Adulthood among American Youth

After three decades of substantial change in American family formation patterns and the resulting increase in single parent and stepparent families, researchers try to ascertain the intergenerational and socioeconomic consequences of these demographic changes. On average, children raised in nonintact families are less successful in making the transition from adolescence to adulthood relative to children raised with both parents, such that children from nonintact families are more likely to have a teen birth and less likely to complete high school and attend college (McLanahan & Sandefur, 1994). The children's education and fertility outcomes, however, are probably not independent from each other. In fact, the life course perspective and prior research leads us to expect that starting a family impacts the development of one's career and vice versa (Marini, 1978).

Researchers have documented a clear link between economic decisions and family formation decisions (e.g., Marini and Fan, 1997). Researchers predicting a person's socioeconomic status (such as education, income or labor force participation) recognize the importance of their fertility and family behavior. Likewise, researchers of fertility behavior and family structure acknowledge the importance of socioeconomic characteristics (such as education) (e.g., Bumpass and Castro Martin, 1991). Therefore, family formation behavior and economic behavior are clearly linked within one person's life. Arland Thornton, in discussing the role of socioeconomic characteristics on fertility, argues that "[c]hildren, family, work, and lifestyles form a very complex cluster that should be examined together" (1979:174). Given that these characteristics cluster within a person's life, one could expect these characteristics to

cluster across generations, within families. Researchers need to articulate and investigate the links between family behavior and socioeconomic status across generations.

I propose that the intergenerational process of status attainment is linked to the intergenerational process of family formation behavior. In my larger research agenda, I plan to research the extent to which these two intergenerational processes are related. Presently, I am interested in researching how these intergenerational processes are related at a particular stage in a child's life course - the early transition to adulthood - because early experiences in the transition to adulthood generally place individuals on trajectories important for later well-being. The present research investigates the role of parental socioeconomic status and family structure for the simultaneous determination of two early experiences – a child's education transitions and having an early birth. By modeling these early fertility and education transitions simultaneously, the present research can provide better estimates of the effects of family background characteristics for a child's early transition to adulthood. In addition, the present research begins to investigate the linkages between the intergenerational process of status attainment and the intergenerational process of family formation.

Theories and Research Linking these Two Intergenerational Processes

I am interested in bringing together the now separate literatures on the intergenerational association of socioeconomic status and the intergenerational association of family formation behavior to determine the relatedness of these two intergenerational processes. Sociological research should thoughtfully incorporate the literature on the intergenerational associations in family behavior with the literature on the intergenerational associations in socioeconomic status because the life course transition to adulthood involves both the socioeconomic and family spheres of life. In an individual's transition to adulthood, two key role transitions are the

creation of one's own family and developing one's own career to become financially independent (Hogan and Astone, 1986). The life course perspective leads us to expect that starting a family impacts the development of one's career and career choices influence family formation (Hogan and Astone, 1986). Research documents that people appear to act on this theoretical hypothesis. For example, men in America tend to delay marriage until after they have completed schooling (Hogan, 1978). Therefore, career and family appear linked in the minds and behaviors of American young adults.

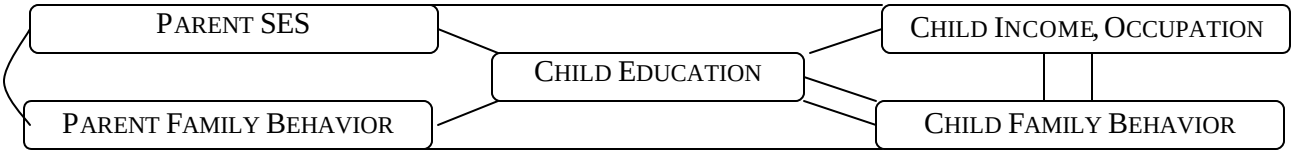
The life course perspective also informs our understanding of the timing of various role transitions. Although only a few role transitions in life are highly structured, many role transitions are expected to occur at certain points within the life cycle (Stryker & Statham, 1985). The timing of the role transitions into marriage, parenthood, or full-time employment is significant. Individuals making role transitions at atypical points in the life course or in unusual sequences experience more difficulty with these role changes (Stryker & Statham, 1985). Unusual career sequences or early motherhood is associated with more difficulty (for a review, see Stryker & Statham, 1985). The timing of these two transitions to adulthood can become quite complicated. Some individuals decide their family and career trajectories simultaneously or decide one transition based on the anticipation of the other (Hogan and Astone, 1986).

Social structure impacts role transitions. "Social structures can facilitate or hinder transitions, and important questions can be raised about what structures do so, how they do so, and with what consequences" (Stryker & Stattham, 1985: 339). An individual's family of origin conditions the transition to adulthood. The present research seeks to further investigate how the family impacts the transition to adulthood. Given that socioeconomic and family formation transitions are linked together for both the children and the parents, it seems that any

intergenerational analysis of these transitions should also be considered jointly. Research should test whether parental socioeconomic status influences a child's status through its impact on the offspring's family and fertility behavior. And research should test whether parents' family structure and fertility histories influences the child's family formation behavior through its impacts on the child's socioeconomic outcomes, especially education.

Graphically, I am interested in the components of the following model:

Figure 1. Theoretical Relationships between the Intergenerational Processes of Socioeconomic Status and Family Formation



The arrows represent paths through which these parental characteristics affect the offspring's characteristics, though the model should not be considered a structural equation model. In Figure 1, parents' socioeconomic status can have both direct and indirect effects on offspring's socioeconomic status. Likewise, parental family and fertility behavior can have both direct and indirect effects on offspring's socioeconomic status. The offspring's family formation behavior both affects and is affected by their education and career decisions. At present, I am not investigating the linkages involves the child's income and occupation.

Previous research estimating the interplay between education and fertility within one generation can be categorized into the following three groups: (1) research estimating event-history models predicting the timing and sequencing of educational and fertility transitions; (2) research estimating simultaneous equation models predicting the joint determination of these two processes; and (3) research estimating the likelihood of educational and labor market success

among women who have an early birth. My review of the literature will focus on the first two areas of research, but it is important to note that women who have an early birth have lower levels of educational attainment and fewer resources in adulthood (e.g., Teachman & Polonko, 1988).

