

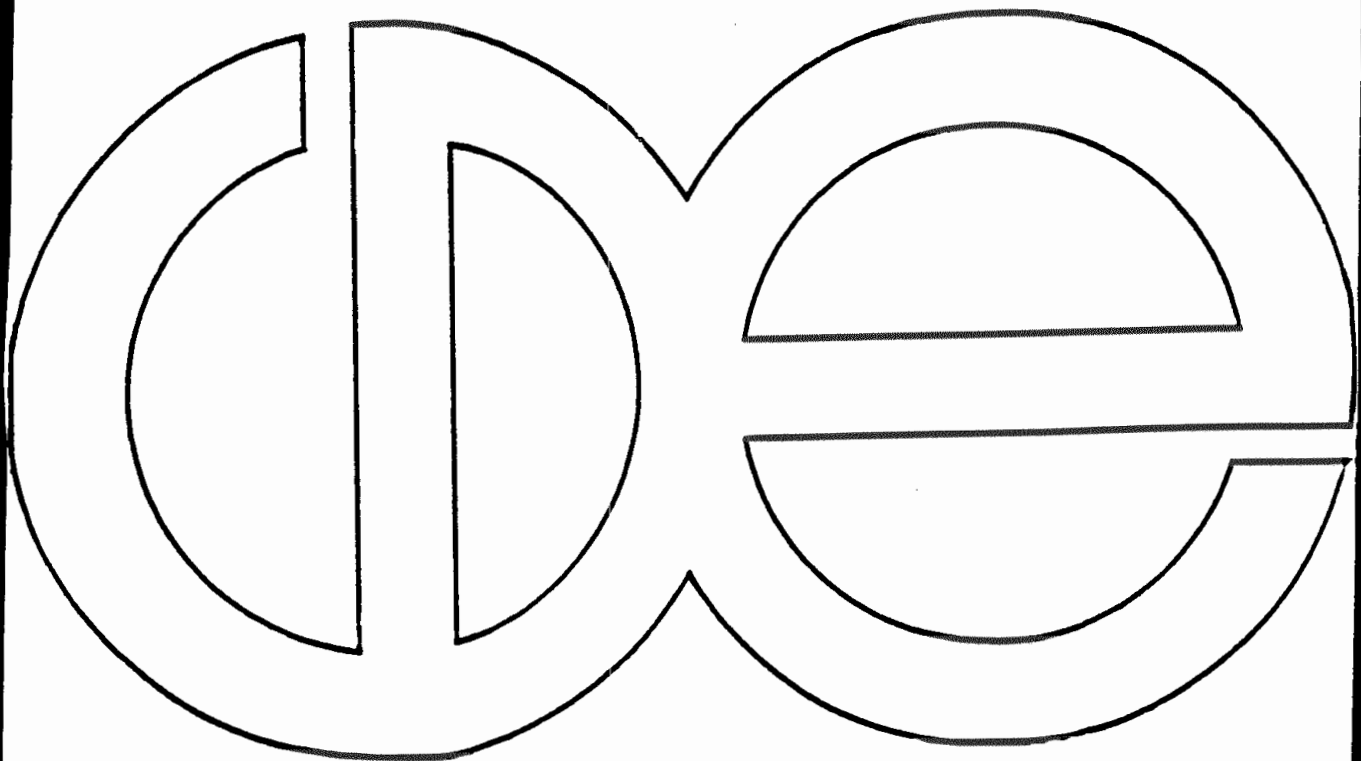
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Affect the Life Chances
of High School Graduates?**

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Does Poverty in Adolescence Affect the Life Chances of High School Graduates?

ABSTRACT

The Wisconsin Longitudinal Study (WLS) has followed a cohort of more than 10,000 Wisconsin high school graduates from 1957 through 1992/93. Income data for most parents of the cohort were obtained from state tax records from 1957 to 1960, the years during which the cohort was most likely to have attended post-secondary schools. The WLS data measure academic potential and social circumstances during high school, and they also include post-secondary schooling, occupations, wage rates, poverty, mental and physical health, and mortality. Our findings about long-term effects of adolescent poverty are limited by sample restrictions: high school graduation, initial regional location, and small numbers of minorities. Adolescent poverty is associated with negative outcomes in most of the domains covered by the WLS data. The negative outcomes occur among women and among men. However, the associations of poverty with adult outcomes are reduced with minimal controls for socioeconomic background (maternal education and family structure), and they are substantially reduced when an expanded vector of socioeconomic and family characteristics is added. Among these high school graduates, the remaining effects of adolescent poverty are largely mediated by academic performance, social support, aspiration, and post-secondary schooling. Thus, in this cohort, the life-long consequences of adolescent poverty are largely explained by its correlation with other social and psychological background characteristics or exhausted through its influence on the initial conditions of young adulthood.

For more than 35 years, the Wisconsin Longitudinal Study (WLS) has followed a cohort of more than 10,000 men and women who graduated from high school in 1957. The sample has been followed up in 1964, 1975, and, most recently, in 1992/93. The WLS is best known for having developed a social psychological model that accounts for effects of social background and mental ability on post-secondary schooling and occupational careers (Sewell and Hauser 1992a; Sewell and Hauser 1992b). During the past four years, a cross-disciplinary team of researchers has again followed up the WLS sample at ages 53 and 54, and we now have a broad array of measurements of socioeconomic, familial, and health outcomes that cover much of the life course (Hauser et al 1992; Hauser et al 1994). In this paper, we estimate the effects of adolescent poverty on several social, economic, and health outcomes.

The Wisconsin Longitudinal Study

The WLS cohort of men and women, mainly born in 1939, precedes by about a decade the bulk of the baby boom generation that continues to tax social institutions and resources at each stage of life. The WLS is the first of the large, longitudinal studies of American adolescents, and it thus provides our first large-scale opportunity to study the life course from late adolescence through the mid-50s in the context of a complete record of ability, aspiration, and achievement.¹

¹ There have, of course, been important and influential longer-term studies of the life-course in the U.S. Despite the careful and insightful work of many investigators, these studies are based on small, local, or highly selected samples (Oden 1968; Elder 1974; Clausen 1993). The Terman study is based on 1500 California children who were first nominated by teachers and then scored extremely high on mental tests. By 1982, Clausen's follow-up of the combined Berkeley Growth Study, Berkeley Guidance Study, and Oakland Growth Study covered 283 individuals aged 53 to 62 out of 528 who had been recruited as children and 358 for whom some data were available at age 18 (Clausen 1993, p. 37). Moreover, the lives of members both the Terman and Berkeley-Oakland samples have been affected by their

The WLS is based upon a simple one-third random sample of public and private Wisconsin high school graduates in the class of 1957. The sample is broadly representative of middle-aged white American men and women who have completed at least a high school education. Among American women and men aged 50 to 54 in 1990 and 1991, approximately 66 percent are whites of non-Hispanic background who completed at least 12 years of schooling (Kominski and Adams 1992). The sample is mainly of German, English, Irish, Scandinavian, Polish, or Czech ancestry. Some strata of American society are not represented in the WLS. Everyone in the primary sample graduated from high school. Sewell and Hauser (1975) estimated that about 75 percent of Wisconsin youth graduated from high schools in the late 1950s, but 7 percent of the WLS siblings did not graduate from high school. Minorities are not well represented; there are only a handful of African American, Hispanic, or Asian persons in the sample. About 19 percent of the WLS sample is of farm origin, and that is consistent with national estimates of persons of farm origin in cohorts born in the late 1930s. In 1964, in 1975, and again in 1992, 70 percent of the sample lived in Wisconsin, and 30 percent lived elsewhere in the U.S. or abroad.

Despite these limitations, the WLS provides a long-term look at the development of the life course from adolescence to midlife in a cohort of men and women who resemble a large segment of the U.S. population. The sample is large; sample retention is very high (compare Jencks et al. 1979: 6-7; Center for Human Resource Research 1992); and measurements are of high (and often of known) quality. In the 1975 survey, approximately 9140 of the original respondents were interviewed, and in the 1992/93 survey, approximately

participation in the studies, e.g., by group activities or academic or psychological counseling.

8500 of the original respondents were interviewed. By that time, about 575 of the original 10,317 members of the sample had died. The WLS has fared well in comparisons of findings with national studies of comparable populations (Sewell and Hauser 1975; Jencks, Crouse, and Mueser 1983; Corcoran, Gordon, Laren, and Solon 1992).²

Many previous studies using WLS data have measured the influence of economic origins on social and economic outcomes. In early, cross-tabular analyses of educational aspirations, socioeconomic background was represented by a factor-weighted composite of mothers's education, father's education, father's occupational status, and parents' income. In later analyses of education, occupational status, and earnings, these four variables were disaggregated (Hauser 1972; Sewell and Hauser 1975; Sewell, Hauser, and Wolf 1980). Some of this work with disaggregated measures of social and economic background asked whether economic, educational, or occupational origins had distinctive effects on post-high school outcomes. In general, each dimension of social standing affected all outcomes, directly or indirectly, and those effects were essentially the same across several adolescent outcomes (Hauser, Tsai, and Sewell 1983). However, there were also some specific effects of economic, educational, and occupational origins. Parental schooling has a larger than expected effect on sons' and daughters' schooling; parental occupational status has a persistent effect on sons' and daughters' occupational status; and parental income has a

² Solon's (1989) critique of intergenerational income correlations in the WLS evolved from the correct observation that the sample is limited to high school graduates to a characterization of the sample as "peculiarly homogenous" (Solon 1992). However, Corcoran, Gordon, Laren, and Solon (1992) used WLS findings as a standard of plausibility in their analysis of PSID children.

persistent effect on sons' and daughters' earnings (Sewell and Hauser 1975; Hauser, Sewell, and Warren 1994).

No previous study based on the WLS has focused specifically on the consequences of adolescent poverty. For obvious reasons, one would not expect to find extremely high rates of adolescent poverty in the WLS, and the definition of the sample would appear to limit the likely consequences of impoverished origins. All members of the sample are high school graduates; very few are minorities; and the State of Wisconsin, if not uniformly affluent, has historically had relatively low rates of poverty and relatively low levels of income inequality.³ Another factor in measuring the influence of poverty in this Wisconsin cohort is the prevalence of farm origins. It is no higher than the contemporary national rate, but the production of income in kind was very likely higher in the late 1950s than now, and a measure based on cash income may overstate the incidence of adolescent poverty in the WLS. Thus, we have carried out some analyses for the population of non-farm origin, as defined by father's occupation in 1957, as well as in the full WLS sample.⁴

Measures of Socioeconomic Background

If the WLS has substantial limitations for the present purpose, it also has some advantages. Economic origins and several other social background characteristics have been measured well. While we have attempted to produce the standard set of estimates of the

³ To be sure, there are more and less affluent areas in the state. Several northern counties and American Indian communities, now joined by much of Milwaukee, have long been economically depressed.

⁴ Our findings in the nonfarm sample are so similar to those in the total sample that we have not reported them separately.

effects of adolescent poverty, we have also estimated those same effects using an expanded vector of social background characteristics. Table 1 shows the sources of these variables and descriptive statistics for men and women.⁵ Family structure was not ascertained in the early rounds of the study, but was measured retrospectively in the 1975 or 1992 surveys. Ninety percent of the sample reported living in an intact family most of the time up to the senior year of high school, and half the female household heads were widows. Thus, the sources of family dissolution were far different in the Wisconsin sample from those prevailing in younger cohorts.

We obtained virtually complete data on parental schooling by combining reports from the 1957, 1975, and 1992 surveys. Paternal and maternal occupations were ascertained in those surveys and, for this analysis, they were mapped into the Stevens-Featherman scale of occupational status (MSEI2). MSEI2 is a weighted average of occupation-specific education and income among male job-holders in the 1970 Census, where the weights were chosen to predict ratings of occupational prestige during the 1960s (Stevens and Featherman 1981). The MSEI2 index ranges from 11 to 89. About two-thirds of respondents' mothers did not work when they were seniors in high school. We assigned the mean of mother's occupational status to cases where the mother did not work, and we introduced a dummy variable for mother not working. Thus, the coefficients of the dummy variable contrast people whose mothers did not work to those with an average working mother. We also introduced a dummy variable for fathers with farm occupations; the coefficients of that variable contrast

⁵ The present analysis is limited to 9611 individuals responding to either the 1975 or 1992/93 surveys and subsamples defined by the availability of data on specific outcomes.

people whose fathers farmed with people whose fathers had the same score as farmers (22.2) on the MSEI2. Number of siblings was ascertained in the 1975 or 1992 surveys, and the population of the town containing the respondent's high school was grouped (roughly) in 8 categories by log of size in 1960.

