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Child Development and Success or Failure in the Youth Labor Market

Paul Gregg and Stephen Machin

6.1 Introduction

Economic success or failure in the early years of adulthood is the outcome of a number of potentially complex interactions involving an individual's development as a child, family background, school experience, and the state of the labor market. In this chapter we consider the determinants of relative success in the initial years of working life, focusing specifically on the associations that disadvantages in the childhood years have with later economic outcomes. We use a large unique cohort database of British individuals to examine a range of issues to do with child development and subsequent outcomes (mostly economic, though broader social outcomes are also to be considered in places).

The basic idea of the paper is, first, to try to pin down the factors associated with childhood disadvantage. We try to do so by using data on detailed characteristics of the families in which children grow up and on child-specific factors such as school attendance, staying on at school, and

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contact with the police. We use these variables to characterize individuals' childhood experiences into classifications that suggest whether or not they may be at some kind of disadvantage at age 16.[1] We choose to focus on two groups of measures, the first based on family circumstances in the years of childhood, the second based on child-specific individual behavioral attributes.

We then go on to relate measures of economic success at later ages (e.g., going on to higher education, higher wages, or being in work) and failure (spells of unemployment or poor educational attainment) as a function of these childhood factors. Our empirical analysis is based on the National Child Development Study (NCDS), a survey of all individuals born in a week of March 1958 that currently contains detailed information (from parents, schools, nurses, and the cohort members themselves) at ages zero, 7, 11, 16, 23, and 33. Because the data source follows a cohort of people through time it allows us to adopt a sequential modeling approach in which we build up progressively more detailed econometric models as we sample individuals at older ages. This enables us to fix initial conditions (by effectively standardizing the characteristics of individuals at an early age) and then to identify the transmission mechanisms that underpin the determinants of economic success or failure in adulthood.

The remainder of the paper is structured as follows. Section 6.2 sets the scene by briefly describing trends in the youth labor market in Britain, using annual cross sections from the Labour Force Survey from the mid-1970s onward. Section 6.3 uses NCDS data to estimate individual-level models of the determinants of age 16 economic and social outcomes. We then define various measures of juvenile delinquency or disadvantaged backgrounds that we use as independent variables in the models of relative success or failure at ages 23 and 33. These models are presented in sections 6.4 (age 23) and 6.5 (age 33). As already noted, we are interested in the transmission mechanisms that may underpin any link with success or failure, and therefore, because we view educational attainment as a key potential transmission mechanism, we report models that do and do not condition on highest educational qualification (by age 23). We do this because we are interested in whether delinquency and disadvantage variables have an impact over and above education or whether it is simply that delinquents and the disadvantaged do worse because of their massively lower educational attainment. We also try to identify whether disadvantaged individuals who invest in education at later ages have any scope to catch up with their counterparts who obtained educational qualifications at earlier ages. In the last part of section 6.5 we also introduce an intergenerational

1. Other work focuses specifically on child disadvantage in terms of children living in poor families or those dependent on welfare: an excellent up-to-date survey of (mostly American) work is given in Currie (1995). For a recent study of trends in child poverty and the evolution of the income distributions of families with and without children in Britain, see Gregg, Harkness, and Machin (1999).

aspect to our analysis by considering the relation between the early age cognitive skills of children of NCDS cohort members and the childhood disadvantage status of the cohort member. Finally, section 6.6 concludes.

6.2 Trends in the British Youth Labor Market

In this section we provide a background description of trends in labor force and student status among young British individuals from the Labour Force Survey (LFS).[2] Up to (and including) 1991 the LFS was an annual survey carried out each spring that covered individuals in a sample of about 60,000 responding households.[3] From 1992 it became a quarterly survey, with a longitudinal component. We define two age cohorts of youths to examine the state of the youth labor market between 1975 and 1995. The two age cohorts are defined (by date of birth) to cover school year cohorts aged 16/17 (one year after the compulsory school leaving age) and aged 18/19 (one year after individuals would have taken A levels).[4] So the first year of data matches with our NCDS cohort of individuals, who if they left at the compulsory school leaving age, would have left school in the summer of 1974.

Table 6.1 reports labor force and schooling status for the full populations of the two age cohorts between 1975 and 1995.[5] Labor force status is broken down into three categories, employed, unemployed, and inactive (where employed includes individuals participating in government training schemes), and given the increased likelihood of students' combining student and work status in recent years, student status is defined as whether an individual carried on full time in the educational system after O and A levels broken down by working and not working (after 1984, when information on this first became available).

The numbers in table 6.1 make it very clear that the youth labor market has changed dramatically since the 1970s. There is a very clear rise in staying on rates, coupled with a massive decline in employment as an individual's sole labor market state. And while unemployment displays a cyclical pattern there is a persistent rise in inactivity rates. For example, in 1975, 61 percent of male 16/17-year-olds were employed while 34 percent

2. See Blanchflower and Freeman (1996) for an international comparison of the evolution of youth labor markets across the OECD.

3. From 1983 to 1991 the survey was conducted annually. Before that (starting in 1975) it was carried out once every two years.

4. The "standard" pattern of schooling in Britain is that individuals take ordinary level ("O" level) exams in their last year of compulsory schooling when aged 15/16 and then advanced level ("A" level) exams two years after that, when aged 17/18.

5. As is well known, the relative sizes of these cohorts, in terms of their shares in the working age population, shifted over this time period. In 1975, 2.5 percent of the working age population was in the age 16/17 cohort. This share rose and peaked at 2.9 percent in 1981 and then fell continuously to 1.9 percent by 1995. For the age 18/19 cohort the percentage was 2.3 in 1975, which rose and peaked at 2.7 percent in 1985 and then fell to 2.0 percent by 1995.

Table 6.1 **Labor Force Status and Staying on in Education for British Youths, 1975–95**