Upchurch and McCarthy (1990) estimate event-history models to determine the relationship between the timing of a first birth and high school completion based on data from the National Longitudinal Survey of Youth. They find that a first birth influences high school graduation, but only among those students who have already dropped out of high school. Those students who have a baby while still enrolled in school are just as likely to graduate as those who do not (Upchurch & McCarthy, 1990). While the authors do not attribute a causal sequence to the processes modeled, the models are identified through the timing of the measured events. The empirical, inverse relationship generally found between a woman's education and the timing of her fertility could reflect underlying causal processes influencing both outcomes simultaneously, especially if both attitudinal and behavioral factors are considered (Marini, 1984). Cutright (1973) suggests that a lack of motivation leads to both low educational attainment and early childbearing. If, for example, the individual or her community devalues education (possibly because of a realistic assessment of her limited opportunities) and values other avenues for success in adulthood, such as parenting (Geronimus & Korenman, 1992), then it would be difficult to determine the underlying order of choices influencing both school and early fertility. Although investigations into the sequence of events are interesting, I argue that event-history models do not provide evidence of the theoretical processes at work. As such, I prefer models of simultaneous equations to better understand the processes and factors leading to the joint determination of education and fertility choices among young women.

For simultaneous equation models to arrive at estimates of the joint determination of fertility and education, researchers have to make strong theoretical assumptions about the causal relationships among variables in the model. Previous research using simultaneous equations has made different exclusionary restrictions and arrives at different conclusions. Rindfuss, Bumpass, and St. John (1980) found that education has stronger effects on fertility than fertility has on education. These authors use father's occupation as an instrument for education and they use a measure of fecundity as an instrument for fertility (Rindfuss, Bumpass, & St. John, 1980). On the other hand, Hofferth and Moore (1979) conclude that fertility has stronger effects on education than education has on fertility. In fact, among women who have their first child at age 18 or younger, the relationship between fertility and education is recursive, whereby fertility only affects education. But among women who have their first child after age 18, there is a simultaneous relationship, but the effects of fertility on education are stronger than the effects of education on fertility. Hofferth and Moore (1979) use an index of the home and school environment and the number of siblings as instruments for education and use age at marriage and whether the woman's family was intact at age 14 as instruments for fertility. Marini (1984) argues that Hofferth and Moore underestimate the effect of education on fertility because their instruments are problematic and because their sample is truncated at age 27, leading to a selectivity bias. Marini goes on to argue that Rindfuss et al. underestimate the effect of fertility on education because the exogenous variables in their model explain very little of the variance in age at first birth and the predicted value of age at first birth is used as a regression in estimating the final education equation (1984). Marini (1984) also estimates simultaneous equation models, but one that also controls for selection into having a birth. Marini uses fecundity to identify the education equation and she uses both enrollment in a college prepatory curriculum and grade

point average to identify the age at first birth equation. She estimates large effects in both causal directions, but finds that the dominant direction of causality is from educational attainment to age at first birth.

I see two problems with the previous research using simultaneous equation models. First, each study utilizes problematic instrumental variables. Hofferth and Moore's use of age at first marriage as an instrument for fertility is questionable because age at first marriage is endogenous to this process (Marini, 1984). Contrary to the assumptions made by Hofferth and Moore, recent research finds that family structure influences a child's educational attainment (Manski, et al., 1992; McLanahan & Sandefur, 1994). Furthermore, the number of siblings one has could reflect orientations to family (Marini, 1984). Rindfuss and his colleagues use father's occupation as an instrument for education, but research concluding that a father's occupation (and other measures of socioeconomic status) influence the likelihood a female has an early and nonmarital birth (Wu, 1996; Mayer, 1997) calls into question this exclusionary restriction. Finally, Marini's instruments for education could be problematic to the extent that high school grade point average and placement in the college prepatory track reflect motivation and commitment to school relative to other options for self-fulfillment. Since these exclusionary restrictions identify their results, their findings and conclusions are questionable. Second, all of the studies conceptualize and measure educational experiences by their end product – educational attainment at some later age. Therefore, the analysis investigates the timing of a first birth relative to a series of educational choices and transitions. Rindfuss and his colleagues note that

> the observed relationship between completed education and completed family size is the cumulative outcome of a complex process that involves attitudes and decisions about both education and fertility that may change as time passes or as

> the woman moves from one stage to the next, and that it is necessary to examine empirically the various stages in the process." (433)

Their research, however, does not model each stage in the process. In the present research, I analyze one stage in the process – the early transition to adulthood when a young woman passes from the years of mandatory schooling to higher education. With a focus on this early phase in the transition to adulthood, we can better understand the relationship between education and fertility at this stage and, therefore, what facilitates a successful transition to adulthood.

In a recent and ambitious article, Upchurch, Lillard and Panis (2002) combine event-history analysis with a simultaneous equation approach, estimating the simultaneous determinants of nonmarital fertility, education, marriage, marital dissolution, and marital fertility. Using data from the National Longitudinal Survey of Youth, they model the processes that generate nonmarital fertility jointly with these other life course events, accounting for the sequencing of events and the unobserved correlations across processes. Upchurch and her colleagues find that the risk of nonmarital conception increases immediately after leaving school, but the educational effects are less pronounced for black women than for other women. Their results indicate that it is important to account for unobserved heterogeneity because women with a higher unobserved propensity for conceiving nonmaritally also have a lower unobserved propensity for continuing in school. To identify these models, the authors make the strong assumption that unobservable factors that affect both nonmarital fertility and other life course events are woman-specific and invariant with respect to age, time, and prior life course experiences and that they are jointly normally distributed. As the authors note, if changes in unobservable factors affect multiple life course events, then the coefficient estimates will be biased. While this study dramatically improves upon previous research, it is not clear that their assumption is tenable. Their conceptual model is grounded in an economic model of fertility and

in a life course perspective, but a life course perspective and the literature on the transition to adulthood would suggest that several unobserved factors, such as home-leaving and labor force participation, will change over the ages under consideration and would influence multiple life course events.

The paper by Upchurch and her colleagues covers lots of ground and improves our understanding of life course events occurring in one generation, but I have a different research question. I am primarily interested in understanding a multi-generational process. I seek to arrive at better estimates of the role of family background for a child's transition to adulthood, focusing on education and fertility. Researchers need to account for the linkages between the child's educational attainment and family formation behavior to better understand the intergenerational associations in socioeconomic status and the intergenerational associations in family behavior. To fully model these intergenerational processes together at this early stage of in a daughter's life course, however, I need to model these dependent variables jointly. With a simultaneous equation approach, I can better determine the direct and indirect effects of parental characteristics in these intergenerational processes and, therefore, better understand how parental socioeconomic status influences a daughter's fertility and how parental family behavior influences a daughter's education. Using a sample of non-Hispanic White and non-Hispanic Black females from the National Education Longitudinal Study of 1988, I will begin to address these concerns.