Parents' income is the adjusted gross income reported on federal tax forms for the years 1957 to 1960, the years during which respondents were most likely to have attended post-secondary school. It was ascertained from Wisconsin State income tax files, which include copies of the federal tax forms. Unfortunately, the original, year-by-year measures have been lost, and we now have income only in the first year for which it was available, along with an average for all available years. In this analysis, we have used only the average income, inflated from 1958 to 1992 dollars using the CPI. We constructed income to needs ratios using the intact family measure, the number of siblings (including the respondent) aged 18 or less in 1957, and the official 1992 poverty thresholds (U.S. Bureau of the Census 1993). Despite the selection of the sample by schooling, more than one fifth of the sample came from families in which the income to needs ratio was less than one, and only in 13 percent of the sample was the income/needs ratio larger than three.

Two factors probably contribute to the seemingly high incidence of poverty in the Wisconsin sample. First, the data pertain to the beginning of the current era of poverty measurement. In 1959, for example, 22.4 percent of all persons in the U.S. were poor by the official definition. Among related children under 18, 26.5 percent were poor in 1960. Second, there is a sharp differential in poverty rates between the nonfarm and farm populations. Nationally, in 1960, in the nonfarm population, 19.6 percent were poor, and in

the farm population, 51.3 percent were poor (Danziger and Weinberg 1994: 26, 37). These estimates are similar to poverty rates defined by average income in the Wisconsin sample: 14.4 percent among nonfarm youth and 53.9 percent among farm youth. Third, one could reasonably argue that, before 1960, the current official poverty standard may have been too high, relative to more recent periods, thus leading to an over-estimate of the share of Wisconsin graduates in poverty (Citro and Michael 1995: 34-35).

Measures of Adolescent Achievement and Aspiration

In addition to social background variables, in part of the analysis we have gone beyond the estimation of reduced form equations and introduced a set of social psychological variables that were measured during the high school years. In other analyses, these variables have explained much of the influence of social background characteristics on post-secondary schooling and attainment (Sewell 1971; Sewell, Hauser, and Wolf 1980; Hauser, Tsai, and Sewell 1983). Mental ability was measured using the Henmon-Nelson test, which was administered to all high school juniors in Wisconsin. The test scores were obtained from the Wisconsin State Testing Service, a unit of the University of Wisconsin, which helped to administer and evaluate the tests and then archived the records. Scores were converted to percentiles among Wisconsin students on whom the test had been normed, and the percentiles were then transformed into the standard metric of IQ. High school rank was obtained from the records of each high school, expressed as a percentile, and transformed into the IQ metric. In the original 1957 survey, students were asked to report the number of courses that they had completed in several academic fields. These responses were compared with the entrance

requirements of the University of Wisconsin in 1957. Students who had completed those requirements were classified as having taken an academic program.

The 1957 survey included three measures of social influence on college attendance: parents' encouragement to attend college, teachers' encouragement to attend college, and friends' college plans. Educational aspirations were coded as high if the respondent planned to enter a four-year college or university in the fall of 1957. Occupational aspirations were ascertained in response to a question about the kind of job that the respondents "eventually hoped to enter." These were coded into broad occupational groups and then mapped into Duncan's (1961) socioeconomic index for occupations (SEI).⁶

Indicators of the Life Course

We have examined the effects of gender, poverty, and social background on nine selected outcomes in the Wisconsin data, ranging in content from education to mental health and covering the life course from high school graduation to the early 50s. We estimated logistic regression equations for dichotomous outcomes and linear regressions for continuously measured outcomes.

In the case of education, we first analyzed the transition from high school graduation to the completion of any further academic schooling. Then, among persons with any further schooling, we analyzed the transition to college graduation. We looked at two measures of occupational standing, each indexed by MSEI2: first full-time civilian occupation held after the respondent left school for the last time, and occupation in 1992. We also analyzed base

⁶ The Duncan SEI is similar in construction to MSEI2, but it is based on characteristics of male jobholders in the 1950 Census. It is not strictly comparable to the MSEI2.

hourly wage rates in 1992/93. Using combined earnings of respondent and spouse in 1992/93, along with data on family composition, we constructed and analyzed poverty at mid-life. Both the earning and poverty measures are problematic. Cases where zero earnings were reported, but positive earnings expected based on other characteristics of the 1992 job, were eliminated from the analysis. We believe that many of the "zero" earners were actually refusals, rather than non-earners. For example, when we looked at other social and economic characteristics of "zero" earners, they did not appear to be substantially worse off than earners in other respects. However, it is possible that we eliminated some impoverished individuals and families from the analysis. For the analysis of poverty in 1992 we also eliminated retired respondents and spouses from the analysis. Although the small number of very early retirees often reported low earnings, they were also very likely to have been raised in high income families.

We also looked at selected measures of health and health-related behavior in the 1992/93 survey. Those analyses are based on roughly 80 percent of telephone respondents who also completed a mail survey on health and personality. We have looked at reports of fair or poor health, and at persons in the highest fifth on a standard measure of depression, the CES-D (Radloff 1977).⁷ Finally, we analyzed mortality in the WLS sample. Because our full sample is limited to those responding to either the 1975 or 1992-93 surveys, this measure reflects mortality occurring after age 36.

⁷ Although not reported here, we also examined several other social and psychological outcome measures. Effects of adolescent income/needs ratio on status of job held in 1975 and earnings in 1974 were explained by controls for social background, and had little influence on poverty in 1974. Also, weak associations were observed between income/needs ratio and marital success, having ever smoked, and positive well-being.

Model Specifications

Figure 1 describes the models that we have estimated for each of the outcomes observed in the WLS. Following the prescribed nomenclature, we use lower case Roman numerals to describe standard models, and we add characters to denote our extensions of the standard models. Model *i* includes only sex, plus a minimal specification of socioeconomic status (maternal educational attainment and family structure). Model *ii* includes sex and the income/needs ratio, but excludes the other background measures. Model *iii* combines the variables in models *i* and *ii*; that is, it includes sex, income/needs, maternal education, and family structure. Model *iv* substitutes number of siblings and average parental income for the income/needs ratio in model *iii*. Model *v* substitutes dummy variables for income/needs less than 1.0, from 2.0 to 2.9, and 3.0 or higher for the linear specification in model *iii*; thus, the reference category is income/needs between 1.0 and 1.9. Model *ix* adds the interaction between sex and income/needs to the specification of model *iii*. Our interest lies primarily in the coefficients of income/needs, parents' income, and their interactions, and we present the full set of coefficients and standard errors from these several equations in Appendix tables A1 to A9.

We have estimated five variants of model *iii*. In model *iii-HN*, we add score on the Henmon-Nelson test of mental ability to the minimal specification of social background. This tells us the degree to which the effects of social background, in this specification, are explained by its correlation with mental ability, as measured during the junior year of high school. In model *iiia*, we add an extended set of social and economic background

characteristics: father's educational attainment, mother's occupational status,⁸ father's occupational status, farm background, number of siblings, and size of place of origin. We believe that model *iiia* provides a more complete specification of measured social background than model *iii*. Thus, we want to see how the effects of the income/needs ratio and of average parental income change when these variables are added to the model. In model *iiia-HN*, we add score on the Henmon-Nelson test of mental ability to the extended specification of social background. This tells us the degree to which the effects of the larger vector of social background characteristics are explained by their correlation with mental ability.

In model *iiiaf*, we retain the full specification of social and economic background, plus mental ability, and we add the remaining social psychological variables: rank in high school class, academic program, parents' encouragement to attend college, teachers' encouragement to attend college, friends' college plans, educational plans, and occupational aspirations. One might think of mental ability as predetermined, along with the other social background variables or as a consequence of them; the other variables, we believe, are consequences of social background and ability. With the addition of those variables, we take model *iiiaf* to represent a set of social, economic, and psychological conditions in late adolescence. To the extent that adolescent poverty affects life chances in model *iiiaf*, we would argue that its influence persists beyond the completion of secondary school. In model *iiiafe*, we add indicators of post-secondary educational attainment to model *iiiaf*. Thus, to the extent that

⁸ Whenever mother's occupational status is entered, we also add a dummy variable for non-working mothers.

adolescent poverty affects life chances in model *iiiafe*, we would argue that its influence persists beyond entry into adulthood.

We have estimated similar sets of models that replace the income/needs ratio with average parental income and number of siblings. In this respect, model *iib* corresponds to model *ii*, model *iv* to model *iii*, model *iva* to model *iiia*, model *ivaf* to model *iiiaf*, and model *ivafe* to model *iiiafe*. We have also estimated models in which the income/needs ratio is expressed with a series of dummy variables, rather than in a single linear term. In model *iic*, the only regressors are the income/needs dummies and sex. In model *v*, maternal education and family structure are added to model *iic*. In models *va*, *vaf*, and *vafe*, we add our extended vector of social background variables, the social psychological variables, and educational attainment.

To put the matter succinctly, we wish to know whether adolescent poverty appears to affect life chances because it is merely correlated with other family and social background characteristics. We wish to know whether adolescent poverty appears to affect life chances merely because it is correlated with mental ability. We wish to know whether the effects of adolescent poverty are linear. Finally, we wish to know whether the effects of adolescent poverty are exhausted through their influence on late adolescent development and opportunity, or whether they have a longer-lasting direct influence on the life course.

We also look to see whether the effects of adolescent poverty and of other social and economic background characteristics differ by sex. Model *ix* adds the interaction between sex and the income/needs ratio to model *iii*, and model *ixa* adds the extended vector of social and economic background variables and the interaction between sex and each of those variables.

Statistical Inference

We have estimated a great many models containing a large number of variables in a rather large sample. For that reason, we would expect to find a large number of nominally significant effects merely by chance and to find many nominally significant effects that are substantively trivial. In order to discipline our analysis and discussion, we have not relied upon the usual 0.05 or 0.01 significance levels, but rather have flagged coefficients for which there is either "strong" or "very strong" evidence, as indicated by the Bayesian information criterion (BIC) developed by Adrian Raftery (1995: 25).⁹ By "strong" evidence, we mean a posterior probability of 95 to 99 in favor of the alternative hypothesis ($6 < \text{BIC} < 10$), and by "very strong" evidence, we mean a posterior probability greater than 99 in favor of the alternative hypothesis ($\text{BIC} > 10$). These are stringent criteria. For example, in a logistic regression, carried out in the full WLS sample ($N = 9611$), the ratio of a coefficient to its standard error must be 3.89 to provide strong evidence, and it must be 4.38 or larger to provide very strong evidence. In the logistic regression of college graduation, where $N = 3474$, the corresponding t-ratios are 3.76 and 4.26.

Findings

Table 2 shows correlations among the nine outcome variables, excepting those between death by 1993 and outcomes measured only in the 1992-93 surveys. The correlations all have the expected signs, but but none is larger than 0.66, which is to say that there is no reason to suppose, *a priori*, that adolescent poverty need have similar relationships

⁹ For those who might wish to apply other criteria of significance, we have in all cases reported coefficients and standard errors.

with the several outcomes. Socioeconomic variables, excepting poverty status in 1992, are more highly intercorrelated than are the other, more heterogenous set of outcomes.

Table 3 summarizes the effects of income/needs on our 9 outcome variables under a variety of model specifications. The estimates from model *ii* show strong or very strong evidence that adolescent poverty is associated with lowered educational, occupational, and economic chances. However, it has no relationship with poverty in 1992. Neither is there strong evidence that adolescent poverty is associated with any of the recent social or health-related outcome measures: fair or poor health, depression, or mortality. When maternal education and family structure are controlled (model *iii*), the regressions of education, occupational status, and wage rate on income/needs are reduced by about 20 percent. In all cases but one (college graduation), the evidence remains very strong. However, when we introduce the extended set of social background characteristics (model *iiia*), the remaining effects of income/needs are substantially less. Between model *ii* and model *iiia*, the previously strong coefficients are reduced by about 65 percent, and between model *iii* and model *iiia*, they are reduced by about 55 percent. In model *iiia*, the evidence remains very strong only for the effect of adolescent poverty on completion of some postsecondary education and on the status of first job, and it remains strong only for base hourly wage in 1992. Thus, model *iii* does not fully control socioeconomic characteristics of the family of orientation. The failure to control other relevant background characteristics leads to a substantial overstatement of the effects of adolescent poverty on the life course of the Wisconsin graduates. Ultimately, a one unit change in the income/needs ratio leads to an 16 percent increase in the odds of completing any postsecondary schooling, a 0.5 point increase

in the status of the first occupation, and a 2 percent increase in base hourly wage, but it has little influence on other indicators of the life chances of the Wisconsin graduates.