	Males (%)					Females (%)				
				Student					Student	
Year	Employed	Unemployed	Inactive	Not Working	Working	Employed	Unemployed	Inactive	Not Working	Working
	First Year after O Levels: 16/17-Year-Olds									
1975	60.5	4.8	0.4	34.2	n.a.	52.7	5.4	3.3	38.5	n.a.
1977	55.8	6.4	0.7	37.1	n.a.	46.0	6.5	2.7	44.9	n.a.
1979	58.0	5.5	1.0	35.6	n.a.	50.7	5.0	2.9	41.4	n.a.
1981	50.5	15.4	1.9	32.2	n.a.	47.1	13.5	4.4	35.0	n.a.
1983	48.2	13.2	2.6	36.0	n.a.	40.6	8.2	3.6	47.6	n.a.
1984	47.6	10.8	2.5	39.1	n.a.	40.4	8.7	3.4	47.6	n.a.
1985	48.9	8.6	2.9	30.4	9.4	40.1	7.0	5.2	30.4	17.3
1986	47.8	8.6	2.7	29.8	11.2	38.3	7.9	6.8	29.4	17.6
1987	46.1	9.2	3.0	29.4	12.2	40.5	6.3	5.0	30.2	18.0
1988	48.6	7.8	2.9	26.5	14.2	40.6	6.1	4.8	27.5	21.0
1989	51.2	5.1	3.1	26.5	14.2	37.8	5.3	4.5	30.6	21.8
1990	45.5	6.5	2.5	28.4	17.1	34.5	3.5	4.3	32.0	25.7
1991	40.3	7.4	2.6	31.6	18.2	29.8	5.8	3.4	34.5	26.5
1992	30.5	7.4	3.7	37.0	21.4	24.0	4.9	5.1	39.2	26.9
1993	30.1	5.5	4.2	44.2	16.0	19.1	5.2	4.0	45.8	26.0
1994	24.7	6.1	3.0	43.3	22.9	21.3	4.3	4.3	43.6	26.5
1995	26.0	6.3	2.6	43.2	22.0	21.0	3.6	4.4	39.8	31.2

First Year after A Levels: 18/19-Year-Olds										
1975	76.8	7.0	0.7	15.4	n.a.	69.1	6.1	11.3	13.6	n.a.
1977	78.0	7.1	1.5	13.4	n.a.	70.6	6.7	10.2	12.5	n.a.
1979	79.7	5.3	1.3	13.7	n.a.	72.7	5.9	10.9	10.5	n.a.
1981	69.2	16.9	2.6	11.3	n.a.	65.2	12.2	11.4	11.4	n.a.
1983	61.7	20.6	3.8	13.9	n.a.	60.8	14.9	11.0	13.3	n.a.
1984	61.2	22.3	4.2	12.3	n.a.	55.2	17.0	15.3	12.6	n.a.
1985	63.9	17.3	5.7	10.7	2.4	60.0	14.2	13.7	9.2	2.9
1986	63.1	18.0	6.2	10.5	2.1	59.8	13.2	14.3	9.4	3.2
1987	63.6	17.5	5.5	10.3	3.1	64.5	11.4	10.0	9.4	4.6
1988	66.6	14.4	5.4	10.1	3.5	63.0	9.4	13.5	9.9	4.3
1989	68.9	11.0	5.5	10.6	4.1	64.5	8.6	12.8	9.6	4.5
1990	67.3	9.9	5.8	12.0	5.0	61.2	8.1	13.0	10.9	6.7
1991	57.8	15.1	5.0	15.1	7.0	59.7	8.8	13.2	11.3	7.0
1992	51.0	13.5	6.5	21.6	7.4	49.2	8.7	13.0	20.2	9.0
1993	45.6	15.7	5.8	24.9	8.0	42.3	9.1	12.8	26.1	9.6
1994	43.9	12.9	5.8	27.0	10.3	39.7	7.2	12.8	27.3	12.9
1995	42.8	10.7	5.2	28.9	12.5	41.9	6.6	12.2	26.0	13.3

Source: Labour Force Survey.
Note: n.a. = data not available.

stayed on in education. By 1995, only 26 percent were in employment and 65 percent stayed on. For women aged 16/17 the pattern is even more marked: in 1975, 53 percent were employed and 39 percent stayed on; by 1995, only 21 percent were in work and a massive 71 percent stayed on. Around half of the rise in staying on after 1985 was from people combining study and (normally part time) employment.[6]

The same kind of pattern is observed for the older, age 18/19 cohort. Employment rates fell sharply between 1975 and 1995: by 34 percentage points (from 77 to 43 percent) for males and by 27 percentage points (from 69 to 42 percent) for females. Looking at those who stayed on in higher education after A-level age illustrates the magnitude of the expansion of the educational system: for men 15 percent stayed on in 1975, while by 1995 this more than doubled to 41 percent; for women the staying on rate also more than doubled, going from 14 percent in 1975 to 39 percent by 1995. At the same time, simultaneously combining work and study seems even more relevant for this older cohort in the 1990s.

The data described in table 6.1 clearly demonstrate that large changes in the educational system and in the youth labor market occurred between the 1970s and 1990s. The higher educational system greatly expanded, as is made evident by the sharp rise in staying on rates for both age cohorts.[7] At the same time the employment rates of teenagers fell very sharply, with about a quarter (fifth) of male (female) 16/17-year-olds and about 40 percent of male and female 18/19-year-olds being employed in 1995. Also, despite the expansion of the educational system, male unemployment rates (while displaying a cyclical evolution) were higher by 1995 than in the 1970s and male inactivity among youths rose very sharply. On the whole, it seems that women did better than men, but that the youth labor market displayed a growing polarization between the 1970s and 1990s, with far more individuals going on to higher education, but this trend was mirrored by a rise in nonemployment (especially for men). These trends, and the gender differences they suggest, are important to bear in mind in the analysis that follows.

6.3 Models of Economic and Social Outcomes at Age 16

6.3.1 Data Description

The National Child Development Study is an ongoing survey of all persons born between 3 and 9 March 1958. To date, follow-up surveys of the participants have occurred in 1965 (NCDS1), 1969 (NCDS2), 1974

6. See Robinson (1994) for more details on changes in the educational system in the United Kingdom.

7. The bulk of the increase took place after 1989, following the introduction of a new examination system (the General Certificate of Secondary Education—GCSE) that was first relevant to students sitting for examinations in the summer of 1989.

(NCDS3), 1981 (NCDS4), and 1991 (NCDS5). NCDS1 to NCDS3 include interviews with the parents of the children involved on a wide range of topics concerning the background, environment, health, and education of the child. These are backed up by questionnaires given to the child's school and the child. NCDS4 and NCDS5 are based on detailed interviews with the subjects themselves (by then aged 23 and 33, respectively). For our purposes, the data are an extremely rich source that allows us to model youth labor market outcomes as a function of children's development through environmental, parental, and individual-specific factors.

6.3.2 Modeling Approach

We begin by modeling age 16 outcomes so as to try to isolate factors that are associated with being in a less advantaged position at that age.[8] We will then, in the subsections that follow, use these classifications to see the extent to which being in a disadvantaged position at age 16 is associated with various economic and social outcomes at later ages (ages 23 and 33). These models build up in a sequential manner, and we implement our estimation procedure as essentially a block recursive system that builds up by age (i.e., identification comes from the aging of the cohort).

The general form of the initial econometric model we intend to estimate treats an outcome measure for youths as a function of various individual, parental, and environmental factors. We consider three age 16 outcomes:

school attendance in the autumn term of the last year of school (age 15/16), which comes from school records and is defined as the proportion of possible half-days attended by the cohort member = (number of possible half-day attendances − number of half-day absences)/number of possible half-day attendances,

contact with the police, which comes from the question "Has the child ever been in contact with the police or probation office?" and

staying on at school after the compulsory school leaving age.[9]

The NCDS is an extremely useful data source for analyzing the determinants of these outcomes because it contains very rich information on individuals as they grow up. We are able to specify a fairly rich set of independent variables that go back to the earlier years of an individual's life.