Data and Methods

Data

The present research uses the National Education Longitudinal Survey of 1988 (NELS:88). This nationally representative data set for the United States provides the necessary

information on both the parents' family and socioeconomic characteristics and the child's early adult behavior to adequately test the proposed linkages across education and fertility processes. NELS:88 is a two-stage stratified cluster sample representative of persons in eighth grade in 1988. The students, including those dropping out of school, were resurveyed in 1990 (10th grade), 1992 (12th grade), 1994, and 2000. Parents were surveyed in the base year and in 1992. I utilize information collected in the base-year survey and the 1994 survey for the longitudinal cohort. The sample is restricted to include only those students whose parents or guardians' completed the 1988 parental survey since parental reports of socioeconomic status characteristics will better measure the child's family background. This is not a severe restriction since all parents of 8th grade sample students were given the survey and 91% of the parents returned completed surveys.

At present, the analysis is further restricted to only White and Black females given that the transition to adulthood is different for girls and boys. This exclusion reflects a desire to carefully theorize gendered differences in the transition to adulthood and gendered differences in parental effects (role modeling, information, monitoring) for this transition. In addition, this exclusion reflects the empirical finding that females better report their fertility and relationship histories. Future research will extend these analyses to males and members of other groups and test if these processes are statistically different for members of different racial and ethnic groups and for boys and girls. The final sample contains 5,707 females, 793 of whom are Non-Hispanic Black and 4,914 are Non-Hispanic White.

The parents' family formation behavior is measured by the family's structure when the student is in the 8th grade. Family structure is defined according the parents' reports of family composition, their relationship to the student, and the spouse/partner's relationship to the

student[1]. Due to small cell sizes for particular categories of families, family composition has been collapsed into (1) two-parent biological family, (2) single parent family, (3) step-parent family, and (4) other relative or non-relative family. Students with missing parental reports of family structure are coded as living in an "other" family type. In the models, two-parent biological families are omitted.

Parental socioeconomic status is measured with three indicators derived from the 1988 Parent Survey – the average of parents' years of education, the average of parents' occupational attainment, and the log of family income[2]. To calculate the average of parents' educational attainment, I rescale each of the original credential categories for the highest level of education achieved into the credential's average years of schooling. Then, I average the years of schooling achieved by the parent and their "spouse/partner"[3]. For the average of parents' occupational attainment, I transform the original occupational categories into occupational education scores (Hauser and Warren, 1997)[4] and then I calculate the mean occupational education scores among valid parental occupational measures. Finally, family socioeconomic status is also measured

[1] The legal relationship between the adults in the household does not factor into the measure of family structure; cohabiting and married couples are treated the same in the analysis.

[2] Although the 8th grade Student Survey asks about parents' education and occupation, the "parental" report of these characteristics are more reliable than the 8th grader's report. Therefore, I use only use the data from the 1988 Parent survey for these family characteristics.

[3] Biological parents who are separated from the other biological parent of the child are instructed in the parent survey to provide information only about their current partner, if they have one, and not the absent parent. Therefore, the available data regarding parental education and occupation reflects the parents' living arrangements in 1988.

[4] The NELS:88 occupation question (on both the parent and student survey) was poorly worded. The instrument asked respondents to identify which category of occupations best fits with what they do. Exemplar occupations were provided for each category. The categories provided to not follow the U.S. Census classification system. To best reflect the respondents' understanding of the question, I have calculated the occupational education scores for each category as the average of the occupational education scores of the exemplar occupations (see Lucas, 2001).

with family income. I rescale the survey's categorical measures of family income into their average dollar value and use the started log of family income in the models.

Parental expectations for the child's educational attainment provide an interesting test for the linkages of these two intergenerational processes. Previous research, conducted within the framework of the Wisconsin model of status attainment, documents that parental expectations for the child's education serves as an intermediary between parents' education and the child's educational attainment. While the present research is not conducted in a structural equation framework, parental expectations will be considered theoretically as a mediating variable between parental socioeconomic status and the outcomes under consideration. Parental expectations are measured as the number of years of education associated with the level of education the parent expects the child to attain. Parental educational expectations are known to affect the child's educational transitions, but they could also affect early fertility if messages about how far the daughter should go in school contain explicit or implicit messages about the timing of her fertility.

Finally, several control variables have been included in the analyses. The student's number of siblings derives from both the student and parent 1988 surveys, counting all biological, step-, half-, and adopted siblings. The student's region of residence within the United States is categorized into three dummy variables, with the South excluded. Similarly, the urbanicity of the student's residence is categorized into dummy variables for central city and rural residence, with suburban residence omitted. The student's standardized score from the 8th grade mathematics achievement test and their placement in the school's tracking system are included in the models to adjust for academic achievement and experience. The student's track placement is measured by the teacher's report of students' abilities using a three-point scale

(below average, average, above average) relative to all 8th grade classes. To account for whether the student has been held back or accelerated in school, the student's year of birth is included in the models. Finally, all missing data have been assigned to the unweighted mean value and flag variables have been created for inclusion in the models.

Models

To research these questions, I will conduct two sets of bivariate probit models. The first set of models will estimate the joint determination of completing high school and having an early birth. Completing high school is defined as having received a high school diploma or a GED certificate by 1994 and having an early birth is defined according to whether the student has a birth by 1994 (approximately age 20). Akin to Mare's education transitions models (1980), I will estimate a second set of models predicting the joint determination of college attendance and having an early birth for those women who have completed high school. College attendance is defined with two indicators to test the robustness of the results to different specifications. The two measures of college attendance are defined as whether the female attends: (a) any post-secondary education, and (b) any four-year college. Because I do not vary the measurement of the female's fertility by the timing of her education transitions, I am, therefore, assuming that her fertility and education decisions are made jointly regardless of whether a birth follows or precedes an education transition. This assumption rests primarily on the fact that the life course period under consideration is relatively short[5].

For each set of equations, I first estimate bivariate probit models with correlated disturbances (Model 1). Then, to correct for bias in the estimated coefficients for family

[5] Given the short period in the life course under consideration here, one might also question whether the education transition decisions are made sequentially, as I have modeled them, or simultaneously, as Cameron and Heckman argue (1998).

background variables, I will estimate bivariate probit models with instrumental variables and correlated disturbances (Model 2). Finally, I will estimate nonrecursive models to determine the influence of fertility on education and the influence of education on fertility by directly including these outcomes in the equation for the other (Model 3).