The best-selling treatise by Herrnstein and Murray (1994) emphasizes the importance of ability relative to socioeconomic background in the attainments of young adults. Thus, we think it is instructive to examine the effects of adolescent poverty when measured mental ability is included in the analysis. In model *iii-HN* we add mental ability to the minimal specification of social background. This specification weakens the evidence that adolescent poverty affects socioeconomic outcomes. For example, the effect of poverty on continuation to postsecondary schooling is reduced by about 8 percent, and the effects on occupational status of the first job, in 1975, and in 1992 are reduced by 15 to 25 percent. All the same, and contrary to some of the arguments of Herrnstein and Murray, there remains very strong evidence of the effect of the income/needs ratio on socioeconomic achievement. In model *iiia-HN*, we again add mental ability to the model, but this time to the specification that also includes an expanded vector of social background characteristics. Here, while the influence of income/needs is weaker to begin with, the incremental importance of ability in accounting for that influence is also much less. However, once ability has been controlled, the effects of adolescent poverty on base hourly wage no longer meet our criterion of strong evidence. It is interesting to compare the effects of adding ability to model *iii* to those of adding the expanded set of socioeconomic background variables to model *iii*; the correlation between poverty and mental ability is less important in explaining the association between adolescent poverty and life chances than is the correlation between poverty and other aspects of social and economic background.

Our measures of ability, as well as those of poverty and social background, pertain to late adolescence. Thus, there is no inconsistency between our findings and the report, elsewhere in this volume, that early childhood poverty delays cognitive development. However, before reaching strong conclusions about the effect of economic deprivation *per se*, we think it important to assess its effects in the context of a full array of social background effects, such as we have introduced in model *iiia*.

One friendly critic has suggested that the additional socioeconomic background variables, especially mother's and father's occupational status, are simply proxies for income. Thus, reduced effects of adolescent poverty in our extended specification would not be surprising, nor would they suggest a lesser role for family economic standing in life chances. We disagree with this interpretation of our findings. First, our expanded specification includes several variables other than occupational status: father's education, size of place of origin, farm background, and number of siblings. Second, we would be surprised that a four year average of adjusted gross income from income tax records could be dominated by less proximate measures of family income. If that were truly the case, then we should be inclined to distrust other, survey-based estimates of the effects of family or household income. Third, as a test of the source of the effects of occupational status, we assembled data on the typical educational and income levels of detailed occupations from the 1970 Census of Population (U.S. Bureau of the Census 1973). In model *iiia-Ed/Earn*, we substituted mean occupation earnings and median education for MSEI2 of mother's and father's occupations. This substitution has very little effect on the coefficients of the income/needs ratio. In model *iiia-Ed*, we have dropped mean earnings from the specification, and again, there is very little

difference in the coefficients of the income/needs ratio. Thus, the typical economic level of occupations has very little to do with the reduction of income/needs effects in the expanded specification of social background.

Thus far, we have considered only relevant correlates of adolescent poverty that are predetermined with respect to the life course by adolescence. In model *iii_af*, we add the full vector of adolescent social and psychological variables (including mental ability) and ask whether they mediate the effects of adolescent poverty. The short answer is that they do. In no case is there very strong evidence, and only for completion of any post-secondary education is there strong evidence, that income/needs affects postsecondary outcomes, once the social background and social psychological variables are controlled. Even at the usual 0.05 probability level, only three significant coefficients remain, those pertaining to post-high school education and base hourly wage in 1992. This is not to say that income/needs has no effects, but rather that the effects that appear in model *iii_a* are largely mediated by other adolescent outcomes.

There are important contrasts between the introduction of ability to the analysis (in models *iii-HN* and *iii_a-HN*) and the introduction of the full vector of social psychological variables in model *iii_af*. When the specification of social background is weak, ability appears to account for a much larger share of the effect of social background social and economic outcomes than when the specification of social background is strong. Moreover, although the influence of poverty on the life course does appear to be determined in large part by way of late adolescent development, that proposition holds only when one enlarges the definition of

development to comprise a much larger set of achievements, aspirations, and social circumstances.

Finally, we introduce educational attainment in model *iiiafe*, and no strong effects of income/needs remain. There remains a nominally significant effect of poverty on the 1992 wage rate and an anomalous negative effect of poverty on the status of first jobs. None of the remaining five effects is even nominally significant. That is, the effects of adolescent poverty are exhausted by way of their direct and indirect influence on academic performance, social support, aspiration, and postsecondary schooling. A good start in early adulthood makes deprived economic origins irrelevant to later life chances.

Table 4 shows the effects of average parental income on our nine outcome measures. The models parallel those of Table 3, except the income/needs ratio is dropped from the equations and replaced by number of siblings and average parental income. The findings here are essentially the same as in Table 3. Adolescent poverty is strongly associated with education, occupational status, and wages, but not with other outcomes. With the exception of obtaining 16 or more years of education (given some post-secondary schooling), the evidence of these associations remains very strong when maternal education and family structure are controlled. However, the evidence is substantially weaker when the extended set of social background factors is controlled. There remains very strong evidence of effects on post-secondary education and the early career, but this is largely explained by the social psychological variables.

Table 5 shows the effects of the dummy-variable representation of income/needs on each outcome variable. Where these effects are significant, they are close to linear. For

example, we can contrast the fit of models *iii* and *v* in Appendix Tables A1 to A9, thus comparing the linear and nonlinear specifications of income/needs when sex, maternal schooling, and family structure have been controlled. Only the contrast for any post-secondary schooling shows substantial improvement in fit in the nonlinear specification. Thus, Table 5 serves mainly to reinforce our earlier findings and to provide illustrative contrasts between youths whose families were above or below the poverty line.

Because so large a share of the Wisconsin sample fell below the official poverty line, we have also run models *v* and *va* with a more detailed breakdown of income/needs ratios below the poverty threshold. We might have expected to find substantial effects of falling into the lowest tenth or lowest twentieth of the family income distribution, even if there were no large effects of being in the bottom fifth. However, Table 6 does not show any substantial or reliable gradations in the effects of adolescent poverty below the 20th percentile. Our inclination is not to conclude that adolescent poverty or extreme poverty is inconsequential in the general population. Again, we would remind readers that all of the members of the Wisconsin sample had completed high school and thus had surpassed one of the most important obstacles created by childhood poverty.

In Table 7, we can examine the effects of sex and maternal schooling on the outcome variables, along with those of income/needs that were reported above in Table 3 (model *iii*). With this specification of social background, the effects both of gender and of mother's education appear to be more persistent across the life course than those of adolescent poverty. For example, there is very strong evidence that women are more likely than men to fall below the poverty line in 1992, but the effects of income/needs do not meet our standard of strong

evidence. Women are also more likely than men to be depressed, while higher levels of maternal education decrease the chances of depression. Adolescent poverty does not affect either poverty or depression in 1992.

In the lower panel of Table 7, we have estimated gender differences in the effects of income/needs on the outcome variables. None of these interactions meet our standard of strong evidence, but there are nominally significant interaction effects on completion of any postsecondary schooling, early occupational status, and base hourly wage. Women are more likely to complete some postsecondary schooling, but they enter the labor force in lower status jobs, and they earn lower wages in 1992. In most cases, income/needs affects the same socioeconomic outcomes among men and among women.¹⁰

Table 8 is similar to Table 7, except we have shown effects and gender interactions for each variable in our expanded definition of social and economic background. In the first panel of Table 8, the line for income/needs is the same as that previously discussed in Table 3. Excepting gender, there is no strong evidence that any of the background variables has effects that extend beyond the socioeconomic variables, with the exception of a negative association between mother's education and depression. At the same time, the evidence of effects on education, occupational status, and wages is generally as strong or stronger in the cases of maternal education, paternal education, father's occupational status, number of siblings, and size of place of origin as it is in the case of income/needs. Again, this is not to

¹⁰ These estimates are not from a single equation. For convenience, we estimated each equation twice, altering the coding of sex in order to obtain separate estimates of the slopes for men and women, as well as estimating the interaction effects.

say that adolescent poverty has no effects, but its effects are a small share of the overall influence of disadvantaged or advantaged social background.

In the second panel of Table 8, we have extracted the main effect of sex and its interaction effects with each of the other social background variables from equations that also include the main effects of the background variables and of family structure. Briefly, very few sex interactions meet our evidentiary criteria. The estimates show very strong evidence for an interaction effect of sex with income/needs only for obtaining any post-secondary schooling. There are few other noteworthy interaction effects. Women with farm backgrounds are more likely than men with farm backgrounds to obtain any postsecondary schooling, and they are also advantaged in occupational status. Presumably, these effects reflect the greater likelihood that farm boys will themselves enter farming. In addition, there is strong evidence that mother's education has a larger effect on post-secondary schooling of daughters than of sons, and that size of place has a stronger effect on secondary schooling of sons than of daughters. Also, there is strong evidence that father's occupational status has a larger effect on the status of first jobs of sons than of daughters.

Social Psychological Factors in Attainment

We have already seen that many of the effects of adolescent poverty are exhausted through their influence on late adolescent development and opportunity, that is, that poverty has no lagged effects later in the life course of the Wisconsin graduates.¹¹ Here, we look more closely at early adult outcomes and at the longer-term effects of the social and

¹¹ Similar observations hold for the effects of other social background characteristics, which are not presented here.

psychological variables. Our analysis is guided by the causal scheme shown in Figure 2, which was developed by William H. Sewell and colleagues (Sewell, Haller, and Portes 1969; Sewell, Haller, and Ohlendorf 1970; Sewell 1971; Sewell, Hauser, and Wolf 1980; Hauser, Tsai, and Sewell 1983). The model posits a recursive causal process leading from social background to post-schooling outcomes through school performance, social influences, educational and occupational aspirations, and post-secondary schooling. While all possible recursive causal paths are shown in Figure 2, theoretical presentations of the model emphasize the importance of a limited set of paths, leading from background to performance, from performance to social influences, from performance and social influences to aspirations, and from aspirations to schooling and post-secondary outcomes (Hauser, Tsai, and Sewell 1983). In other words, the main paths in the model form a modified causal chain, in which the social psychological variables -- labelled as the block of intermediate variables in Figure 2 -- explain the influence of social background on schooling and later attainment.

Table 9 shows coefficients of sex and the intermediate variables in reduced form equations for educational attainment in the model of Figure 2. Because much of influence of the intermediate variables on adult outcomes is mediated by schooling, we show coefficients only for the logistic regressions of any post-secondary schooling and of college graduation. Selected effects of the extended specification of social background have already been presented (in Table 8), and we do not repeat them here.

The intermediate variables do not explain the effects of gender on either measure of post-secondary schooling, nor do they account for the effects of mental ability or class rank on college completion. However, social influences and aspirations do account for much of

the effect of mental ability, high school rank, and academic program on whether a graduate completes any post-secondary schooling. The effect of mental ability declines from 0.025 to 0.017 as social influences and aspirations are added to the model, while the effect of rank in high school class declines from 0.044 to 0.022. The effect of completing an academic program declines from 1.245 to 0.526 as the intermediate variables are controlled. However, there is very strong evidence that all three measures of school performance affect post-secondary schooling, net of the social influences and aspirations. In the case of college completion, there is only nominal evidence that completion of an academic program affects college graduation among persons with some post-secondary schooling, and much of that effect is mediated by social influences and aspirations.

There is strong evidence that the social influences and aspirations affect completion of some post-secondary schooling, but they have only nominally significant effects on college completion. About half of the effects of the social influences on post-secondary schooling are mediated by educational and occupational aspirations.

In Tables 10 and 11, we show the effects of sex and the intermediate variables on post-schooling outcomes. In Table 10, the estimates are based on model *iii_{af}*, and thus the models are equivalent to those for schooling outcomes in column 3 of Table 9. In Table 11, the estimates are based on model *iii_{afe}*, which includes post-secondary schooling, so the contrast between corresponding coefficients in Table 10 and Table 11 shows the extent to which effects of the social psychological variables are mediated by educational attainment.

Whether or not schooling has been controlled, mental ability, rank in high school class, and academic program continue to affect some adult socioeconomic outcomes, but none

of them affects poverty, physical or mental health, or mortality. Much of the influence of mental ability on early and midlife occupational status is mediated by schooling, but schooling accounts for more of the early than of the later effect of ability on job status. It is also striking that the effect of mental ability on occupational status increases from the first job to the 1992 job, while that of rank in high school class declines; these observations hold with or without controlling the length of schooling, and they suggest that the Henmon-Nelson test reflects some abilities that are both important and somewhat different from the behaviors that are rewarded in the school setting. Perhaps occupational standing early in the career is more affected by signals of school performance, while it takes longer for other influences of ability on job performance to appear. However, this interpretation is complicated by the effects of academic program, which affects occupational standing at midlife, but not early in the career. One might argue, as in the case of ability, that academic program reflects specific forms of achievement, rather than an honorific distinction. That would appear to be consistent with our construction of the program measure, which is based upon the courses taken in high school, rather than the student's report of having been in a college preparatory program.