We choose to model the three outcomes as a function of the characteristics of individuals and their families at various points in time. As was noted above NCDS interviews took place at ages zero, 7, 11, and 16, so we prefer to split the cohort members' childhood development into an early stage and a late stage. Given the survey construction we take the

8. The compulsory school leaving age in Britain is 15/16 years depending on date of birth—given that respondents were all born in March 1958 it would be age 16 for the cohort we study.

9. See also Micklewright (1989) for an analysis of staying on at age 16 using the NCDS3 data.

former to be age 7 and before and the latter to be between ages 7 and 16 (these can be loosely thought of as preschool and during-school timings).

In terms of our modeling strategy we then estimate our first-stage econometric models for cohort member i of the form.[10]

$$Y_i^{\text{age 16}} = \Gamma_1 X_i^{\text{pre 16}} + \varepsilon_1,$$

where Y^{age16} is the appropriate age 16 outcome under consideration and X^{pre16} is a set of childhood factors as follows: (1) age 7 individual-specific characteristics—ethnicity, age 7 cognitive skills (measured by math and reading test scores), indicators of illness and behavioral problems,[11] and whether the child was classified as an educational special needs child; (2) parental educational status; (3) the pre-7 and age 7–16 outcomes of interest. In our empirical models these outcomes are the following: whether the child was living in a lone-mother family, whether the father figure was unemployed at the survey date, whether the family was in financial difficulties in the year prior to the survey date,[12] whether the child has ever been in care.

We prefer to think of the inclusion of the variables in items 1 and 2 as fixing what we might call the "initial conditions" (i.e., standardizing the characteristics of individuals at an early age) so that we can then follow a sequential modeling approach as individuals grow older. Put alternatively, we are interested in the relation between our age 16 outcomes and the variables in item 3 above in models that hold constant these initial conditions.

6.3.3 Descriptive Statistics

Table 6.2 reports some simple descriptive statistics on the age 16 outcomes. They are reported separately for male and female cohort members, as are all the empirical models that we present. Mean school attendance for males was .88 and for females was .87 in autumn 1973, and there are clear differences for both sexes in terms of childhood characteristics: school attendance is lower for children of lower age 7 ability, for children who have ever been in care, and for those from families with less educated

10. Notice that the subscript "1" attached to the parameter vector and the error term is there simply to denote that this is the first stage in our sequential modeling approach.

11. The illness variables correspond to the age 15/16 school year and are included in the school attendance and staying on models to ensure that we are not classifying children as low school attendance individuals or poor school performers if they are ill. The behavioral problem variable are defined from the following eight "syndrome" scores given in NCDS: unforthcomingness, withdrawal, depression, anxiety, hostility toward adults, anxiety for acceptance by children, restlessness, and "inconsequential" behavior. They are entered into the empirical models as 0/1 dummies indicating positive scores on one, two or three, and four or more of the eight measures (with no positive scores being the reference group).

12. To be precise the age 11 and 16 questions on family financial difficulties related to the previous year, but at age 7 the question referred to the child's early years.

Table 6.2 **Age 16 Outcomes and Child and Family Characteristics**

Characteristic	School Attendance	Sample Size	Contact with Police/Probation	Sample Size	Stay on at School	Sample Size
			Males			
All individuals	.883	6,381	.108	5,995	.289	6,267
White	.895	4,759	.100	4,708	.303	4,449
Nonwhite	.891	203	.130	200	.355	141
Bottom quintile of age 7 reading test	.829	1,288	.171	1,209	.080	1,248
Top quintile of age 7 reading test	.926	944	.081	896	.567	928
Bottom quintile of age 7 math test	.855	1,027	.139	944	.117	987
Top quintile of age 7 math test	.916	1,223	.082	1,129	.476	1,236
Ever in care	.841	277	.388	304	.123	244
Never in care	.886	5,960	.093	5,688	.295	5,884
Father left school aged 15 or less	.876	3,739	.121	4,455	.207	3,522
Father left school after age 15	.937	1,047	.052	1,233	.600	987
Mother left school aged 15 or less	.876	3,860	.121	4,615	.207	3,615
Mother left school after age 15	.934	1,054	.056	1,238	.597	994
Ever in lone-mother family	.847	731	.181	747	.202	636
Never in lone-mother family	.888	5,514	.097	5,248	.298	5,497
Father ever unemployed	.812	492	.203	528	.152	447
Father never unemployed	.890	5,753	.096	5,467	.299	5,686
Family ever in financial difficulties	.817	1,111	.204	1,151	.126	982
Family never in financial difficulties	.898	5,080	.084	4,826	.320	5,101

(continued)

Table 6.2 (continued)

Characteristic	School Attendance	Sample Size	Contact with Police/Probation	Sample Size	Stay on at School	Sample Size
			Females			
All individuals	.866	6,135	.038	5,696	.289	6,270
White	.880	4,622	.037	4,702	.299	4,436
Nonwhite	.879	174	.027	152	.364	121
Bottom quintile of age 7 reading test	.792	818	.062	747	.081	790
Top quintile of age 7 reading test	.910	1,300	.029	1,229	.496	1,386
Bottom quintile of age 7 math test	.824	1,134	.059	1,041	.122	1,103
Top quintile of age 7 math test	.899	970	.032	913	.480	1,056
Ever in care	.813	228	.664	231	.175	223
Never in care	.869	5,968	.032	5,459	.292	5,910
Father left school aged 15 or less	.862	3,626	.043	4,224	.207	3,522
Father left school after age 15	.927	1,003	.013	1,180	.565	982
Mother left school aged 15 or less	.859	3,721	.042	4,340	.215	3,584
Mother left school after age 15	.928	1,054	.022	1,239	.563	1,024
Ever in lone-mother family	.815	725	.064	747	.186	683
Never in lone-mother family	.895	5,282	.034	4,949	.300	5,461
Father ever unemployed	.787	499	.063	506	.141	466
Father never unemployed	.874	5,508	.035	5,790	.300	5,678
Family ever in financial difficulties	.780	1,109	.074	1,100	.128	1,057
Family never in financial difficulties	.887	4,867	.029	4,583	.321	5,050

Source: National Child Development Study, waves 1, 2, and 3 (at ages 7, 11, and 16).

Note: Ever/never refers to any of age 7, 11, or 16.

parents, from lone-mother families, or from families where fathers were unemployed at the survey date. It is also considerably lower for individuals whose families reported being in financial difficulties during the childhood years. The same pattern holds for females.