Since NELS oversampled some types of schools to enable analyses of small subpopulations and given sample attrition across survey years, I include sample weights to calculate proper population estimates for both descriptive statistics and multivariate analyses. In addition, the multivariate analyses conducted in STATA account for the multi-stage cluster design of NELS:88 by using information on the sampling strata and primary sampling units (schools) to generate weighted point estimates and appropriate standard errors. Since the clustering of observations within schools violates the maximum likelihood theory, model χ^2 statistics are not provided.

Instrumental Variables

The difficulty in estimating simultaneous equation models is finding appropriate instruments for each outcome. After several investigations into possible instruments, I have uncovered very promising instrumental variables. The 8th grade teacher's report of whether the student has a disability serves as an excellent instrument for the student's educational transitions because it is significantly related to high school completion and college attendance, but it is not associated with having an early birth[6]. These associations are noted in the first two rows of Table 1.

There are two viable options to instrument for a female's fertility in equations predicting her education transitions. First, I can use a standardized scale about her relationships with boys.

[6] The original wording of the question asks the teacher whether the child has "a physical or emotional handicap that is affecting his or her school work."

In the 1990 survey, students were asked to indicate the degree to which the following statements were true: "I get a lot of attention from members of the opposite sex," "I'm not very popular with members of the opposite sex," "I make friends easily with boys," and "I do not get along very well with boys." Individuals could respond on the following scale: "true," "mostly true," "more true than false," "more false than true," "mostly false," and "false." I have transformed these responses into a six-point scale, where higher values reflect greater attention from or popularity with boys. The responses to these four statements have been summed and then the scale has been standardized. This standardized scale is significantly associated with an increase in the likelihood of having an early birth, but it is not significant in predicting her education transitions, as noted in Table 1. This scale might reflect both the female's interpersonal communication style and her physical attractiveness. Second, I could instrument for fertility using the female's age at first sex and the square of her age at first sex. Although the two age at first sex measures are more strongly associated with fertility than is the standardized scale for a girl's relationships with boys, age at first sex is significantly associated with high school completion and attending a four-year college (see Table 1). Therefore, I utilize the measure of the female's relationship with boys in simultaneous equation models predicting high school completion and attendance at a four-year college, but I use the two measures for the female's age at first sex in the simultaneous equation models predicting any post-secondary education.

After extensive research into possible instruments for the simultaneous equation models, I am confident that these measures – the teacher's report that the female is disabled, the standardized measure of the female's relationships with boys, and measures of her age at first sex – are valid instruments and thereby, identify the simultaneous equations I seek to investigate. In addition, these are better instruments for fertility and education than has been utilized in previous

research because they do not reflect the family context. With this modeling framework, I can not only estimate the reciprocal influences of education and fertility on each other, but I can also derive better estimates of the effects of parental characteristics on each of these outcomes.

Results

Table 2 provides the weighted, descriptive statistics for the present research. Ninety-one percent of the sample completes high school, seventy-three percent attend a post-secondary institution, and forty-one percent attend a four-year college by 1994. Only seventeen percent of the females in the sample have an early, first birth. Given the dominance of Whites in the sample, the total sample statistics better reflect their experiences. Black females are less likely to finish high school and attend college, but are more likely to have an early first birth. In fact, over forty percent of Black females in this sample have an early birth. Finally, the Black females have lower mean socioeconomic characteristics and are more likely to live in nonintact families relative to the White females, but the Black females also display greater variation in these characteristics.

One would expect an early birth to negatively impact the likelihood of completing high school and going on to attend college, but it is useful to get a sense of the magnitude of this negative association. In the NELS:88 data, an early birth decreases a girl's odds of completing high school by 92%. Among those girls who do complete high school, an early birth decreases their odds of any post-secondary education by 87% and their odds of attending a four-year college by 93%. The negative association between early fertility and college attendance is not as large for Black females as it is for White females. For White females who have graduated from high school, an early birth reduces the odds of attending a post-secondary institution by 89% and

a four-year college by 95%. For their Black counterparts, an early birth reduces the odds by 77% and 90%, respectively.

Simultaneous Predictions of Having an Early Birth and Completing High School

Table 3 provides the results from the bivariate probit models predicting high school completion and having an early birth. In Model 1, where the two outcomes are estimated to have correlated disturbances, we find very strong evidence that there is a large and negative correlation between the two errors. This negative correlation in the disturbances reinforces the need to model these two processes simultaneously.

Model 2 adds the instrumental variables into the bivariate probit models. The models with instrumental variables change some of our estimated effects of various family background characteristics. With the instrumental variables in the models, the associated effect of growing up in a single parent family becomes stronger for predicting an early birth and weaker for high school completion. The effect of growing up in a step-parent family is reduced for both outcomes and the indicator for step-parent family becomes statistically nonsignificant for predicting high school completion.

With regard to parental socioeconomic characteristics, the coefficient for parental occupation becomes larger for both outcomes with the inclusion of the instrumental variables. Family income, however, becomes statistically nonsignificant for predicting an early birth, but it remains significant for predicting high school completion. As noted previously, parental expectations for the child's eventual educational attainment provide an interesting mechanism by which parental socioeconomic characteristics might be transmitted to their children. With the inclusion of the instruments, parental expectations are estimated to have stronger negative effects on early fertility and weaker positive effects on high school completion. Therefore, it appears

that parental messages about educational expectations have explicit or implicit messages about the timing of fertility.

Previous research repeatedly finds that Blacks are more likely to complete high school, once socioeconomic characteristics are controlled. When the instrumental variables are included in the models, however, the Black advantage for completing high school actually increases. Although previous research and Model 1 finds that Blacks are more likely to have an early birth, when the instrumental variables are included in the models, Blacks are not significantly different than Whites in their likelihood of having an early birth.

Finally, indicators of the child's achievement and placement within the school system change between Models 1 and 2. Although the coefficient for the child's 8^{th} grade standardized mathematics test score remains unchanged for predicting high school completion, it becomes smaller for predicting early fertility. Interestingly, in Model 2 the child's placement in the school's tracking system becomes statistically nonsignificant for high school completion, but becomes significant in predicting an early birth. This suggests that our educational tracking system not only sends messages to the students about their academic ability, but also about the appropriateness of having an early birth.

Model 3 estimates the nonrecursive model, including high school completion in the equation for having an early birth and including whether she has an early birth in the equation for high school completion. I find large effects in both causal directions, but I find that the dominant direction of causality is from early fertility to high school completion. Once the nonrecursive model is estimated, family structure and parental expectations no longer have direct effects on high school completion, but parental occupation continues to have direct effects on both outcomes. In addition, in the nonrecursive models, being Black has a direct and positive

association with both high school completion and having an early birth. Finally, the student's 8th grade mathematics test score continues to have direct effects on fertility and high school completion.