The modest effect of ability on wage rate in 1992 is not mediated by schooling; whether or not schooling has been controlled, a one point difference in Henmon-Nelson IQ leads to a 0.6 percent difference in the wage rate. Again, mental ability does not affect poverty in 1992, before or after schooling has been controlled, nor does it affect our measures of health or mortality.

Among the social influences (parents' encouragement, teachers' encouragement, and friends' college plans), there is very strong evidence that teacher's encouragements and friends' plans affect occupational standing early in the career and at midlife, but that these effects are largely mediated by post-secondary schooling. One exception is that teacher's encouragement continues to affect occupational status at midlife. However, parents' encouragement does not affect any of the adult outcomes, once aspirations have been entered into the model, and neither teacher's encouragement nor friends' plans has lagged effects on wage rates, poverty, or the health outcomes.

As in the case of the social influences, there is strong evidence that educational and occupational aspirations affect occupational status, both early in the career and at midlife. Much of the influence of educational aspirations is mediated by post-secondary schooling; indeed, there is an anomalous negative effect of educational aspiration on early occupational status in model *iiiafe*. However, there is very strong evidence that occupational aspirations have a persistent effect on occupational status at midlife, even after schooling has entered the model. Educational and occupational aspirations also affect the wage rate in 1992, but these effects no longer meet our criterion of strong evidence, once schooling has entered the model. Neither educational nor occupational aspirations affect poverty at midlife nor our other indicators of health and well-being.

By comparing the coefficients of sex among Table 8, Table 10, and Table 11, we can see whether the intermediate variables or schooling account for gender differences in adult outcomes. On the whole, they do not: Controlling the intermediate variables and post-

secondary schooling makes little difference in the significant effects of gender on wage rates, adult poverty, and depression.

Gender effects on occupational status are more complex. When social background alone has been controlled, there is strong evidence that women obtain first jobs with higher status than men, but that this advantage is reversed by midlife (Table 8). After the intermediate variables have been controlled, there is no gender difference in the status of first jobs, and the 1992 jobs of women remain significantly lower in status than those of men (Table 10). However, net of schooling, the status of women's first jobs is substantially higher than that of men, and there is no longer any significant difference in the status of current jobs (Table 11). These findings are consistent in showing a deterioration of women's occupational standing relative to men throughout the life course; in each model, the gender differential in 1992 occupations is less favorable to women than the gender differential in first occupations. Women initially tend to enter white collar jobs and thus are at an advantage relative to men. This advantage is explained to some degree by women's superior academic achievement in high school, and it appears yet larger in light of women's lower levels of post-secondary schooling, but it eventually withers away as men's careers progress.

As shown at the bottom of Table 11, educational attainment has substantial effects of adult socioeconomic outcomes among the Wisconsin graduates. Completion of some post-secondary schooling leads to an increase of 9 points on the SEI of the first job and to 5 points on the SEI of the job at midlife. Completion of college increases status of the first job by 32 points and status of the current job by 18 points. Post-secondary schooling also affects wages at midlife. When all other variables in the model have been controlled, completion of

some post-secondary schooling increases the wage rate in 1992 by 7 percent, and completion of college increases the wage rate by almost 30 percent. However, schooling has little or no effect on the other outcome variables, and this helps to account for the meager influence of background and intermediate variables on those outcomes.

Discussion

We have examined the effects of poverty on the life chances of a cohort of Wisconsin high school graduates in the context of the larger array of social circumstances of their adolescence. If we ignore the full array of educational, occupational, and family circumstances, it is easy to overstate the import of economic deprivation for adult life chances. When we take a wider set of circumstances into account, the effects of adolescent poverty appear to be limited to educational and occupational chances, and they appear also to be exhausted through their influence on late adolescent development and opportunity. That is, there is scant evidence of direct effects of poverty that last beyond entry into adulthood. To be sure, similar observations hold also for other social conditions, such as parents' schooling and occupational standing, but there is no evidence that the effects of income or poverty loom larger over the life course than those of other circumstances of upbringing.

We would not claim that the validity of our specific findings extends beyond the kind of population that is represented by the Wisconsin Longitudinal Study, that is, high school graduates, almost all of European stock, who were raised in the Midwest in the years following World War II. Thus, we would not argue that our findings contradict those of Mary Corcoran in a national sample, the Panel Study of Income Dynamics, which includes a more heterogeneous population of non-high school graduates.

At the same time, we believe that our findings should be cautionary, at least on methodological grounds, to anyone who might be tempted to focus on economic circumstances alone as determinants of life chances. We cannot think of any reason to discount our finding that maternal education and family structure cannot stand alone as controls for social background against which one can freely extrapolate estimates of the influence of economic standing. In fact, we know that the reliability of our income measurements -- obtained as an average of adjusted gross income from tax records over a four year period -- is higher than that of the other measured background variables used in our analysis (Hauser, Tsai, and Sewell 1983: 38). Thus, we believe that efforts to estimate the influence of economic circumstance should be based upon an equally rich specification of non-economic conditions of origin.

Again, all of this is not to say that adolescent poverty has no lasting effects. In our sample, adolescent poverty affects schooling and occupational chances, primary by way of its effects on late adolescent development. In that way, it has indirect effects throughout the life course. Thus, our findings support the widespread belief that the developmental pathways leading from childhood to achievement and aspiration in late adolescence ought to be the main targets of policy intervention. At the same time, the large influence of other social background characteristics suggests that policies affecting income alone are unlikely to compensate fully for social disadvantage.

Neither should we imagine that non-economic circumstances of origin are either immutable or insensitive to public policy. For example, as we have seen in the growth of academic achievement and school retention in the black population over the past twenty years,

rising maternal education and reduced childbearing have substantially improved life chances (Hauser 1993a; Hauser 1993b; Grissmer, et al 1994). In our opinion, the social sciences have suffered from a preoccupation with current measures of income or poverty. To some degree, we think this focus is program-driven. In the administration and evaluation of social, economic, and health programs, rather than establishing universal eligibility, as some countries do, we rely upon narrow, temporally specific economic measures of eligibility or of outcome. This focus is also perhaps a consequence of the diffusion of economic thinking beyond the disciplinary boundary of economics, and it may reflect broader social and political trends. Whatever its sources, a narrow focus on economic resources may not be scientifically valid. We believe that overly economic thinking may have diverted us from other major sources, dimensions, and consequences of social inequality.

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Table 1. Sources and Descriptions of Variables Used in the Analysis of Adolescent Poverty and the Life Course: Wisconsin Longitudinal Study

Variable	Source	Description	All Respondents			Men			Women		
			Mean	SD	N	Mean	SD	N	Mean	SD	N
Social and Economic Background Variables											
Sex	1957 survey	Coded 1 if female; 0 otherwise.	0.52	0.50	9611	0.00	0.00	4570	1.00	0.00	5041
Intact Family	1975, 1993* surveys	Coded 1 if intact; 0 otherwise.	0.90	0.30	9611	0.90	0.30	4570	0.89	0.31	5041
Mother Head of Household, Widowed	-----	Coded 1 if mother head, widowed; 0 otherwise.	0.03	0.16	9611	0.02	0.16	4570	0.03	0.16	5041
Mother Head of Household, Other Reason	-----	Coded 1 if mother head, other reason; 0 otherwise.	0.03	0.17	9611	0.03	0.16	4570	0.03	0.18	5041
Father Head of Household, Any Reason	-----	Coded 1 if father head, other reason; 0 otherwise.	0.02	0.13	9611	0.02	0.13	4570	0.02	0.13	5041
Other Head of Household	-----	Coded 1 if other person head; 0 otherwise.	0.03	0.17	9611	0.03	0.17	4570	0.03	0.17	5041
Mother's Education	1993*, 1975, 1957 surveys	Years of school completed.	10.47	2.80	9611	10.62	2.78	4570	10.33	2.81	5041
Father's Education	1993*, 1975, 1957 surveys	Years of school completed.	9.77	3.37	9611	9.82	3.41	4570	9.72	3.33	5041
Mother's Job Status	1993*, 1975 surveys	MSEI2 score of 1957 occupation.	29.89	9.34	3508	29.98	9.40	1615	29.81	9.29	1893
Mother's Occupational-Specific Education	1993*, 1975 surveys, 1970 Census data	Median years education for occupation.	11.86	0.97	3508	11.87	0.97	1615	11.85	0.97	1893
Mother's Occupational-Specific Earnings	1993*, 1975 surveys, 1970 Census data	Mean earnings for occupation, 1992 dollars (10,000s).	1.50	0.29	3508	1.50	0.29	1615	1.50	0.30	1893
Father's Job Status	1993*, 1975 surveys	MSEI2 score of 1957 occupation.	32.25	16.53	9611	32.43	16.82	4570	32.08	16.27	5041
Father's Occupational-Specific Education	1993*, 1975 surveys, 1970 Census data	Median years education for occupation.	11.88	1.57	9611	11.90	1.60	4570	11.86	1.54	5041
Father's Occupational-Specific Earnings	1993*, 1975 surveys, 1970 Census data	Mean earnings for occupation, 1992 dollars (10,000s).	3.11	1.12	9611	3.12	1.14	4570	3.11	1.11	5041
No Job Reported for Mother in 1957	1993*, 1975 surveys	Coded 1 if no job reported; 0 otherwise.	0.64	0.48	9611	0.65	0.48	4570	0.62	0.48	5041
Farm Background	Wisconsin tax records	Coded 1 if father was a farmer; 0 otherwise.	0.20	0.40	9611	0.20	0.40	4570	0.20	0.40	5041
Number of Siblings	1993*, 1975 surveys	Living in 1975 (excludes respondent).	2.97	2.27	9611	2.92	2.23	4570	3.01	2.30	5041
Size of Place of Origin	1957 survey	Scored 2-9 based on size of place, with 9 being largest.	5.03	2.27	9611	4.93	2.23	4570	5.12	2.31	5041
Average Parental Income	Wisconsin tax records	1992 dollars (10,000s).	2.82	2.55	9611	2.84	2.62	4570	2.81	2.49	5041
Income/Needs Ratio	Tax records, 1975, 1993* surveys	Parent's 1957 income (1992 dollars) divided by needs as defined by 1992 poverty thresholds.	1.99	1.88	9611	2.00	1.85	4570	1.98	1.91	5041
Income/Needs < 1 = 1	-----	Coded 1 if income/needs < 1; 0 otherwise.	0.22	0.42	9611	0.22	0.41	4570	0.23	0.42	5041
Income/Needs 1-2 = 1	-----	Coded 1 if income/needs = 1-2; 0 otherwise.	0.41	0.49	9611	0.41	0.49	4570	0.42	0.49	5041
Income/Needs 2-3 = 1	-----	Coded 1 if income/needs = 2-3; 0 otherwise.	0.24	0.43	9611	0.25	0.43	4570	0.23	0.42	5041
Income/Needs 3+ = 1	-----	Coded 1 if income/needs = 3+; 0 otherwise.	0.13	0.33	9611	0.13	0.33	4570	0.13	0.33	5041

(continued)

Table 1, continued.