In terms of whether cohort members had ever been in contact with the police or probation services, the mean is (not surprisingly) higher for males than females, and the qualitative pattern of differences across characteristics is broadly the inverse of the school attendance breakdown.

Finally, the third outcome of interest, whether the cohort member stayed on at school, is the same on average for males and females, and for both sexes, the breakdown by characteristics is displays a similar qualitative pattern to the school attendance variables and the converse pattern to the police/probation contact variable. Staying on at school is higher for higher ability children, for children who have never been in care, for children from more educated parents, and where the family has not had financial difficulties or not suffered from father's unemployment or lone-mother status.

6.3.4 Econometric Estimates

A number of the patterns in the raw data remain statistically significant in the econometric models reported in table 6.3, which reports Tobit models of school attendance (as there is upper censoring at complete school attendance equal to one) and probit models of police/probation contact and staying on at school. For males "good" outcomes, higher school attendance or staying on at school, are more likely with higher reading ability (staying on is also more likely for children with higher math ability). Better school performance (i.e., better attendance or staying on) at this stage is also more likely for those whose parents stayed on at school after age 15. It is also more likely for children who live in families without financial difficulties (in early or late childhood) or who have never been in a lone-mother family or had an unemployed father. These last three variables are strongly related to one another, and in the models we report the financial difficulty variable seems to dominate: leaving it out of the specification, however, produced much stronger effects of living in a lone-mother family or having an unemployed father (and this was true in all the models of table 6.3). We take this strong interrelation into account when we move on to characterizing children into disadvantaged states below.

Turning to the "bad" outcome variable, whether the child had been in contact with the police or probation services, it is reassuring that the effects of the independent variables largely go in the opposite direction. Better reading ability (for males) and math ability (for females) are associated with less police contact. Whether the child was in care during the childhood years has a very strong positive association with police contact as does whether the family was in financial difficulties during the child's years of growing up.

Table 6.3 Estimates of the Determinants of Age 16 Outcomes

Characteristic	School Attendance (Tobit)	Contact with Police/Probation (probit)	Stay on at School (probit)
	Males		
Constant	.995 (.010)	−1.981 (.113)	.022 (.097)
Individual characteristics			
Nonwhite	−.003 (.012)	.029 (.127)	.129 (.126)
2d Lowest quintile of math test scores (age 7)	−.000 (.007)	.102 (.078)	−.036 (.077)
Middle quintile of math test scores (age 7)	−.015 (.008)	.160 (.082)	.129 (.075)
2d Highest quintile of math test scores (age 7)	−.010 (.008)	.165 (.085)	.186 (.076)
Highest quintile of math test scores (age 7)	−.008 (.008)	.249 (.091)	.315 (.076)
2d Lowest quintile of reading test scores (age 7)	.025 (.007)	−.073 (.071)	.174 (.074)
Middle quintile of reading test scores (age 7)	.047 (.007)	−.156 (.079)	.448 (.074)
2d Highest quintile of reading test scores (age 7)	.069 (.008)	−.206 (.086)	.748 (.075)
Highest quintile of reading test scores (age 7)	.068 (.008)	−.384 (.097)	1.035 (.078)
Behavioral response 1	−.015 (.006)	.043 (.074)	−.105 (.054)
Behavioral response 2/3	−.022 (.006)	.234 (.066)	−.207 (.053)
Behavioral response 4	−.025 (.007)	.435 (.072)	−.324 (.068)
Ever educational special needs	.015 (.011)	−.077 (.110)	−.269 (.129)
Ever sick in last school year, minor ailments	−.095 (.005)		−.351 (.052)
Ever sick in last school year, more serious ailments	−.124 (.008)		−.303 (.082)
Family structure and parental characteristics			
Ever in care	−.004 (.011)	.814 (.084)	−.276 (.122)
Father left school aged 15 or less	−.036 (.007)	.257 (.074)	−.612 (.055)
Mother left school aged 15 or less	−.023 (.007)	.191 (.072)	−.633 (.055)
Lone-mother family at child age 7	−.011 (.012)	.050 (.122)	−.097 (.127)
Lone-mother family at child age 11 or 16	−.016 (.008)	.120 (.074)	.010 (.078)
Father unemployed at child age 7	−.043 (.015)	.035 (.140)	−.210 (.196)
Father unemployed at child age 11 or 16	−.026 (.009)	.057 (.083)	−.078 (.096)
Family in financial difficulties at child age 7	−.039 (.010)	.279 (.089)	−.474 (.122)
Family in financial difficulties at child age 11 or 16	−.042 (.007)	.254 (.062)	−.232 (.071)
Proportion censored (Tobit)/mean proportion (probit)	.161	.108	.289
Log likelihood	1,264.17	−1,845.58	−2,974.84
Sample size	6,381	5,995	6,267

Table 6.3 (continued)

Characteristic	School Attendance (Tobit)	Contact with Police/Probation (probit)	Stay on at School (probit)
	Females		
Constant	.978 (.011)	−2.532 (.166)	−.140 (.101)
Individual characteristics			
Nonwhite	.020 (.014)	−.338 (.242)	.288 (.130)
2d Lowest quintile of math test scores (age 7)	.013 (.007)	−.178 (.108)	.137 (.071)
Middle quintile of math test scores (age 7)	−.003 (.008)	−.109 (.109)	.311 (.070)
2d Highest quintile of math test scores (age 7)	−.003 (.008)	−.263 (.124)	.312 (.071)
Highest quintile of math test scores (age 7)	.004 (.009)	−.057 (.124)	.530 (.073)
2d Lowest quintile of reading test scores (age 7)	.026 (.008)	.027 (.119)	.100 (.088)
Middle quintile of reading test scores (age 7)	.043 (.009)	.085 (.126)	.318 (.086)
2d Highest quintile of reading test scores (age 7)	.057 (.009)	.112 (.128)	.544 (.085)
Highest quintile of reading test scores (age 7)	.070 (.009)	.188 (.134)	.826 (.086)
Behavioral response 1	−.009 (.006)	.335 (.091)	−.124 (.049)
Behavioral response 2/3	−.023 (.007)	.371 (.097)	−.140 (.059)
Behavioral response 4	−.017 (.008)	.460 (.115)	−.357 (.085)
Ever educational special needs	−.024 (.015)	.324 (.160)	.196 (.156)
Ever sick in last school year, minor ailments	−.098 (.005)		−.363 (.047)
Ever sick in last school year, more serious ailments	−.132 (.008)		−.435 (.074)
Family structure and parent characteristics			
Ever in care	−.012 (.012)	.702 (.113)	−.071 (.112)
Father left school aged 15 or less	−.023 (.007)	.375 (.117)	−.503 (.054)
Mother left school aged 15 or less	−.037 (.007)	.070 (.100)	−.583 (.053)
Lone-mother family at child age 7	−.002 (.013)	.032 (.163)	−.148 (.125)
Lone-mother family at child age 11 or 16	−.023 (.008)	.047 (.107)	−.136 (.078)
Father unemployed at child age 7	−.052 (.016)	.085 (.209)	.100 (.162)
Father unemployed at child age 11 or 16	−.016 (.009)	−.054 (.117)	−.194 (.096)
Family in financial difficulties at child age 7	−.053 (.010)	.159 (.121)	−.343 (.108)
Family in financial difficulties at child age 11 or 16	−.059 (.007)	.258 (.087)	−.238 (.068)
Proportion censored (Tobit)/mean proportion (probit)	.121	.038	.289
Log likelihood	1,361.30	−829.88	−3,103.87
Sample size	6,135	5,696	6,270

Note: Behavioral response variables are based on eight sets of teacher-reported answers to questions about interactions between the cohort member and adults and other children (see n. 11 in the text). Scores 1, 2/3, and 4 denote a score for one set, two or three, and four or more of the eight scores indicating behavioral difficulties. Numbers in parentheses are standard errors.