In summary, parental socioeconomic status equally affects both high school completion and having an early birth. And although family structure affects both outcomes, the effects are stronger for having an early birth. If these models had not been estimated in a simultaneous framework, we would have underestimated the effects of parental occupation for having an early birth and high school completion and underestimated the effects of growing up in a single parent family for having an early birth, but we would have overestimated the effects of family structure for high school completion.

Simultaneous Predictions of Having an Early Birth and Attending College

For those students who complete high school, I also estimate a simultaneous equation system for their college attendance and having an early birth. College attendance is measured in two ways to ascertain the robustness of the results across different specifications. Table 4 displays the results from the bivariate probit models measuring college attendance as any post-secondary education and Table 5 displays the results when college attendance is measured as attending a four-year college.

Turning first to the results for any post-secondary education, we find strong evidence that college attendance and early fertility are negatively associated with each other. The estimated correlation for the disturbances of any post-secondary education and having an early birth is smaller, however, than the estimated correlation between high school completion and having an early birth. This results, in part, from the fact that the sample included in these models have all completed high school and, thus, those who have an early birth are not as likely to be in this

sample and those mothers who are in the sample are likely to be a select group of students possessing characteristics enabling them to complete high school despite their early fertility.

When the instrumental variables are included in the models, the coefficients for living in a single or step-parent family and parental expectations become statistically nonsignificant for predicting an early birth, but these three variables remain significant, and even increase in magnitude, for predicting any post-secondary education. For both outcomes, the coefficients for parental occupation increase with the inclusion of instrumental variables, as do the coefficients for family income, number of siblings, being Black, and standardized mathematics test scores. This pattern of results – whereby the coefficients increase in models with instrumental variables - suggests that we have underestimated the effects of these background characteristics for having an early birth and attending a post-secondary institution in previous analyses where these two processes have not been modeled simultaneously. The effects of parental education on attending a post-secondary institution remain relatively constant even with the inclusion of instrumental variables.

In the nonrecursive models, the effects of family structure and number of siblings for attending a post-secondary institution become statistically nonsignificant, suggesting that the association of these two variables with post-secondary education operates indirectly through their influence on early fertility. Although parental occupation becomes statistically nonsignifcant for both outcomes, family income and parental education continue to have strong, direct effects on post-secondary attendance. Similar to the simultaneous models of high school completion and having an early birth, the coefficients for being Black increase for both outcomes in the nonrecursive models. Finally, for those women who successfully complete high school,

attending a post-secondary institution more strongly influences having an early birth than having an early birth influences post-secondary attendance.

Some of the above results appear sensitive to the definition of college attendance. As noted in Table 5, when college attendance is narrowed to only include attendance at a four-year college, the results for family structure, number of siblings, parental expectations, and parental occupation differ. In my discussion of the differences between the models displayed in Tables 4 and 5, I will first focus on variables whose patterns of significance differ between models measuring attendance at a four-year college versus at any post-secondary institution. The most striking difference across the two models occurs for the measures of family structure. When college attendance is measured as attending a four-year college, the indicators for single parent and step-parent families remain statistically significant in the equation predicting an early birth when the instrumental variables are included, but this was not the case when college attendance is measured as any post-secondary education. For the equation predicting attendance at a four-year college, the indicator for a single parent family is not significant when the instrumental variables are included, but the indicator for a step-parent family is significant. In Table 5, parental expectations for retain significance for predicting an early birth in Model 2, but they are not significant in Table 4. When the nonrecursive model is estimated (Model 3), parental expectations no longer have a direct effect on the likelihood of attending a four-year college. Parental occupation also manifests a different pattern such that parental occupation is never significant in models predicting attendance at a four-year college, but is significant in models predicting any post-secondary attendance.

Some of the estimated coefficients differ in magnitude between Tables 4 and 5. The estimated coefficients for parental expectations in Table 5 are larger for both outcomes relative

to their counterparts in Table 4. In addition, the effect of parental occupation for having an early birth is larger in Table 5. Relative to the coefficients for being Black in Table 4, the coefficients for being Black in Table 5 differ such that the effects for having an early birth are smaller, but the effects for college attendance are greater. Finally, the coefficients for school track are larger in models predicting four-year college attendance.

The final point of comparison between the models displayed in Tables 4 and 5 involve the relationships between the two, simultaneously estimated variables. The estimated covariance between the disturbances is larger in models predicting attendance at a four-year college and having an early birth. The most important point of similarity, however, is that in both Tables 4 and 5, the dominant direction of causality is from college attendance to early fertility.

In summary, for those females who complete high school, parental socioeconomic status more strongly affects college attendance than having an early birth. If these models had not been estimated in a simultaneous framework, we would have underestimated the effects of parental occupation for having an early birth and college attendance. When college attendance is measured as any post-secondary education, family structure has greater effects on college attendance than on whether the daughter has an early birth, but when college attendance is measured as attending a four-year college, family structure has greater effects on the daughter's fertility.

Discussion

The present research sought to better estimate the effects of family background characteristics on the early transition to adulthood for young women through simultaneous equation modeling. Given my interest in linking the intergenerational association of

socioeconomic status and the intergenerational association of family formation, the key family background characteristics are family structure and parental socioeconomic status. The results demonstrate that parental socioeconomic status affects both high school completion and having an early birth. For those who complete high school, parental socioeconomic status more strongly affects college attendance than having an early birth. If these models had not been estimated in a simultaneous framework, we would have underestimated the effects of parental occupation for having an early birth, high school completion, and attendance at any post-secondary institution.

Family structure affects both high school completion and having an early birth, but the effects are stronger for having an early birth. For those female students who complete high school, the results suggest that family structure affects both college attendance and having an early birth, but the results are sensitive to the way in which college attendance is measured. If we had modeled these education transitions and early fertility separately, we would have underestimated the effects of growing up in a single parent family for having an early birth and we would have overestimated the negative effects of growing up in a step-parent family for having an early birth and making successful education transitions.

As noted, parental expectations for their child's eventual educational attainment provides an interesting test of the association between the intergenerational process of status attainment and the intergenerational process of family formation. Parental educational expectations not only influence a student's education transitions, but also her likelihood of having an early birth. In fact, had we estimated the process of having an early birth separate from the process of education continuation decisions, we would have underestimated the effects of parental education expectations for the likelihood a daughter has an early birth. This suggests that

parental messages about education continuation decisions carry along with them messages about delaying fertility.