	Source	Description	All Respondents						Men			Women		
			Mean	SD	N	Mean	SD	N	Mean	SD	N			
Social Psychological Variables														
Mental Ability	Wisconsin Testing Service	Normalized score on Henmon-Nelson test taken in 11th grade.	100.89	14.70	9611	101.11	15.04	4570	100.68	14.38	5041			
Rank in High School Class	School Records	Ranked and Normalized report of average grades in high school.	100.83	14.36	9611	97.55	14.14	4570	103.80	13.91	5041			
Academic Program	1957 survey	Coded 1 if completed University of Wisconsin entrance requirements; 0 otherwise.	0.59	0.49	9611	0.65	0.48	4570	0.53	0.50	5041			
Parents' Encouragement	1957 survey	Coded 1 if reported parental encouragement to attend college; 0 otherwise.	0.52	0.50	9611	0.59	0.49	4570	0.46	0.50	5041			
Teacher's Encouragement	1957 survey	Coded 1 if reported teachers' encouragement to attend college; 0 otherwise.	0.43	0.49	9611	0.45	0.50	4570	0.40	0.49	5041			
Friends' College Plans	1957 survey	Coded 1 if most friends planned to attend college; 0 otherwise.	0.39	0.49	9611	0.37	0.48	4570	0.41	0.49	5041			
Educational Aspiration	1957 survey	Coded 1 if planned to attend college; 0 otherwise.	0.44	0.50	9611	0.41	0.49	4570	0.46	0.50	5041			
Occupational Aspiration	1957 survey	Duncan SEI score.	49.85	21.52	9611	48.73	26.42	4570	50.87	15.75	5041			
Educational Attainment (by 1975)														
12 years Education	1975, 1993* surveys	Coded 1 if 12 years; 0 otherwise.	0.63	0.48	9611	0.56	0.50	4570	0.70	0.46	5041			
13-15 years Education	-----	Coded 1 if 13-15 years; 0 otherwise.	0.13	0.34	9611	0.14	0.35	4570	0.12	0.33	5041			
16+ years Education	-----	Coded 1 if 16+ years; 0 otherwise.	0.23	0.42	9611	0.29	0.45	4570	0.17	0.38	5041			
Outcome Variables														
1a: Some Post-High School Education	1975, 1993* surveys	Coded 1 if 13+ years; 0 otherwise.	0.36	0.48	9549	0.44	0.50	4547	0.30	0.46	5002			
1b: 16+ Years of Education (Given some post-HS education)	1975, 1993* surveys	Coded 1 if 13+ years, given some post-HS; 0 otherwise.	0.63	0.48	3474	0.67	0.47	1979	0.58	0.49	1495			
2: Status of First Occupation	1975, 1993* surveys	MSEI2 score.	37.36	19.83	8970	36.63	23.30	4320	38.04	15.91	4650			
3: Status of 1992 Occupation	1993 survey	MSEI2 score.	44.20	20.00	7181	45.30	21.56	3675	43.05	18.15	3506			
4: Log of 1992 Base Hourly Wage	1993 survey	Current dollars (plus 50 cents start value).	2.64	0.71	6739	2.92	0.71	3478	2.33	0.58	3261			
5: Below Poverty Threshold in 1992	1975, 1993* surveys	Coded 1 if Respondent and spouse's total 1992 income is less than needs as defined by 1992 poverty thresholds.	0.02	0.15	5824	0.01	0.12	3051	0.03	0.17	2773			
6: Fair or Poor Health	1993 survey	Coded 1 if yes; 0 otherwise.	0.13	0.34	6793	0.12	0.33	3152	0.13	0.34	3641			
7: High Depression in 1992	1993 survey	Coded 1 if top 20% on CES-D depression scale; 0 otherwise.	0.21	0.41	6820	0.19	0.39	3168	0.23	0.42	3652			
8: Death by 1992	1975, 1993 surveys	Covers survivors to 1975 or later, coded 1 if death occurred, 0 otherwise	0.04	0.19	9611	0.04	0.20	4570	0.03	0.17	5041			

Note: In a small number of cases, missing data on regressors were filled with means, and dummy variables for missing data were added to regression models. *In most cases, data missing for those not responding to the 1975 survey were filled in during the 1993 interview.

Table 2. Correlations Among Outcome Variables: Wisconsin Longitudinal Study

Variable	1a	1b	2	3	4	5	6	7	8
1a: Some Post-High School Education	1.00	-	-	-	-	-	-	-	-
1b: 16+ Years of Education (Given some post-HS education)	-	1.00	-	-	-	-	-	-	-
2: Status of First Occupation	0.66	0.61	1.00	-	-	-	-	-	-
3: Status of 1992 Occupation	0.52	0.40	0.59	1.00	-	-	-	-	-
4: Log of 1992 Base Hourly Wage	0.33	0.20	0.28	0.39	1.00	-	-	-	-
5: Below Poverty Threshold in 1992	-0.03	-0.02	-0.03	-0.05	-0.14	1.00	-	-	-
6: Fair or Poor Health	-0.07	-0.07	-0.08	-0.07	-0.07	0.08	1.00	-	-
7: High Depression in 1992	-0.08	-0.04	-0.06	-0.09	-0.09	0.07	0.21	1.00	-
8: Death by 1992	-0.01	-0.03	-0.00	-	-	-	-	-	1.00

Note: See Table 1 for complete description of variables.

Table 3. Effect of Income/Needs Under Various Model Specifications: Wisconsin Longitudinal Study

	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Model ii	0.413** (0.020)	0.074* (0.018)	1.906** (0.110)	1.622** (0.125)	0.042** (0.004)	0.009 (0.051)	-0.035 (0.022)	-0.043 (0.019)	-0.022 (0.033)
Model iii	0.336** (0.020)	0.053 (0.017)	1.482** (0.110)	1.252** (0.125)	0.033** (0.004)	-0.003 (0.054)	-0.021 (0.022)	-0.022 (0.018)	-0.010 (0.032)
Model iii-HN	0.309** (0.021)	0.045 (0.017)	1.141** (0.102)	0.932** (0.117)	0.026** (0.004)	0.014 (0.051)	-0.013 (0.021)	-0.012 (0.018)	-0.010 (0.033)
Model iiiia	0.149** (0.020)	0.036 (0.018)	0.518** (0.115)	0.426 (0.132)	0.017* (0.004)	-0.009 (0.060)	-0.003 (0.022)	-0.030 (0.020)	-0.045 (0.041)
Model iiiia-Ed/Earn	0.157** (0.020)	0.040 (0.018)	0.555** (0.117)	0.434 (0.134)	0.014 (0.005)	0.011 (0.060)	-0.002 (0.022)	-0.026 (0.020)	-0.050 (0.041)
Model iiiia-Ed	0.162** (0.020)	0.036 (0.018)	0.564** (0.114)	0.465 (0.131)	0.018* (0.004)	-0.018 (0.062)	-0.003 (0.022)	-0.030 (0.020)	-0.038 (0.040)
Model iiiia-HN	0.153** (0.021)	0.038 (0.019)	0.441* (0.108)	0.364 (0.124)	0.015 (0.004)	-0.005 (0.060)	-0.001 (0.022)	-0.027 (0.020)	-0.045 (0.041)
Model iiiiaf	0.081* (0.020)	0.040 (0.019)	0.146 (0.097)	0.115 (0.117)	0.011 (0.004)	-0.001 (0.060)	0.006 (0.021)	-0.022 (0.020)	-0.051 (0.041)
Model iiiiafe	n/a	n/a	-0.185 (0.077)	-0.065 (0.111)	0.008 (0.004)	-0.000 (0.060)	0.008 (0.021)	-0.021 (0.020)	-0.045 (0.041)

Note: Variables are defined in Table 1, and model specifications are described in Figure 1.
 ** Very strong evidence. * Strong evidence.

Table 4. Effect of Average Parental Income Under Various Model Specifications: Wisconsin Longitudinal Study

	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Model iib	0.288** (0.015)	0.054* (0.013)	1.209** (0.080)	1.068** (0.091)	0.029** (0.003)	-0.001 (0.040)	-0.030 (0.017)	-0.038 (0.015)	-0.022 (0.026)
Model iv	0.226** (0.016)	0.038 (0.013)	0.928** (0.080)	0.826** (0.091)	0.023** (0.003)	-0.011 (0.043)	-0.020 (0.017)	-0.022 (0.014)	-0.010 (0.025)
Model iva	0.114** (0.015)	0.028 (0.013)	0.386** (0.083)	0.331 (0.095)	0.012 (0.003)	-0.016 (0.047)	-0.003 (0.016)	-0.024 (0.015)	-0.037 (0.031)
Model ivaf	0.048 (0.015)	0.025 (0.014)	0.070 (0.070)	0.064 (0.084)	0.007 (0.003)	-0.007 (0.046)	0.005 (0.015)	-0.016 (0.015)	-0.042 (0.031)
Model ivafe	n/a	n/a	-0.134 (0.056)	-0.039 (0.080)	0.005 (0.003)	-0.007 (0.046)	0.006 (0.015)	-0.016 (0.015)	-0.039 (0.031)

Note: Variables are defined in Table 1, and model specifications are described in Figure 1.

** Very strong evidence. * Strong evidence.

Table 5. Effect of Income/Needs Dummy Variables Under Various Model Specifications: Wisconsin Longitudinal Study

	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Model iic									
Income/needs <1	-0.411** (0.064)	-0.059 (0.112)	-3.771** (0.547)	-3.814** (0.621)	-0.109** (0.021)	0.083 (0.245)	0.173 (0.095)	0.104 (0.080)	-0.036 (0.145)
Income/needs 2-3	0.421** (0.055)	-0.018 (0.089)	3.412** (0.529)	3.025** (0.597)	0.085* (0.020)	-0.052 (0.231)	0.024 (0.093)	0.089 (0.076)	-0.194 (0.145)
Income/needs 3+	1.396** (0.071)	0.373 (0.100)	10.210** (0.667)	8.530** (0.753)	0.245** (0.025)	-0.047 (0.309)	-0.212 (0.125)	-0.172 (0.101)	-0.114 (0.179)
Model v									
Income/needs <1	-0.303** (0.066)	-0.023 (0.113)	-2.899** (0.536)	-3.014** (0.615)	-0.090* (0.021)	0.124 (0.248)	0.153 (0.095)	0.065 (0.081)	-0.069 (0.146)
Income/needs 2-3	0.385** (0.057)	-0.055 (0.090)	3.026** (0.517)	2.740** (0.589)	0.080* (0.020)	-0.057 (0.232)	0.038 (0.094)	0.104 (0.076)	-0.184 (0.146)
Income/needs 3+	1.206** (0.074)	0.261 (0.102)	8.185** (0.660)	6.761** (0.751)	0.205** (0.026)	-0.123 (0.314)	-0.153 (0.126)	-0.084 (0.102)	-0.063 (0.181)
Model va									
Income/needs <1	-0.103 (0.071)	-0.041 (0.119)	-0.902 (0.556)	-0.775 (0.644)	-0.047 (0.022)	0.144 (0.265)	0.163 (0.102)	0.106 (0.086)	0.031 (0.155)
Income/needs 2-3	0.164 (0.062)	-0.061 (0.094)	0.808 (0.522)	0.893 (0.601)	0.052 (0.021)	-0.078 (0.241)	0.044 (0.097)	0.066 (0.079)	-0.275 (0.150)
Income/needs 3+	0.690** (0.082)	0.146 (0.112)	2.928* (0.693)	2.611 (0.796)	0.136** (0.027)	-0.207 (0.336)	-0.069 (0.135)	-0.107 (0.109)	-0.239 (0.195)
Model vaf									
Income/needs <1	0.114 (0.093)	0.063 (0.129)	0.083 (0.468)	0.077 (0.569)	-0.028 (0.021)	0.148 (0.266)	0.139 (0.103)	0.085 (0.087)	0.027 (0.155)
Income/needs 2-3	0.202 (0.082)	-0.018 (0.102)	0.458 (0.440)	0.357 (0.532)	0.043 (0.020)	-0.058 (0.243)	0.054 (0.098)	0.079 (0.080)	-0.286 (0.151)
Income/needs 3+	0.602** (0.108)	0.208 (0.121)	1.102 (0.586)	1.075 (0.707)	0.109* (0.026)	-0.204 (0.338)	-0.024 (0.136)	-0.083 (0.111)	-0.270 (0.197)
Model vafe									
Income/needs <1	n/a	n/a	-0.271 (0.373)	-0.145 (0.539)	-0.032 (0.021)	0.150 (0.266)	0.140 (0.103)	0.085 (0.087)	0.036 (0.155)
Income/needs 2-3	n/a	n/a	0.093 (0.350)	0.170 (0.504)	0.041 (0.020)	-0.059 (0.243)	0.054 (0.098)	0.079 (0.080)	-0.281 (0.151)
Income/needs 3+	n/a	n/a	-1.264 (0.468)	-0.325 (0.671)	0.090 (0.026)	-0.197 (0.339)	-0.009 (0.136)	-0.081 (0.111)	-0.233 (0.197)

Note: Reference category is income/needs ratio between 1 and 2. Variables are defined in Table 1, and model specifications are described in Figure 1. ** Very strong evidence. * Strong evidence.