In table 6.4 we illustrate the relative magnitude of these effects by computing school attendance, police contact, and staying on on probabilities for a base group individual and then examining deviations from the base. These are of interest because they give some indication of the relative magnitude of the estimated effects. They also let us combine the effects of more than one variable in our examination of the deviations from the base set of characteristics (as in the last two rows of the table). The largest positive effect on school attendance comes from higher age 7 reading ability and on staying on rates from better reading and math ability at age 7 for both males and females: for example, the second to last row of the table combines the two effects, showing that being in the highest quintile of both raises staying on rates by a huge .406 over the base for males and .444 for females. On the down side the most negative effects on school attendance are from growing up in a family facing financial hardship, and the same is true for staying on rates, along with a strong negative effect from low parental education. The last row of the table highlights this pattern, showing that school attendance is .099 and .136 points lower than the base and the staying on rate is .482 and .409 points lower than the base for males and females who grew up in families with low parental education that faced financial difficulties during the childhood years. Finally, contact with the police or probation services is much higher for children who have ever been in care, at .098 higher than the .024 base for males and .028 higher than the .006 base for females. Children growing up in families with low parental education that had financial difficulties during the childhood years are also much more likely to have contact with the police (with positive deviations of .134 and .042 for males and females, respectively).

6.3.5 Characterizing Delinquency and Disadvantage

For the remainder of the paper we require some measures of delinquency and disadvantage that we can use as independent variables in our models of success or failure at later ages. To ensure that the analysis is manageable and to facilitate a clear interpretation of the reported effects we choose two sets of variables as measures. The first set consists of variables based on individual behavioral attributes that we stylize as juvenile delinquency, and the second consists of measures based on family circumstances that we stylize as describing disadvantaged social background in the years of childhood.

We model juvenile delinquency in terms of school attendance and contact with the police. First, we define a variable for low school attendance that equals one if school attendance is less than or equal to .75 (unless the child was ill, in which case we do not code the child as low attendance). Second, we consider the dummy variable indicating whether the individual has been in contact with the police. We use these two variables to characterize individuals who have delinquent tendencies at age 16.

Table 6.4 **Variations in Age 16 Predicted Outcomes**

Characteristic	Males			Females		
	School Attendance	Contact with Police/Probation	Stay on at School	School Attendance	Contact with Police/Probation	Stay on at School
Base individual[a]	.853	.024	.509	.841	.006	.444
Deviations from base						
Nonwhite	−.001	+.001	+.050	+.010	−.004	+.114
Top quintile of math test scores	−.003	+.018	+.123	+.002	−.002	+.208
Top quintile of reading test scores	+.018	−.015	+.346	+.025	+.004	+.310
Ever in care	−.001	+.098	−.109	−.006	+.028	−.027
Father left school aged 15 or less	−.019	+.018	−.232	−.013	+.010	−.184
Mother left school aged 15 or less	−.012	+.013	−.239	−.022	+.001	−.209
Lone-mother family at child age 7	−.005	+.003	−.039	−.001	+.000	−.057
Lone-mother family at child age 11 or 16	−.010	+.007	+.003	−.013	+.001	−.053
Father unemployed at child age 7	−.024	+.002	−.086	−.033	+.001	+.040
Father unemployed at child age 11 or 16	−.013	+.003	−.032	−.009	−.001	−.075
Family in financial difficulties at child age 7	−.021	+.020	−.186	−.033	+.003	−.129
Family in financial difficulties at child age 11 or 16	−.023	+.018	−.092	−.038	+.006	−.091
Top quintile of math and reading test scores	+.017	−.007	+.406	+.026	+.002	+.444
Father and mother left school aged 15 or less, family in financial difficulties at child age 7, 11, or 16	−.099	+.134	−.482	−.136	+.042	−.409

Note: Derived from Tobit and probit models in table 6.3.

[a]The base individual is white, lowest quintiles of test scores, never in care, father and mother left school after age 15, never in lone-mother family, father never unemployed, never in family with financial difficulties, not sick in last school year, and behavioral response score of zero.

We model childhood disadvantage on the basis of the ways in which the family-based measures enter the age 16 equations discussed above. Four particular variables are considered: whether the cohort member was ever placed in care during his or her childhood, whether the family was ever in financial difficulties, whether the cohort member ever lived in a lone-mother family, and whether the cohort member's father was unemployed at any of the age 7, 11, and 16 interview dates.

Because of the clear overlap among the last three variables in terms of their correlations with age 16 outcomes we enter the financial difficulty variable directly but then define two dummies for the lone-mother and father unemployed variables conditional on not having financial difficulties. That is, the actual variables entered into the econometric model are (1) ever lived in a lone-mother family but without facing financial difficulties and (2) ever had an unemployed father without facing financial difficulties. This is because, as noted above, when they coincide the financial difficulty variable and the lone-mother family and father unemployed variables tend to capture similar effects in the reported regressions. We define the variables in this particular way because the financial difficulty variable seems to dominate in the table 6.3 models.

Of course, there are clear issues associated with characterizing children and their families in this rather coarse way, but because we intend to examine a large number of outcomes at different ages, we require some parsimony in our approach. We have, however, estimated fuller specifications, and it is reassuring that for the most part, our classifications seem to parameterize the concepts of age 16 delinquency and disadvantage relatively well.

6.4 Models of Economic and Social Outcomes at Age 23

In this section we treat a variety of age 23 outcomes as functions of our measures of juvenile delinquency and social disadvantage.[13] We begin by considering educational attainment and then go on to look at economic and social outcomes in models that do and do not condition on education. We choose to do the following as it is of interest whether or not any significant correlations are affected by netting out educational achievement.