The large and significant correlations in disturbances strongly suggest that the process of early fertility is linked to the processes for high school completion and college attendance. Thus, future research should continue to model these processes together. In addition, we need to develop better theoretical propositions for understanding the mechanisms by which these two early adult transitions are linked. When the nonrecursive models are estimated, there are strong effects of each outcome on the other, but the causal direction of effects depends upon the education transition under consideration. Having an early birth more strongly influences high school completion, but among those who complete high school, college attendance more strongly influences having a birth.

To conclude, there is strong evidence that the intergenerational processes of status attainment and family formation are linked. An individual's early education and fertility decisions are clearly linked within one generation, but family formation characteristics and socioeconomic characteristics are linked across two generations. While these intergenerational associations might have been linked over centuries, modern changes in the organization of work could strengthen this association. As educational and career opportunities are increasing for women, but the gendered norms of childcare remain unchanged, early births could be very detrimental for a young woman's career. As such, parents' who have high expectations for their daughters, and they are usually of high status themselves, might discuss the risks of teen pregnancy in terms of the daughter's future career. It would be helpful if we had direct measures of parents' expectations for the child's family formation behavior just as we have parents' expectations for the child's educational attainment, but theory might have to make up for missing

data. Future research should continue investigating these linkages so that we have a better understanding of both family formation patterns and status attainment for women. And with more theorizing about these processes, we can develop better models of the intra- and intergenerational processes involved.

It is important to note that these findings are only useful for making conclusions about the cohort of non-Hispanic females in the 8th grade in 1988. With the secular changes toward greater high school completion and college attendance for women, greater female labor force participation, delays in fertility, and increases in out-of-wedlock childbearing, this cohort is coming of age in a different career and family environment than did previous cohorts of females. The associations between early education transitions and early fertility were probably different when fewer young women went on to college and more had births at younger ages. Research using data from older cohorts would be helpful for better understanding how the relationship between fertility and education, as well as the relationship between the intergenerational processes of family formation and status attainment, have changed over time.

The present research has better information to model the intergenerational association of socioeconomic status relative to the information for the intergenerational association of family formation. The NELS:88 data does not have any information on the marital history of these families before 1988. We do not know how the single parent families were formed – through divorce or non-marital childbearing. In addition, it would be useful to have information on the mother's fertility timing, especially since I am modeling the timing of the daughter's fertility. Therefore, the parental measures of family formation (family structure) are not parallel to the daughter's measure of family formation (early fertility). To better capture the family's history

and the importance of family change for these outcomes, I could use information about changes in family structure between the 8th and 10th grade.

The results are specific to the non-Hispanic population. This restriction not only is a restriction by ethnicity but also a restriction by immigration status. Although some members of the sample could be immigrants themselves or children of immigrants, the probability is lower among non-Hispanics than it would be for Hispanics. In considering how these intra- and intergenerational processes might work for Hispanics, it is important to consider and conceptualize how the intergenerational processes of immigrant adaptation impinges upon the relationships and patterns documented in the present sample.

In future research, I plan to model these processes separately for Blacks and Whites. Some evidence suggests that the processes associated with early fertility and college attendance operate different for Blacks. Although the instrumental variable for education used in the present analysis (disability status) does not instrument well for Blacks, I have already discovered appropriate instruments for educational attainment for Blacks. For high school completion, an adequate instrument is whether the child has been held back in school before 8th grade and for college attendance, a good instrument is the proportion of 1988-89 graduates who attended a four-year college). The appropriate next step for this research is determining if all of the variables need to be interacted with race or if only certain variables need to be interacted by race. Once these decisions are made, the research will better model these processes.

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Table 1: Results from Multivariate Probit Analyses Testing Instrumental Variables

Models	High School Completion	Any Post-Secondary	Four-year College	Early Birth
1. Disability	-0.417 **	-0.372 *	-0.542 **	0.237
	(0.159)	(0.170)	(0.153)	(0.155)
2. Relations with boys	-0.030	0.021	-0.043	0.114 **
	(0.042)	(0.029)	(0.036)	(0.032)
3. Age at first sex	0.426 **	0.029	0.280 *	0.675 **
	(0.149)	(0.108)	(0.132)	(0.210)
Age at first sex2	-0.007	0.001	-0.005	-0.029 **
	(0.004)	(0.003)	(0.003)	(0.007)

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Note: Models also include measures for family structure, average parental education, average parental occupation, family income, number of siblings, parental expectations of child's education, region, urbanicity, 8th grade mathematics achievement score, 8th grade track, year of birth, and flags for missing data.

Table 2: Weighted descriptive statistics of final sample, accounting for NELS:88 survey design

	Total Sample (N = 5,707)			Blacks (N = 793)		Whites (N = 4,914)	
	Mean or %	S.D.	Missing	Mean or %	S.D.	Mean or %	S.D.
Dependent Variables							
High school certification	91.1%	-	4	87.2%	-	91.8%	-
Any Post-secondary	73.0%	-	19	66.4%	-	74.2%	-
Four-year College	40.5%	-	19	31.2%	-	42.2%	-
Early first birth	16.8%	-	12	33.3%	-	13.8%	-
Social Capital							
Family Structure							
Bio. two-parent[a]	66.9%	-	106	41.9%	-	71.5%	-
Single parent	16.5%	-	106	34.1%	-	13.3%	-
Step-parent	14.6%	-	106	17.0%	-	14.2%	-
Other family	2.0%	-	106	6.9%	-	1.0%	-
No. siblings	2.23	0.04	0	2.90	0.17	2.11	0.04
Parental Expectations	15.75	0.08	18	16.11	0.27	15.68	0.08
Human & Financial Capital							
Ln(Family Income)	10.27	0.03	252	9.51	0.07	10.41	0.02
Avg. Years of Education	13.37	0.05	4	12.76	0.12	13.48	0.06
Avg. Occupation SEI	0.51	0.03	189	0.13	0.09	0.57	0.03
Instrumental Variables							
Disabled	5.31%	-	254	9.61%	-	4.54%	-
Relations with boys	0.01	0.03	536	-0.03	0.06	0.01	0.03
Age at first sex	17.88	0.10	559	17.06	0.23	18.02	0.11
Age at first sex^2	331.34	3.74	559	301.16	8.33	336.47	4.09
Controls							
Region							
Northeast	19.6%	-	7	15.5%	-	20.4%	-
North Central	29.6%	-	7	12.2%	-	32.8%	-
South[a]	36.3%	-	7	64.8%	-	31.1%	-
West	14.5%	-	7	7.5%	-	15.8%	-
Urbanicity							
Central city	23.9%	-	0	50.0%	-	19.1%	-
Suburban[a]	44.3%	-	0	27.1%	-	47.5%	-
Rural	31.8%	-	0	22.9%	-	33.4%	-
Mathematics Achievement	51.62	0.29	173	45.22	0.60	52.78	0.29
School track (range: 1-3)	2.10	0.01	168	2.01	0.04	2.11	0.01
Year of birth	1973.7	0.01	64	1973.6	0.04	1973.7	0.01

[a] Indicates omitted variable in multivariate analyses.