Table 6. Effect of Detailed Income/Needs Dummy Variables Under Various Model Specifications: Wisconsin Longitudinal Study

	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Model v									
Lowest 5%	-0.340 (0.120)	-0.363 (0.206)	-3.029 (0.948)	-2.695 (1.107)	-0.063 (0.037)	-0.615 (0.603)	-0.144 (0.186)	-0.021 (0.148)	0.173 (0.233)
Lowest 5-10%	-0.335 (0.120)	0.419 (0.221)	-2.609 (0.933)	-2.287 (1.078)	-0.134 (0.037)	0.173 (0.415)	0.215 (0.161)	0.055 (0.140)	-0.072 (0.257)
Lowest 10-15%	-0.207 (0.116)	0.024 (0.200)	-2.962 (0.946)	-3.163 (1.058)	-0.097 (0.036)	0.581 (0.359)	0.246 (0.158)	0.132 (0.137)	-0.329 (0.286)
Lowest 15-22%	-0.325 (0.102)	-0.106 (0.176)	-2.976 (0.816)	-3.631* (0.933)	-0.071 (0.032)	0.035 (0.390)	0.216 (0.141)	0.078 (0.122)	-0.096 (0.226)
Income /needs 2-3	0.385** (0.057)	-0.056 (0.090)	3.026** (0.517)	2.740** (0.589)	0.080* (0.020)	-0.057 (0.232)	0.038 (0.094)	0.104 (0.076)	-0.184 (0.146)
Income /needs 3+	1.206** (0.074)	0.261 (0.102)	8.184** (0.660)	6.758** (0.751)	0.205** (0.026)	-0.123 (0.314)	-0.153 (0.126)	-0.083 (0.102)	-0.064 (0.181)
Model va									
Lowest 5%	-0.143 (0.125)	-0.387 (0.209)	-1.087 (0.939)	-0.554 (1.108)	-0.026 (0.038)	-0.592 (0.609)	-0.126 (0.189)	0.016 (0.151)	0.227 (0.239)
Lowest 5-10%	-0.114 (0.125)	0.383 (0.226)	-0.422 (0.937)	0.347 (1.097)	-0.084 (0.038)	0.221 (0.433)	0.239 (0.168)	0.108 (0.145)	0.054 (0.265)
Lowest 10-15%	0.008 (0.121)	-0.004 (0.205)	-0.750 (0.944)	-0.695 (1.067)	-0.052 (0.037)	0.595 (0.373)	0.255 (0.164)	0.183 (0.141)	-0.203 (0.292)
Lowest 15-22%	-0.145 (0.106)	-0.088 (0.180)	-1.197 (0.810)	-1.687 (0.934)	-0.033 (0.032)	0.061 (0.398)	0.221 (0.145)	0.110 (0.125)	-0.002 (0.231)
Income /needs 2-3	0.164 (0.062)	-0.062 (0.094)	0.803 (0.522)	0.877 (0.601)	0.052 (0.021)	-0.079 (0.241)	0.044 (0.097)	0.065 (0.079)	-0.275 (0.150)
Income /needs 3+	0.690** (0.082)	0.144 (0.112)	2.922* (0.693)	2.591 (0.797)	0.136** (0.027)	-0.207 (0.336)	-0.070 (0.135)	-0.107 (0.110)	-0.239 (0.195)

Note: Reference category is income/needs ratio between 1 and 2. Variables are defined in Table 1, and model specifications are described in Figure 1.
 ** Very strong evidence. * Strong evidence.

Table 7. Effects of Maternal Education and Income/Needs Under Models iii and ix: Wisconsin Longitudinal Study

	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Model iii									
Sex	-0.609** (0.046)	-0.430** (0.072)	2.002** (0.403)	-1.933* (0.459)	-0.583** (0.016)	0.803* (0.191)	0.081 (0.073)	0.267** (0.061)	-0.321 (0.111)
Mother's Education	0.199** (0.009)	0.070** (0.013)	1.491** (0.074)	1.286** (0.083)	0.031** (0.003)	0.048 (0.033)	-0.043 (0.013)	-0.063** (0.011)	-0.026 (0.020)
Income/Needs	0.336** (0.020)	0.053 (0.017)	1.482** (0.110)	1.252** (0.125)	0.033** (0.004)	-0.003 (0.054)	-0.021 (0.022)	-0.022 (0.018)	-0.010 (0.032)
Model ix									
Sex	-0.894** (0.090)	-0.333 (0.111)	2.980** (0.585)	-1.257 (0.668)	-0.540** (0.023)	0.872 (0.286)	0.013 (0.112)	0.364* (0.091)	-0.351 (0.165)
Mother's Education	0.198** (0.009)	0.070** (0.013)	1.494** (0.073)	1.290** (0.083)	0.032** (0.003)	0.048 (0.033)	-0.043 (0.013)	-0.062** (0.011)	-0.026 (0.020)
Income/Needs (F)	0.410** (0.029)	0.038 (0.020)	1.244** (0.151)	1.088** (0.171)	0.023* (0.006)	-0.017 (0.070)	-0.007 (0.027)	-0.047 (0.026)	-0.002 (0.045)
Income/Needs (M)	0.262** (0.027)	0.079 (0.029)	1.740** (0.156)	1.430** (0.179)	0.045** (0.006)	0.018 (0.080)	-0.042 (0.036)	0.004 (0.024)	-0.018 (0.046)
Income/Needs * Sex	0.148 (0.040)	-0.041 (0.035)	-0.496 (0.215)	-0.342 (0.245)	-0.022 (0.008)	-0.034 (0.106)	0.035 (0.045)	-0.050 (0.036)	0.016 (0.063)

Note: Family structure variables are included in the models, but their effects are not presented here. Variables are defined in Table 1, and model specifications are described in Figure 1. ** Very strong evidence. * Strong evidence.

Table 8. Effects of Sex, Social Background, and Income/Needs Under Models iia and ixa: Wisconsin Longitudinal Study

Model iia	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Sex	-0.670** (0.048)	-0.463** (0.073)	1.945** (0.390)	-1.987** (0.449)	-0.587** (0.015)	0.796* (0.191)	0.086 (0.073)	0.265** (0.061)	-0.328 (0.111)
Mother's Education	0.099** (0.010)	0.024 (0.015)	0.584** (0.083)	0.602** (0.096)	0.019** (0.003)	0.063 (0.039)	-0.021 (0.015)	-0.052* (0.013)	-0.026 (0.024)
Father's Education	0.098** (0.009)	0.063** (0.013)	0.739** (0.075)	0.510** (0.086)	0.008 (0.003)	-0.008 (0.034)	-0.035 (0.014)	-0.017 (0.012)	-0.010 (0.021)
Father's Job Status	0.021** (0.002)	0.003 (0.002)	0.169** (0.015)	0.130** (0.017)	0.003* (0.001)	-0.001 (0.007)	-0.006 (0.003)	0.000 (0.002)	0.009 (0.004)
Mother's Job Status	0.015** (0.003)	0.002 (0.004)	0.110** (0.022)	0.067 (0.025)	0.001 (0.001)	-0.004 (0.011)	0.003 (0.004)	-0.007 (0.004)	-0.011 (0.007)
Mother Not Working	-0.024 (0.051)	-0.067 (0.080)	-0.771 (0.420)	-0.936 (0.484)	-0.014 (0.017)	0.428 (0.208)	0.075 (0.079)	-0.068 (0.064)	-0.140 (0.117)
Number of Siblings	-0.090** (0.012)	-0.023 (0.020)	-0.669** (0.091)	-0.361 (0.106)	-0.000 (0.004)	-0.008 (0.043)	-0.017 (0.017)	-0.012 (0.014)	0.011 (0.026)
Farm Background	0.116 (0.071)	0.267 (0.120)	-0.654 (0.550)	-2.688* (0.630)	-0.061 (0.022)	0.211 (0.258)	-0.021 (0.100)	-0.032 (0.085)	-0.266 (0.171)
Size of Place	0.053** (0.012)	-0.019 (0.017)	0.453** (0.096)	0.503** (0.111)	0.021** (0.004)	0.064 (0.045)	-0.002 (0.018)	0.022 (0.015)	0.011 (0.027)
Income/Needs	0.149** (0.020)	0.036 (0.018)	0.518** (0.115)	0.426 (0.132)	0.017 (0.004)	-0.009 (0.060)	-0.003 (0.022)	-0.030 (0.020)	-0.045 (0.041)

(continued)

Table 8, continued.

Model	Dependent Variable								
	1a	1b	2	3	4	5	6	7	8
Sex	-1.815** (0.307)	-1.343 (0.438)	4.318 (2.275)	-4.103 (2.640)	-0.428** (0.090)	2.391 (1.191)	-0.068 (0.436)	1.161 (0.358)	-0.304 (0.692)
Sex x Mother's Education	0.086* (0.021)	0.039 (0.031)	0.296 (0.166)	0.263 (0.192)	0.003 (0.007)	-0.087 (0.083)	-0.014 (0.031)	-0.021 (0.026)	0.012 (0.048)
Sex x Father's Education	0.002 (0.018)	0.002 (0.026)	-0.405 (0.148)	-0.256 (0.172)	-0.003 (0.006)	0.016 (0.071)	0.010 (0.028)	-0.013 (0.023)	0.029 (0.042)
Sex x Father's Job Status	0.003 (0.004)	-0.008 (0.005)	-0.121* (0.029)	-0.044 (0.034)	-0.003 (0.001)	-0.008 (0.014)	0.001 (0.006)	-0.006 (0.005)	-0.009 (0.008)
Sex x Mother's Job Status	0.001 (0.005)	0.011 (0.008)	0.034 (0.045)	0.062 (0.051)	0.001 (0.002)	0.004 (0.023)	-0.003 (0.009)	-0.003 (0.007)	0.003 (0.014)
Sex x Mother Not Working	0.216 (0.104)	0.137 (0.162)	1.457 (0.836)	0.175 (0.966)	-0.037 (0.033)	0.702 (0.431)	-0.279 (0.160)	-0.039 (0.131)	-0.200 (0.172)
Sex x Number of Siblings	-0.026 (0.025)	-0.011 (0.041)	0.146 (0.181)	0.085 (0.211)	-0.006 (0.007)	-0.022 (0.090)	0.034 (0.035)	-0.044 (0.029)	0.070 (0.052)
Sex x Farm Background	0.718** (0.143)	0.128 (0.240)	5.758** (1.091)	5.050* (1.257)	0.087 (0.043)	-1.357 (0.536)	-0.327 (0.201)	-0.036 (0.173)	-0.162 (0.345)
Sex x Size of Place	-0.094* (0.024)	0.066 (0.035)	-0.399 (0.191)	-0.050 (0.222)	-0.013 (0.008)	-0.098 (0.095)	0.089 (0.037)	-0.003 (0.030)	0.014 (0.053)
Sex x Income/Needs	0.183** (0.040)	-0.029 (0.038)	0.419 (0.228)	0.115 (0.263)	-0.008 (0.009)	-0.055 (0.114)	-0.006 (0.044)	-0.042 (0.041)	0.055 (0.080)

Note: Many variables included in the models are not shown. Please refer to Table 1 and Figure 1 for variable definitions and model specifications. ** Very strong evidence. * Strong evidence.

Table 9. Reduced Form Equations of Model iiiif for Educational Attainment: Effects of Sex and Social Psychological Variables

Variable	Any Post-High School Education			16+ Years of Education		
	(1)	(2)	(3)	(1)	(2)	(3)
Sex	-1.017** (0.059)	-0.925** (0.064)	-1.195** (0.072)	-0.856** (0.084)	-0.881** (0.086)	-0.928** (0.089)
Mental Ability	0.025** (0.002)	0.019** (0.003)	0.017** (0.003)	0.021** (0.003)	0.020** (0.003)	0.020** (0.004)
Rank in High School Class	0.044** (0.003)	0.032** (0.003)	0.022** (0.003)	0.048** (0.004)	0.045** (0.004)	0.042** (0.004)
Academic Program	1.245** (0.063)	0.756** (0.070)	0.526** (0.075)	0.256 (0.114)	0.156 (0.117)	0.105 (0.120)
Parents' Encouragement		1.390** (0.069)	0.765** (0.078)		0.096 (0.122)	-0.077 (0.127)
Teacher's Encouragement		0.554** (0.063)	0.263 (0.070)		0.234 (0.088)	0.185 (0.089)
Friends' College Plans		0.961** (0.063)	0.567** (0.070)		0.342 (0.092)	0.267 (0.094)
Educational Aspiration			1.353** (0.079)			0.464 (0.125)
Occupational Aspiration			0.028** (0.002)			0.005 (0.002)

Note: Many variables included in the models are not shown. Please refer to Table 1 and Figure 1 for variable definitions and model specifications. ** Very strong evidence. * Strong evidence.

Table 10. Effects of Sex and Social Psychological Variables Under Model iiiaf: Wisconsin Longitudinal Study

	Dependent Variable							
	2	3	4	5	6	7	8	
Sex	0.003 (0.355)	-2.989** (0.428)	-0.608** (0.016)	0.892** (0.206)	0.135 (0.080)	0.288** (0.066)	-0.212 (0.120)	
Mental Ability	0.117** (0.015)	0.191** (0.018)	0.006** (0.001)	-0.018 (0.008)	-0.000 (0.003)	-0.008 (0.003)	0.006 (0.005)	
Rank in High School Class	0.230** (0.016)	0.133** (0.019)	0.001 (0.001)	-0.008 (0.008)	-0.009 (0.004)	-0.007 (0.003)	-0.017 (0.005)	
Academic Program	0.292 (0.400)	1.983* (0.493)	-0.015 (0.018)	-0.168 (0.225)	-0.041 (0.088)	-0.024 (0.073)	0.243 (0.137)	
Parents' Encouragement	1.629 (0.442)	2.035 (0.537)	0.039 (0.020)	-0.185 (0.256)	-0.174 (0.098)	-0.199 (0.081)	0.066 (0.148)	
Teacher's Encouragement	2.023** (0.403)	2.651** (0.486)	0.030 (0.018)	0.033 (0.228)	0.001 (0.090)	-0.099 (0.074)	-0.199 (0.136)	
Friends' College Plans	3.069** (0.415)	2.648** (0.501)	0.066 (0.019)	0.012 (0.238)	-0.138 (0.093)	-0.155 (0.077)	0.062 (0.138)	
Educational Aspiration	3.776** (0.473)	3.364** (0.577)	0.085* (0.022)	-0.012 (0.265)	-0.033 (0.105)	0.048 (0.087)	0.222 (0.158)	
Occupational Aspiration	0.224** (0.010)	0.145** (0.012)	0.002** (0.000)	-0.003 (0.006)	-0.002 (0.002)	0.001 (0.002)	-0.002 (0.003)	

Note: Many variables included in the models are not shown. Please refer to Table 1 and Figure 1 for variable definitions and model specifications. ** Very strong evidence. * Strong evidence.