6.4.1 Age 23 Educational Attainment

Table 6.5 breaks down age 23 educational attainment by the juvenile delinquency and social disadvantage variables. Educational attainment is measured by a ninefold ordered ranking of educational qualifications ranging from no educational qualifications to a degree or higher (see the

13. See also some early work using the NCDS up to age 23 by Elias and Blanchflower (1987) and the more recent study by Kiernan (1995). Blanchflower and Elias (1993) also examine some of the economic outcomes that we consider here in their work on NCDS twins.

Table 6.5 **Age 23 Educational Qualifications and Age 16 Delinquency and Social Disadvantage**

Characteristic	Sample Size	No Qualification	Lower Academic	Lower Vocational	Intermediate Vocational	Intermediate Academic	Advanced Vocational	Advanced Academic	Higher Vocational	Higher Academic
					Males					
All	6,267	.257	.014	.018	.022	.280	.163	.057	.081	.109
School attendance < .75 (and not ill)	264	.606	.034	.023	.038	.208	.049	.008	.023	.011
Contact with police/probation	463	.477	.026	.024	.052	.242	.123	.015	.030	.011
Ever in care	244	.520	.008	.033	.025	.238	.094	.016	.033	.033
Family ever in financial difficulties	982	.458	.014	.024	.030	.275	.097	.024	.043	.035
Ever in lone-mother family (but no financial difficulties)	331	.254	.024	.024	.024	.317	.151	.066	.054	.085
Father ever unemployed (but no financial difficulties)	183	.279	.022	.044	.016	.311	.164	.055	.060	.049
					Females					
All	6,270	.298	.023	.012	.007	.368	.060	.051	.088	.093
School attendance < .75 (and not ill)	261	.663	.023	.011	.023	.211	.011	.008	.038	.012
Contact with police/probation	162	.525	.025	.012	.000	.296	.049	.012	.049	.031
Ever in care	223	.547	.013	.013	.000	.251	.067	.022	.054	.031
Family ever in financial difficulties	1,057	.535	.017	.016	.005	.304	.023	.023	.052	.026
Ever in lone-mother family (but no financial difficulties)	348	.305	.026	.009	.000	.376	.055	.043	.089	.098
Father ever unemployed (but no financial difficulties)	174	.356	.017	.017	.006	.368	.046	.023	.069	.098

Note: The educational attainment variable is defined as: 0 = no qualifications; 1 = lower academic (certificates of secondary education, no O levels); 2 = lower vocational/other; 3 = intermediate vocational (craft qualifications, apprenticeships); 4 = intermediate academic (O levels only); 5 = advanced vocational (national or general certificate or diploma/ordinary national certificate); 6 = advanced academic (A levels only); 7 = higher vocational (higher national certificate/higher national diploma, teaching, nursing); 8 = higher academic (degree or higher degree).

note to the table for the precise definitions). The table makes it very clear that in the raw data, our groups of interest do much worse in terms of educational attainment. For example, in the full sample 26 percent of males have no educational qualifications, while the same is true of 61 percent of males with low school attendance and 48 percent of males who had been in contact with the police or probation services in their adolescent years. Young men with no educational qualifications are also overrepresented in the disadvantaged family groups, with the percentages for men being 52 percent of those who have ever been in care and 46 percent of those from poor families. Things are better in the lone-mother and father unemployed cases in the absence of family financial difficulties, where the percentages are 25 and 27 percent, respectively. For females the contrast is equally stark with delinquent and disadvantaged females having much higher probabilities of having no educational qualifications.

The picture is equally bleak for higher levels of educational attainment. At the upper end of the educational spectrum about 11 and 9 percent of men and women, respectively, have a degree or higher qualification. Hardly any of the low school attendance individuals possess a degree, and with the exception of the lone-mother (no financial difficulties) group, the percentages with a degree are much lower for the delinquency and disadvantage groups.

We can now move to stage two in our modeling procedure. If we define the delinquency measures as $DELINQ_i$ and the family disadvantage measures as $DISADV_i$ this involves estimating educational attainment equations of the form:

$$ED_i^{\text{age 23}} = \alpha_2 + \beta_2 DELINQ_i + \psi_2 DISADV_i + \Gamma_2 X_i^{\text{pre 16}} + \varepsilon_2,$$

where ED^{age23} is the age 23 educational attainment variable (and the subscript "2" denotes that we are now at stage two in our sequential modeling procedure).

Table 6.6 reports ordered probit estimates of educational attainment equations. It reports six specifications, three each for males and females, which differ in which of the *DELINQ*, *DISADV*, and X^{pre16} variables are included. We basically build the specifications up, first looking at the correlation between $ED^{\text{age 23}}$ and the *DISADV* variables (i.e., setting $\beta = \Gamma_2 = 0$), then entering the X^{pre16} variables, and finally including the *DELINQ* variables.

It is clear from table 6.6 that the main thrust of the results holds for both groups as the estimated specifications are qualitatively very similar for males and females and there is a strong linkage between worse educational achievement and delinquency or disadvantage among this cohort of British young adults. Even after conditioning on the pre-16 variables.[14]

14. Of the pre-16 variables it is very clear that (in results nor reported here, but available on request) doing better on tests administered to NCDS children at age 7 leads to higher

there remains a strongly negative association between age 23 educational attainment and age 16 juvenile delinquency or social disadvantage for males and females.

The bottom of the table converts the ordered probit coefficient estimates on the key dummy variables of interest into marginal effects. These are defined as

$$\begin{aligned}\Pr[ED = j \mid D = 1] - \Pr[ED = j \mid D = 0] \\ = \Phi(X\theta + \tau_j + \Theta) - \Phi(X\theta + \tau_j)\end{aligned}$$

for the ordered educational variable *ED*, which is modeled as a function of a set of control variables X with associated coefficients θ, a threshold parameter τ_j and a dummy independent variable D with an estimated coefficient Θ ($\Phi(\cdot)$ is the standard normal distribution function, and we evaluate it at the sample means of the X variables). This can be interpreted as the ceteris paribus impact of D on the probability of being in a given educational qualification category.

The reported marginal effects are sizable. Males with low school attendance or who had been in contact with the police or probation services are 11 and 8 percentage points less likely to be in the higher academic category and 17 and 10 percentage points more likely to have no educational qualifications as compared to the other NCDS cohort members (for females comparable marginal effects are 8 and 4 percentage points for degrees or higher and 23 and 9 percentage points for no qualifications).

Growing up in a socially disadvantaged background characterized by ever being placed in care renders males 6 percentage points less likely to have a degree and 6 percentage points more likely to have no educational qualifications (from the fullest specification). For females comparable figures are −3 and 6 percentage points. Finally, being in a family facing financial difficulties during the childhood years has a strong effect, even when all other delinquency and disadvantage variables and the $X^{\text{pre 16}}$ variables are included. The marginal effects here correspond to a 7 (5) percentage point lower probability of being in the top educational group and a 7 (10) percentage point increased chance of being in the bottom group for males (females).