Table 3: Bivariate Probit Analysis of Having an Early Birth and High School Completion

	Early Birth			High School Completion		
	(1)	(2)	(3)	(1)	(2)	(3)
Single parent	0.351 **	0.435 **	0.337 **	-0.320 **	-0.288 *	0.052
	(0.091)	(0.093)	(0.097)	(0.115)	(0.122)	(0.134)
Step-parent	0.544 **	0.444 **	0.379 **	-0.403 **	-0.243	0.057
	(0.125)	(0.134)	(0.139)	(0.116)	(0.127)	(0.130)
Other family	0.757 **	0.603 **	0.122	-0.737 **	-0.984 **	-0.506
	(0.236)	(0.214)	(0.335)	(0.253)	(0.249)	(0.338)
No. Siblings	0.078 **	0.076 **	0.048	-0.040	-0.041	0.028
	(0.023)	(0.024)	(0.026)	(0.022)	(0.025)	(0.024)
Par. Expectations	-0.055 **	-0.064 **	-0.053 **	0.066 **	0.054 *	0.015
	(0.018)	(0.016)	(0.016)	(0.020)	(0.023)	(0.017)
Avg. Par. Education	-0.021	-0.021	-0.007	0.102 **	0.064	0.050
	(0.026)	(0.028)	(0.025)	(0.033)	(0.034)	(0.029)
Avg. Occupation	-0.121 **	-0.135 **	-0.076 *	0.216 **	0.232 **	0.096 *
	(0.036)	(0.038)	(0.034)	(0.055)	(0.057)	(0.048)
Ln(Family Income)	-0.081 *	-0.050	0.010	0.106 **	0.103 **	0.058
	(0.037)	(0.035)	(0.033)	(0.035)	(0.038)	(0.035)
Black	0.225 *	0.120	0.325 **	0.385 **	0.521 **	0.475 **
	(0.094)	(0.093)	(0.089)	(0.126)	(0.136)	(0.097)
Northeast	-0.258 *	-0.408 **	-0.300 **	0.099	0.148	-0.118
	(0.116)	(0.099)	(0.095)	(0.130)	(0.140)	(0.136)
North Central	0.065	0.005	0.130	0.205 *	0.324 **	0.211 *
	(0.088)	(0.091)	(0.091)	(0.104)	(0.113)	(0.104)
West	0.076	-0.061	-0.022	-0.213	-0.045	-0.093
	(0.110)	(0.112)	(0.105)	(0.153)	(0.160)	(0.114)
Central city	-0.133	-0.096	-0.037	0.141	0.162	0.045
	(0.100)	(0.103)	(0.100)	(0.116)	(0.117)	(0.094)
Rural	-0.031	-0.006	0.042	0.129	0.131	0.084
	(0.074)	(0.080)	(0.087)	(0.099)	(0.109)	(0.111)
Mathematics Score	-0.032 **	-0.026 **	-0.014 **	0.055 **	0.054 **	0.030 **
	(0.005)	(0.005)	(0.005)	(0.008)	(0.009)	(0.006)
School track	-0.065	-0.110 *	-0.057	0.174 *	0.159	0.086
	(0.061)	(0.056)	(0.060)	(0.089)	(0.087)	(0.065)
Year of birth	-0.266 **	-0.290 **	-0.094	0.343 **	0.383 **	0.140 *
	(0.059)	(0.064)	(0.069)	(0.065)	(0.072)	(0.065)

(Continued)

Table 3 (cont.): Bivariate Probit Analysis of Having an Early Birth and High School Completion

	Early Birth			High School Completion		
	(1)	(2)	(3)	(1)	(2)	(3)
Relations with boys	-	0.107 **	0.107 **	-	-	-
		(0.033)	(0.031)			
Disabled	-	-	-	-	-0.399 **	-0.261
					(0.147)	(0.155)
High school	-	-	-2.174 **	-	-	-
			(0.087)			
Early birth	-	-	-	-	-	-2.315 **
						(0.077)
Error Covariance	-0.552 **	-0.454 **	-	-0.552 **	-0.454 **	-
Observations	5480	4909	4909	5480	4909	4909

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table 4: Bivariate Probit Analysis of Having an Early Birth and Attending any Post-secondary Institution