Table 11. Effects of Sex and Social Psychological Variables Under Model iii: Wisconsin Longitudinal Study

	Dependent Variable							
	2	3	4	5	6	7	8	
Sex	4.757** (0.290)	-0.248 (0.416)	-0.569** (0.016)	0.874* (0.211)	0.097 (0.083)	0.284* (0.068)	-0.278 (0.124)	
Mental Ability	0.048* (0.012)	0.155** (0.017)	0.006** (0.001)	-0.017 (0.008)	0.000 (0.003)	-0.008 (0.003)	0.007 (0.005)	
Rank in High School Class	0.113** (0.012)	0.059 (0.018)	0.000 (0.001)	-0.008 (0.008)	-0.008 (0.004)	-0.007 (0.003)	-0.016 (0.005)	
Academic Program	-0.504 (0.319)	1.486 (0.469)	-0.022 (0.018)	-0.165 (0.225)	-0.042 (0.088)	-0.024 (0.073)	0.255 (0.137)	
Parents' Encouragement	0.082 (0.355)	1.089 (0.512)	0.026 (0.020)	-0.183 (0.256)	-0.170 (0.098)	-0.199 (0.082)	0.089 (0.148)	
Teacher's Encouragement	0.789 (0.321)	1.957* (0.461)	0.020 (0.018)	0.039 (0.228)	0.008 (0.090)	-0.098 (0.074)	-0.180 (0.136)	
Friends' College Plans	0.573 (0.332)	1.187 (0.477)	0.045 (0.019)	0.018 (0.239)	-0.122 (0.094)	-0.153 (0.077)	0.095 (0.138)	
Educational Aspiration	-1.808** (0.389)	0.083 (0.563)	0.039 (0.022)	0.009 (0.274)	0.001 (0.108)	0.050 (0.090)	0.295 (0.160)	
Occupational Aspiration	0.113** (0.008)	0.082** (0.012)	0.002 (0.000)	-0.002 (0.006)	-0.001 (0.002)	0.002 (0.002)	-0.000 (0.003)	
13 - 15 Years Education	8.556** (0.470)	5.156** (0.650)	0.069 (0.025)	0.001 (0.323)	0.066 (0.126)	0.011 (0.106)	-0.169 (0.184)	
16+ Years Education	32.126** (0.458)	17.681** (0.628)	0.250** (0.024)	-0.127 (0.331)	-0.257 (0.131)	-0.023 (0.105)	-0.449 (0.192)	

Note: Many variables included in the models are not shown. Please refer to Table 1 and Figure 1 for variable definitions and model specifications. ** Very strong evidence. * Strong evidence.

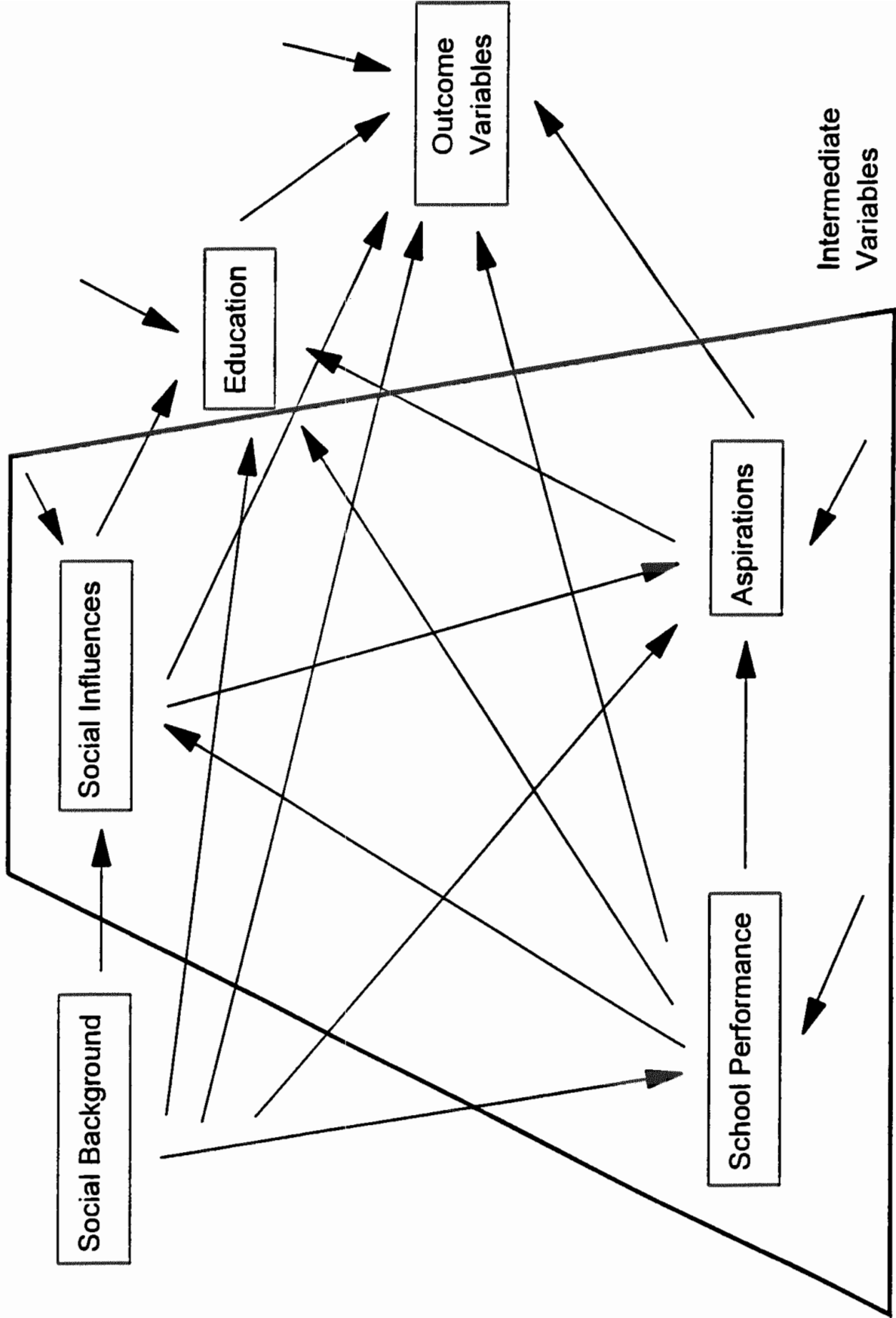
Figure 1. Specifications of Models Used in the Analysis of Adolescent Poverty and the Life Course

Model	Independent Variables
i	Sex, Socioeconomic Status 1
ii	Sex, Income/Needs
iib	Sex, Average Parental Income, Number of Siblings
iic	Sex, Income/Needs <1, Income/Needs 2-3, Income/Needs 3+
iii	Sex, Socioeconomic Status 1, Income/Needs
iii-HN	Model iii plus Henmon-Nelson Mental Ability
iiia	Model iii plus Socioeconomic Status 2
iiia-HN	Model iiia plus Henmon-Nelson Mental Ability
iiiaf	Model iiia plus all Social Psychological Variables
iiiafe	Model iiiaf plus Educational Attainment
iv	Sex, Socioeconomic Status 1, Average Parental Income, Number of Siblings
iva	Model iv plus Socioeconomic Status 2
ivaf	Model iva plus all Social Psychological Variables
ivafe	Model ivaf plus Educational Attainment
v	Sex, Socioeconomic Status 1, Income/Needs < 1, Income/Needs 2-3, Income/Needs 3+
va	Model v plus Socioeconomic Status 2
vaf	Model va plus all Social Psychological Variables
vafe	Model vaf plus Educational Attainment
ix	Sex, Socioeconomic Status 1, Income/Needs, Sex x Income/Needs
ixa	Sex, Socioeconomic Status 1, Socioeconomic Status 2, Income/Needs, Sex x Income/Needs, Sex x Socioeconomic Status 1, Sex x Socioeconomic Status 2

Note: All models also contain dummy variables for missing data.

Socioeconomic Status 1 = mother's education, family structure (intact family, mother headed-widowed, mother headed-other reason, father headed-any reason, other head). In a few models, family structure was collapsed into the categories "intact family" and "non-intact family."
 Socioeconomic Status 2 = father's education, father's occupational status in 1957, mother's occupational status in 1957, dummy variable indicating mother not working in 1957, farm background, number of siblings, 1957 population of high school town.
 Social Psychological Variables = mental ability, rank in high school class, academic program, parents' encouragement, teachers' encouragement, friends' plans, college plans, and occupational aspiration.

Figure 2. A Social Psychological Model of Attainment



APPENDIX

Table A1. Logistic Regression Coefficients for Effect of Family and Income on Receiving Any Post High School Education.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	-0.580** (0.045)	-0.624** (0.045)	-0.609** (0.046)	-0.613** (0.046)	-0.610** (0.046)	-0.894** (0.090)
Family Level Background Variables						
Mother's Education (years)	0.229** (0.009)		0.199** (0.009)	0.183** (0.009)	0.202** (0.009)	0.198** (0.009)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	0.143 (0.145)		0.203 (0.146)	0.371 (0.147)	0.230 (0.147)	0.203 (0.146)
Mother Head of Household, Other Reason	-0.272 (0.137)		-0.242 (0.139)	-0.139 (0.140)	-0.218 (0.139)	-0.244 (0.139)
Father Head of Household, Any Reason	0.004 (0.183)		0.093 (0.184)	0.114 (0.187)	0.086 (0.186)	0.100 (0.185)
Other Head of Household	-0.598* (0.150)		-0.562 (0.154)	-0.547 (0.154)	-0.561 (0.153)	-0.564 (0.154)
Number of Siblings				-0.137** (0.012)		
Family Economic Status						
Income/Needs		0.413** (0.020)	0.336** (0.020)			0.262** (0.027)
Average Parental Income (10,000's of 1992 dollars)				0.226** (0.016)		
Income/Needs < 1 = 1					-0.303** (0.066)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					0.385** (0.057)	
Income/Needs 3+ = 1					1.206** (0.074)	
Sex * Income/Needs						0.148 (0.040)
Constant	-2.686	-1.066	-3.022	-2.455	-2.599	-2.880
-2 Log Likelihood	11480.32	11694.35	11090.43	10971.39	11072.61	11076.55
DF	7	3	9	11	11	10

Source: Wisconsin Longitudinal Study, N=9549. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A2. Logistic Regression Coefficients for Effect of Family and Income on Receiving 16 or More Years of Education, Given Some Post-High School Education.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	-0.417** (0.072)	-0.414** (0.071)	-0.430** (0.072)	-0.431** (0.072)	-0.429** (0.072)	-0.333** (0.111)
Family Level Background Variables						
Mother's Education (years)	0.079** (0.013)		0.070** (0.013)	0.067** (0.013)	0.071** (0.013)	0.070** (0.013)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	0.210 (0.229)		0.241 (0.230)	0.270 (0.231)	0.258 (0.231)	0.248 (0.230)
Mother Head of Household, Other Reason	-0.609 (0.218)		-0.582 (0.219)	-0.568 (0.220)	-0.575 (0.219)	-0.579 (0.219)
Father Head of Household, Any Reason	0.065 (0.294)		0.089 (0.294)	0.108 (0.295)	0.081 (0.295)	0.091 (0.294)
Other Head of Household	-0.522 (0.250)		-0.506 (0.251)	-0.484 (0.252)	-0.505 (0.251)	-0.498 (0.251)
Number of Siblings				-0.030 (0.019)		
Family Economic Status						
Income/Needs		0.074* (0.018)	0.053 (0.017)			0.079 (0.029)
Average Parental Income (10,000's of 1992 dollars)				0.038 (0.013)		
Income/Needs < 1 = 1					-0.023 (0.113)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					-0.055 (0.090)	
Income/Needs 3+ = 1					0.261 (0.102)	
Sex * Income/Needs						-0.041 (0.035)
Constant	-0.148	0.542	-0.185	-0.074	-0.108	-0.241
-2 Log Likelihood	4482.86	4516.13	4472.27	4468.09	4472.56	4470.91
DF	7	3	9	11	11	10

Source: Wisconsin Longitudinal Study, N=3474. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A3. OLS Regression Coefficients for Effect of Family and Income on Status of First Job, (Stevens-Featherman Scale, MSEI2).