Despite the coarseness of our measures of disadvantage these results are striking. Educational attainment by age 23 is very strongly hampered by child development factors, and children growing up in relatively disadvantaged situations have strikingly worse levels of educational attainment.

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educational attainment, because being in a higher quintile of the age 7 math or reading score distribution strongly raises the probability of having a higher educational qualification by age 23. There is also a strong relation between educational attainment and whether one's parents left school at the compulsory school leaving age. Estimated coefficients on dummy variables for whether an individual's father or mother left school at age 15 or less are significantly negative in all cases.

Table 6.6 **Models of Educational Attainment at Age 23**

	Males			Females		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Low school attendance			−.699 (.054)			−.733 (.054)
Contact with police/probation			−.448 (.057)			−.322 (.096)
Ever in care	−.590 (.075)	−.360 (.078)	−.286 (.079)	−.454 (.079)	−.283 (.083)	−.234 (.084)
Family ever in financial difficulties	−.672 (.039)	−.450 (.041)	−.348 (.041)	−.731 (.039)	−.452 (.041)	−.358 (.042)
Ever in lone-mother family (but no financial difficulties)	−.204 (.060)	−.178 (.061)	−.139 (.062)	−.134 (.060)	−.133 (.061)	−.100 (.062)
Father ever unemployed (but no financial difficulties)	−.307 (.080)	−.253 (.081)	−.235 (.082)	−.255 (.084)	−.183 (.087)	−.123 (.087)
Age 7 controls and parental characteristics	No	Yes	Yes	No	Yes	Yes
Log likelihood	−11,219.10	−10,319.16	−10,165.62	−10,204.05	−9,219.37	−9,073.99
Sample size	6,267	6,267	6,267	6,270	6,270	6,270

Pr[ED = 8|Low school attendance = 1] − Pr[ED = 8]Low school attendance = 0]			−.111			−.078
Pr[ED = 0|Low school attendance = 1] − Pr[ED = 0| Low school attendance = 0]			.172			.225
Pr[ED = 8|Police/probation = 1] − Pr[ED = 8|Police/probation = 0]			−.080			−.041
Pr[ED = 0|Police/probation = 1] − Pr[ED = 0|Police/probation = 0]			.095			.087
Pr[ED = 8|Care = 1] − Pr[ED = 8|Care = 0]	−.090	−.059	−.055	−.066	−.030	−.032
Pr[ED = 0|Care = 1] − Pr[ED = 0|Care = 0]	.199	.091	.060	.159	.090	.063
Pr[ED = 8|Financial difficulties = 1] − Pr[ED = 8|Financial difficulties = 0]	−.109	−.075	−.067	−.104	−.048	−.048
Pr[ED = 0|Financial difficulties = 1] − Pr[ED = 0|Financial difficulties = 0]	.226	.116	.074	.276	.155	.103

Note: These are ordered probit coefficient estimates where the dependent variable is the ordered educational attainment variable defined in table 6.5. All models include X^{pre16} as defined in the text. Numbers in parentheses are standard errors.

As such, education must play a potentially important role as an intermediating factor, or transmission mechanism, that may underpin any association with economic success or failure. We now consider this explicitly in models of age 23 economic and social outcomes.

6.4.2 Age 23 Economic and Social Outcomes

For male NCDS cohort members we consider four economic and social outcomes at age 23:

ln hourly wages if in employment in 1981,
unemployment time since age 16, defined by a count of the number of months spent unemployed,
probability of being in employment in 1981, and
whether an individual has ever had a spell of prison or borstal (since age 16).

For female NCDS cohort members we consider four outcomes, the first three being the wage, unemployment time, and employment outcomes listed for males and the fourth outcome being:

whether a female cohort member was a lone mother by age 23.

These variables enable us to consider a relatively wide range of outcomes (from higher wages through prison attendance for males and through lone motherhood for females) in our search for factors that shape relative success or failure in the early years of adulthood.

Table 6.7 reports descriptive statistics for the economic and social outcomes for all NCDS cohort members and broken down by the delinquency and disadvantage variables. In these raw data descriptions hourly wages and the probability of being employed are lower than average in almost all cases. On the other hand, time spent unemployed since age 16 and the probability of having had a prison or borstal spell (for males) or being a lone mother (for females) are higher in almost all cases. There is some variation across the different groups, with low school attendance being strongly associated with lower wages and employment and higher unemployment. Also, ever being placed in care during the childhood years and being in contact with the police or probation services between ages 10 and 16 are associated with much higher incidence of prison or borstal spells for men.

Again following our modeling strategy of building up progressively more detailed models as the individuals age, the age 23 models we estimate are of the following form:

$$Y_i^{\text{age 23}} = \alpha_3 + \beta_3 DELINQ_i + \psi_3 DISADV_i + \Gamma_3 X_i^{\text{pre 16}} + \Omega_3 ED_i^{\text{age 23}} + \varepsilon_3,$$

where Y^{age23} denotes the relevant age 23 economic or social outcome variable.

Table 6.7 **Age 23 Outcomes and Age 16 Juvenile Delinquency and Social Disadvantage**

Characteristic	Hourly Pay	Unemployment Time	Pr[Employment]	Pr[Prison] for Males; Pr[Lone Mother] for Females
		Males		
All	2.710	4.707	.861	.011
Low school attendance	2.496	10.788	.723	.042
Police/probation	2.610	9.309	.767	.050
Ever in care	2.562	10.734	.721	.074
Ever in financial difficulties	2.595	8.746	.773	.025
Ever in lone-mother family (no financial difficulties)	2.707	5.849	.855	.009
Father ever unemployed (no financial difficulties)	2.647	6.497	.780	.016
		Females		
All	2.380	3.614	.661	.080
Low school attendance	2.051	7.388	.467	.199
Police/probation	2.022	6.086	.438	.191
Ever in care	2.215	6.009	.511	.170
Ever in financial difficulties	2.243	5.757	.485	.163
Ever in lone-mother family (no financial difficulties)	2.416	3.448	.678	.075
Father ever unemployed (no financial difficulties)	2.161	5.011	.618	.080

Table 6.8 reports models of the determinants of age 23 outcomes. For each outcome four specifications are reported, the first three being the same as the education models in table 6.6, plus a further specification that enters age 23 educational attainment. In some sense this is a key distinction because we are interested in models that set either set $\Omega_3 = 0$ or estimate Ω_3 along with the other parameters of the model. The reason for doing this is that we are interested in the role that educational attainment may play as a transmission mechanism, and some information on this can be gleaned from considering models that do and do not condition on educational attainment.