	Early Birth			Any Post-secondary		
	(1)	(2)	(3)	(1)	(2)	(3)
Single parent	0.287 **	0.089	0.021	-0.193 *	-0.208 *	-0.109
	(0.101)	(0.118)	(0.128)	(0.084)	(0.088)	(0.096)
Step-parent	0.455 **	0.237	0.076	-0.276 *	-0.318 *	-0.113
	(0.154)	(0.162)	(0.117)	(0.116)	(0.130)	(0.095)
Other family	0.939 **	0.743 **	0.191	-0.666 *	-0.630 *	0.022
	(0.299)	(0.277)	(0.254)	(0.308)	(0.277)	(0.244)
No. Siblings	0.075 **	0.112 **	0.056 *	-0.047 *	-0.063 **	-0.003
	(0.027)	(0.031)	(0.024)	(0.022)	(0.023)	(0.020)
Par. Expectations	-0.055 **	-0.040	0.026	0.120 **	0.108 **	0.079 **
	(0.021)	(0.021)	(0.019)	(0.015)	(0.016)	(0.017)
Avg. Par. Education	-0.014	0.007	0.031	0.083 **	0.085 **	0.082 **
	(0.027)	(0.033)	(0.027)	(0.024)	(0.025)	(0.024)
Avg. Occupation	-0.109 **	-0.138 **	-0.059	0.095 **	0.112 **	0.058
	(0.038)	(0.045)	(0.045)	(0.033)	(0.034)	(0.035)
Ln(Family Income)	-0.066	-0.058	0.039	0.121 **	0.132 **	0.085 *
	(0.040)	(0.044)	(0.041)	(0.034)	(0.038)	(0.043)
Black	0.277 **	0.332 **	0.468 **	0.373 **	0.380 **	0.484 **
	(0.103)	(0.112)	(0.136)	(0.105)	(0.105)	(0.110)
Northeast	-0.169	-0.138	0.004	0.161	0.139	0.070
	(0.137)	(0.147)	(0.143)	(0.085)	(0.089)	(0.088)
North Central	0.101	0.038	0.029	0.004	0.017	0.068
	(0.098)	(0.112)	(0.114)	(0.081)	(0.088)	(0.077)
West	0.105	0.073	0.150	0.086	0.072	0.072
	(0.113)	(0.134)	(0.128)	(0.089)	(0.098)	(0.105)
Central city	-0.035	0.060	0.139	0.038	0.117	0.087
	(0.108)	(0.128)	(0.120)	(0.092)	(0.100)	(0.090)
Rural	0.009	-0.025	-0.004	-0.041	0.002	-0.018
	(0.082)	(0.096)	(0.097)	(0.065)	(0.073)	(0.071)
Mathematics Score	-0.026 **	-0.031 **	-0.010	0.038 **	0.042 **	0.031 **
	(0.005)	(0.006)	(0.006)	(0.004)	(0.004)	(0.004)
School track	-0.001	0.002	0.112	0.213 **	0.188 **	0.120 *
	(0.062)	(0.070)	(0.062)	(0.057)	(0.059)	(0.056)
Year of birth	-0.264 **	-0.388 **	-0.212 **	0.095	0.119	-0.020
	(0.070)	(0.083)	(0.071)	(0.061)	(0.066)	(0.057)

(Continued)

Table 4 (cont.): Bivariate Probit Analysis of Having an Early Birth and Attending any Post-secondary Institution

	Early Birth			Any Post-secondary		
	(1)	(2)	(3)	(1)	(2)	(3)
Age at first sex	-	0.857 *	0.564	-	-	-
		(0.347)	(0.307)			
Age at first sex^2	-	-0.034 **	-0.022 *	-	-	-
		(0.011)	(0.009)			
Disabled	-	-	-	-	-0.380 *	-0.250
					(0.157)	(0.161)
Any Post-secondary	-	-	-2.023 **	-	-	-
			(0.088)			
Early birth	-	-	-	-	-	-1.972 **
						(0.085)
Error Covariance	-0.449 **	-0.355 **	-	-0.449 **	-0.355 **	-
Observations	5074	4435	4435	5074	4435	4435

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table 5: Bivariate Probit Analysis of Having an Early Birth and Attending a Four-year College

	Early Birth			Four-year College Attendance		
	(1)	(2)	(3)	(1)	(2)	(3)
Single parent	0.280 **	0.382 **	0.131	-0.106	-0.071	0.079
	(0.099)	(0.101)	(0.082)	(0.084)	(0.087)	(0.080)
Step-parent	0.449 **	0.406 **	0.033	-0.329 **	-0.300 **	-0.041
	(0.154)	(0.154)	(0.108)	(0.109)	(0.109)	(0.110)
Other family	0.913 **	0.658 **	0.389	-0.321	-0.063	0.366
	(0.293)	(0.230)	(0.233)	(0.270)	(0.244)	(0.244)
No. Siblings	0.080 **	0.075 **	-0.007	-0.066 **	-0.062 *	-0.020
	(0.027)	(0.028)	(0.022)	(0.025)	(0.027)	(0.025)
Par. Expectations	-0.051 *	-0.069 **	0.017	0.065 **	0.070 **	0.026
	(0.020)	(0.017)	(0.020)	(0.021)	(0.024)	(0.021)
Avg. Par. Education	-0.010	-0.018	0.088 **	0.126 **	0.127 **	0.112 **
	(0.028)	(0.031)	(0.027)	(0.029)	(0.031)	(0.027)
Avg. Occupation	-0.107 **	-0.108 **	0.011	0.080	0.074	0.030
	(0.037)	(0.040)	(0.038)	(0.045)	(0.046)	(0.041)
Ln(Family Income)	-0.072	-0.038	0.085 *	0.178 **	0.189 **	0.112 *
	(0.041)	(0.041)	(0.038)	(0.054)	(0.058)	(0.044)
Black	0.279 **	0.198 *	0.498 **	0.413 **	0.479 **	0.510 **
	(0.102)	(0.100)	(0.112)	(0.098)	(0.102)	(0.110)
Northeast	-0.205	-0.388 **	-0.100	0.174 *	0.161	0.001
	(0.132)	(0.116)	(0.095)	(0.082)	(0.083)	(0.076)
North Central	0.110	0.050	-0.017	-0.025	-0.061	-0.034
	(0.097)	(0.098)	(0.088)	(0.086)	(0.086)	(0.079)
West	0.068	0.006	-0.267 **	-0.347 **	-0.334 **	-0.292 **
	(0.111)	(0.114)	(0.091)	(0.095)	(0.100)	(0.094)
Central city	-0.071	-0.051	0.036	0.125	0.132	0.075
	(0.108)	(0.111)	(0.096)	(0.087)	(0.091)	(0.083)
Rural	-0.012	0.010	0.084	0.143 *	0.114	0.096
	(0.082)	(0.087)	(0.086)	(0.072)	(0.076)	(0.070)
Mathematics Score	-0.024 **	-0.021 **	0.021 **	0.038 **	0.038 **	0.026 **
	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)
School track	-0.018	-0.078	0.157 *	0.294 **	0.262 **	0.192 **
	(0.060)	(0.057)	(0.064)	(0.075)	(0.080)	(0.072)
Year of birth	-0.260 **	-0.271 **	-0.131 *	0.060	0.076	-0.094
	(0.069)	(0.074)	(0.064)	(0.061)	(0.063)	(0.060)

(Continued)

Table 5 (cont.): Bivariate Probit Analysis of Having an Early Birth and Attending a Four-year College

	Early Birth			Four-year College Attendance		
	(1)	(2)	(3)	(1)	(2)	(3)
Relations with boys	-	0.107 **	0.015	-	-	-
		(0.039)	(0.018)			
Disabled	-	-		-	-0.424 **	-0.059
					(0.163)	(0.050)
Four-year College	-	-	-2.649 **	-	-	-
			(0.129)			
Early birth	-	-	-	-	-	-2.573 **
						(0.154)
Error Covariance	-0.516 **	-0.512 **	-	-0.516 **	-0.512 **	-
Observations	5074	4599	4599	5074	4599	4599

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%