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	1.998** (0.407)	1.504 (0.412)	2.002** (0.403)	2.079** (0.400)	2.038** (0.401)	2.980** (0.585)
Family Level Background Variables						
Mother's Education (years)	1.676** (0.073)		1.491** (0.074)	1.347** (0.074)	1.434** (0.073)	1.494** (0.073)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	1.607 (1.293)		1.970 (1.287)	2.782 (1.281)	2.390 (1.283)	1.973 (1.286)
Mother Head of Household, Other Reason	-5.441** (1.186)		-5.174** (1.182)	-4.806* (1.176)	-4.882* (1.177)	-5.171** (1.181)
Father Head of Household, Any Reason	-0.014 (1.598)		0.508 (1.584)	0.712 (1.574)	0.676 (1.577)	0.482 (1.584)
Other Head of Household	3.259 (1.217)		-3.119 (1.212)	-2.880 (1.205)	-2.605 (1.207)	-3.113 (1.212)
Number of Siblings				-1.072** (0.089)		
Family Economic Status						
Income/Needs		1.906** (0.110)	1.482** (0.110)			1.740** (0.156)
Average Parental Income (10,000's of 1992 dollars)				0.928** (0.080)		
Income/Needs < 1 = 1					-2.899** (0.536)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					3.026** (0.517)	
Income/Needs 3+ = 1					8.185** (0.660)	
Sex * Income/Needs						-0.496 (0.215)
Constant	19.225	32.877	18.190	23.082	20.613	17.647
Adjusted R square	0.062	0.033	0.081	0.093	0.089	0.082

Source: Wisconsin Longitudinal Study, N=8970. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A4. OLS Regression Coefficients for Effect of Family and Income on Status of Job Held in 1992, (Stevens-Featherman Scale, MSEI2).

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	-1.902* (0.462)	-2.239** (0.466)	-1.933* (0.459)	-1.888* (0.457)	-1.861* (0.457)	-1.257 (0.668)
Family Level Background Variables						
Mother's Education (years)	1.443** (0.082)		1.286** (0.083)	1.175** (0.084)	1.221** (0.083)	1.290** (0.083)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	1.210 (1.385)		1.402 (1.385)	2.131 (1.383)	1.823 (1.381)	1.414 (1.385)
Mother Head of Household, Other Reason	-1.837 (1.517)		-1.610 (1.514)	-1.335 (1.510)	-1.217 (1.509)	-1.620 (1.514)
Father Head of Household, Any Reason	-0.746 (1.848)		-0.311 (1.837)	-0.112 (1.830)	-0.201 (1.829)	-0.315 (1.836)
Other Head of Household	-3.352 (1.410)		-3.158 (1.407)	-3.071 (1.402)	-2.760 (1.402)	-3.174 (1.407)
Number of Siblings				-0.760** (0.103)		
Family Economic Status						
Income/Needs		1.622** (0.125)	1.252** (0.125)			1.430** (0.179)
Average Parental Income (10,000's of 1992 dollars)				0.826** (0.091)		
Income/Needs < 1 = 1					-3.014** (0.615)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					2.740** (0.589)	
Income/Needs 3+ = 1					6.761** (0.751)	
Sex * Income/Needs						-0.342 (0.245)
Constant	30.167	42.060	29.276	32.792	31.584	28.887
Adjusted R square	0.047	0.026	0.060	0.067	0.068	0.060

Source: Wisconsin Longitudinal Study, N=7181. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A5. OLS Regression Coefficients for Effect of Family and Income on Log of 1992 Hourly Earnings.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	-0.583** (0.016)	-0.590** (0.016)	-0.583** (0.016)	-0.582** (0.016)	-0.581** (0.015)	-0.540** (0.023)
Family Level Background Variables						
Mother's Education (years)	0.035** (0.003)		0.031** (0.003)	0.030** (0.003)	0.029** (0.003)	0.032** (0.003)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	0.048 (0.047)		0.046 (0.047)	0.061 (0.047)	0.060 (0.047)	0.047 (0.047)
Mother Head of Household, Other Reason	0.058 (0.052)		0.057 (0.052)	0.066 (0.052)	0.070 (0.052)	0.057 (0.052)
Father Head of Household, Any Reason	0.126 (0.062)		0.135 (0.062)	0.137 (0.062)	0.140 (0.062)	0.134 (0.062)
Other Head of Household	-0.113 (0.048)		-0.113 (0.048)	-0.114 (0.048)	-0.101 (0.047)	-0.114 (0.048)
Number of Siblings				-0.011 (0.003)		
Family Economic Status						
Income/Needs		0.042** (0.004)	0.033** (0.004)			0.045** (0.006)
Average Parental Income (10,000's of 1992 dollars)				0.023** (0.003)		
Income/Needs < 1 = 1					-0.090* (0.021)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					0.080* (0.020)	
Income/Needs 3+ = 1					0.205** (0.026)	
Sex * Income/Needs						-0.022 (0.008)
Constant	2.549	2.837	2.521	2.571	2.587	2.496
Adjusted R square	0.194	0.184	0.202	0.203	0.209	0.202

Source: Wisconsin Longitudinal Study, N=6739. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A6. Logistic Regression Coefficients for Effect of Family and Income on Being in Poverty in 1992.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	0.794* (0.190)	0.781* (0.190)	0.803* (0.191)	0.803* (0.191)	0.803* (0.191)	0.872 (0.286)
Family Level Background Variables						
Mother's Education (years)	0.049 (0.032)		0.048 (0.033)	0.050 (0.034)	0.053 (0.033)	0.048 (0.033)
Intact Family	Omitted	Omitted	Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	0.327 (0.466)		0.170 (0.471)	0.162 (0.472)	0.158 (0.472)	0.171 (0.471)
Mother Head of Household, Other Reason	-0.418 (0.720)		-0.534 (0.722)	-0.541 (0.723)	-0.541 (0.722)	-0.534 (0.722)
Father Head of Household, Any Reason	0.872 (0.492)		0.804 (0.491)	0.799 (0.491)	0.796 (0.491)	0.803 (0.491)
Other Head of Household	-0.574 (0.723)		-0.699 (0.725)	-0.702 (0.725)	-0.709 (0.725)	-0.700 (0.725)
Number of Siblings				0.003 (0.041)		
Family Economic Status						
Income/Needs		0.009 (0.051)	-0.003 (0.054)			0.018 (0.080)
Average Parental Income (10,000's of 1992 dollars)				-0.011 (0.043)		
Income/Needs < 1 = 1					0.124 (0.248)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					-0.057 (0.232)	
Income/Needs 3+ = 1					-0.123 (0.314)	
Sex * Income/Needs						-0.034 (0.106)
Constant	-4.813	-4.363	-4.880	-4.883	-4.943	-4.928
-2 Log Likelihood	1187.92	1191.90	1182.16	1182.09	1181.50	1182.06
DF	7	3	9	10	11	10

Source: Wisconsin Longitudinal Study, N=5824. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A7. Logistic Regression Coefficients for Effect of Family and Income on Having Fair or Poor Health.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	0.080 (0.073)	0.091 (0.073)	0.081 (0.073)	0.081 (0.073)	0.082 (0.073)	0.013 (0.112)
Family Level Background Variables						
Mother's Education (years)	-0.046 (0.013)		-0.043 (0.013)	-0.043 (0.013)	-0.040 (0.013)	-0.043 (0.013)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	-0.366 (0.258)		-0.372 (0.259)	-0.383 (0.260)	-0.394 (0.259)	-0.372 (0.259)
Mother Head of Household, Other Reason	0.134 (0.220)		0.128 (0.221)	0.119 (0.221)	0.112 (0.221)	0.127 (0.221)
Father Head of Household, Any Reason	0.304 (0.258)		0.296 (0.259)	0.295 (0.259)	0.294 (0.259)	0.297 (0.259)
Other Head of Household	0.134 (0.216)		0.129 (0.218)	0.128 (0.218)	0.120 (0.218)	0.128 (0.218)
Number of Siblings				-0.006 (0.016)		
Family Economic Status						
Income/Needs		-0.035 (0.022)	-0.021 (0.022)			-0.042 (0.036)
Average Parental Income (10,000's of 1992 dollars)				-0.020 (0.017)		
Income/Needs < 1 = 1					0.153 (0.094)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					0.038 (0.094)	
Income/Needs 3+ = 1					-0.153 (0.126)	
Sex * Income/Needs						0.035 (0.045)
Constant	-1.477	-1.884	-1.463	-1.429	-1.570	-1.421
-2 Log Likelihood	5226.46	5240.90	5225.47	5224.62	5220.71	5224.83
DF	7	3	9	11	11	10

Source: Wisconsin Longitudinal Study, N=6793. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A8. Logistic Regression Coefficients for Effect of Family and Income on Being Depressed.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	0.266** (0.061)	0.279** (0.060)	0.267** (0.061)	0.268** (0.061)	0.270** (0.061)	0.364* (0.091)
Family Level Background Variables						
Mother's Education (years)	-0.065** (0.011)		-0.063** (0.011)	-0.064** (0.011)	-0.063** (0.011)	-0.062** (0.011)
Intact Family	Omitted		Omitted	Omitted	Omitted	Omitted
Mother Head of Household, Widowed	0.037 (0.183)		-0.014 (0.184)	-0.023 (0.184)	-0.022 (0.184)	-0.014 (0.184)
Mother Head of Household, Other Reason	-0.102 (0.197)		-0.152 (0.198)	-0.163 (0.198)	-0.160 (0.198)	-0.151 (0.198)
Father Head of Household, Any Reason	0.310 (0.219)		0.282 (0.220)	0.283 (0.220)	0.290 (0.220)	0.280 (0.220)
Other Head of Household	-0.078 (0.190)		-0.134 (0.191)	-0.134 (0.191)	-0.129 (0.191)	-0.135 (0.191)
Number of Siblings				-0.012 (0.014)		
Family Economic Status						
Income/Needs		-0.043 (0.019)	-0.022 (0.018)			0.004 (0.024)
Average Parental Income (10,000's of 1992 dollars)				-0.022 (0.014)		
Income/Needs < 1 = 1					0.065 (0.081)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					0.104 (0.076)	
Income/Needs 3+ = 1					-0.084 (0.102)	
Sex * Income/Needs						-0.050 (0.036)
Constant	-0.799	-1.421	-0.806	-0.742	-0.878	-0.863
-2 Log Likelihood	6949.74	6979.63	6942.54	6940.39	6940.36	6940.53
DF	7	3	9	11	11	10

Source: Wisconsin Longitudinal Study, N=6820. Standard errors enclosed in parentheses. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

Table A9. Logistic Regression Coefficients for Effect of Family and Income on Death by 1992.

Independent Variable	Model Specification					
	i	ii	iii	iv	v	ix
Sex (Female=1)	-0.320 (0.111)	-0.308 (0.110)	-0.321 (0.111)	-0.321 (0.111)	-0.323 (0.111)	-0.351 (0.165)
Family Level Background Variables						
Mother's Education (years)	-0.027 (0.020)		-0.026 (0.020)	-0.025 (0.020)	-0.026 (0.020)	-0.026 (0.020)
Intact Family	-0.402 (0.159)		-0.422 (0.162)	-0.419 (0.163)	-0.423 (0.162)	-0.422 (0.162)
Number of Siblings				0.000 (0.025)		
Family Economic Status						
Income/Needs		-0.022 (0.033)	-0.010 (0.032)			-0.018 (0.046)
Average Parental Income (10,000's of 1992 dollars)				-0.010 (0.025)		
Income/Needs < 1 = 1					-0.069 (0.146)	
Income/Needs 1-2 =1					Omitted	
Income/Needs 2-3 =1					-0.184 (0.146)	
Income/Needs 3+ = 1					-0.063 (0.181)	
Sex * Income/Needs						0.016 (0.063)
Constant	-2.504	-3.094	-2.461	-2.461	-2.411	-2.446
-2 Log Likelihood	2951.01	2958.21	2950.34	2950.22	2948.81	2950.28
DF	4	3	6	8	8	7

Source: Wisconsin Longitudinal Study, N=9611. Standard errors enclosed in parentheses. Data could not support more detailed family structure categorization for predicting death by 1992. Models also include dummy variables for missing data. ** Very strong evidence. * Strong evidence.

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