The first part of table 6.8 reports least squares estimates of wage equations, Tobit estimates of the determinants of unemployment time (as there is censoring at zero), and probit models of employment and prison or borstal status for male cohort members. The overall picture that emerges is one that shows a marked relation between delinquency and disadvantage and economic and social outcomes. What is also clear is that educational attainment acts as an important transmission mechanism because an important part of the association is usually wiped out by including the education variable (if coefficients in cols. [3] and [4] and witness the fall in the absolute value of the estimated effects). Nevertheless, some important associations with the delinquency and disadvantage results remain intact (and significant in most cases). The main exception to this is the wage results, but we would argue that looking at wages at age 23 is probably too early in the life cycle to identify any important effects—this is borne out when we consider the age 33 results below. For females, all four outcomes are significantly worse for most of the delinquency and disadvantage variables (except for the lone-mother and father unemployed variables, whose effects are more mixed) and remain so (albeit smaller) once one controls for education.

Looking in a little more detail, the quantitatively most important effects in the models that control for educational attainment are the following: poor school attendance is associated with about five months more of unemployment between ages 16 and 23 for both men and women; individuals growing up in a family facing financial difficulties have about five months (males) and three months (females) more of unemployment and joblessness rates about 6 percent higher for both sexes; being in contact with the police or probation services results in much lower employment probabilities (5 percent for men, 13 percent for women) and significantly higher probabilities of a prison or borstal spell for men (the marginal effect is .016) and lone motherhood for women (the marginal effect is .045).

It is also interesting that table 6.8 shows that conditioning on education reduces the estimated coefficients by somewhere up to 50 percent (the "typical" reduction is probably about a third). As these estimated models include the early age "ability"-related measures (what we earlier called the

Table 6.8 **Models of Attainment by Age 23**

A. Males

Variable	(1)	(2)	(3)	(4)
	Ln Hourly Wage: Least Squares			
Low school attendance			−.011 (.023)	.028 (.023)
Police/probation			−.010 (.025)	.011 (.024)
Ever in care	−.049 (.034)	−.009 (.034)	−.009 (.034)	.006 (.034)
Family ever in financial difficulties	−.035 (.018)	−.015 (.018)	−.013 (.018)	.005 (.018)
Ever in lone-mother family (but no financial difficulties)	.010 (.027)	.011 (.027)	.009 (.028)	.015 (.027)
Father ever unemployed (but no financial difficulties)	−.035 (.038)	−.029 (.038)	−.029 (.038)	−.017 (.038)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
R^2	.002	.036	.037	.056
Sample size	4,720	4,720	4,720	4,720
	Unemployment Time: Tobit			
Low school attendance			7.049 (.817)	5.012 (.813)
Police/probation			5.499 (.903)	4.371 (.891)
Ever in care	8.319 (1.217)	5.364 (1.201)	4.289 (1.199)	3.511 (1.176)
Family ever in financial difficulties	8.774 (.669)	7.133 (.668)	5.842 (.670)	4.835 (.660)
Ever in lone-mother family (but no financial difficulties)	4.330 (1.093)	3.877 (1.065)	3.350 (1.063)	3.030 (1.043)
Father ever unemployed (but no financial difficulties)	4.280 (1.455)	4.098 (1.416)	3.726 (1.397)	3.295 (1.367)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−14,285.69	−14,171.01	−14,105.10	−13,998.81
Proportion censored at zero	.541	.541	.541	.541
Sample size	6,263	6,263	6,263	6,263

(*continued*)

Table 6.8 (continued)

A. Males

Variable	(1)	(2)	(3)	(4)
	Pr[Employed]: Probit			
Low school attendance			−.314 (.066)	−.244 (.068)
			[−.075]	[−.055]
Police/probation			−.261 (.073)	−.220 (.074)
			[−.061]	[−.049]
Ever in care	−.436 (.089)	−.265 (.093)	−.197 (.095)	−.168 (.096)
	[−.115]	[−.064]	[−.045]	[−.037]
Family ever in financial difficulties	−.417 (.051)	−.335 (.054)	−.277 (.055)	−.241 (.056)
	[−.104]	[−.080]	[−.128]	[−.053]
Ever in lone-mother family (but no financial difficulties)	−.105 (.089)	−.079 (.091)	−.035 (.092)	−.028 (.094)
	[−.023]	[−.017]	[−.007]	[−.006]
Father ever unemployed (but no financial difficulties)	−.415 (.107)	−.419 (.108)	−.398 (.109)	−.408 (.110)
	[−.109]	[−.108]	[−.101]	[−.101]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−2,461.11	−2,394.26	−2,371.89	−2,322.38
Sample size	6,251	6,251	6,251	6,251
	Pr[Prison/Borstal since Age 16]: Probit			
Low school attendance			.385 (.140)	.284 (.143)
			[.008]	[.004]
Police/probation			.692 (.140)	.651 (.142)
			[.022]	[.016]

Ever in care	.844 (.135) [.050]	.714 (.143) [.028]	.592 (.153) [.017]	.556 (.156) [.013]
Family ever in financial difficulties	.373 (.110) [.012]	.304 (.116) [.007]	.231 (.124) [.004]	.165 (.127) [.002]
Ever in lone-mother family (but no financial difficulties)	.070 (.223) [.002]	.039 (.232) [.001]	−.042 (.254) [−.001]	−.029 (.259) [−.000]
Father ever unemployed (but no financial difficulties)	.280 (.247) [.009]	.289 (.260) [.007]	.304 (.268) [.006]	.272 (.275) [.004]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−353.21	−334.24	−317.22	−306.07
Sample size	6,267	6,267	6,267	6,267

B. Females

Variable	(1)	(2)	(3)	(4)
	Ln Hourly Wage: Least Squares			
Low school attendance			−.125 (.027)	−.073 (.026)
Police/probation			−.105 (.053)	−.084 (.052)
Ever in care	−.060 (.045)	−.013 (.044)	−.002 (.044)	−.028 (.021)
Family ever in financial difficulties	−.113 (.021)	−.063 (.021)	−.049 (.021)	.011 (.042)
Ever in lone-mother family (but no financial difficulties)	.036 (.031)	.033 (.030)	.032 (.030)	.038 (.029)
Father ever unemployed (but no financial difficulties)	−.100 (.044)	−.077 (.042)	−.071 (.042)	−.052 (.041)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
R^2	.011	.085	.096	.151
Sample size	3,777	3,777	3,777	3,777

(continued)

Table 6.8 (continued)

B. Females

Variable	(1)	(2)	(3)	(4)
	Unemployment Time: Tobit			
Low school attendance			5.049 (.727)	4.550 (.738)
Police/probation			2.713 (1.328)	2.720 (1.324)
Ever in care	3.341 (1.168)	2.146 (1.162)	1.892 (1.158)	1.751 (1.155)
Family ever in financial difficulties	5.333 (.587)	4.131 (.600)	3.454 (.604)	3.171 (.607)
Ever in lone-mother family (but no financial difficulties)	1.055 (.979)	1.102 (.967)	1.175 (.974)	.998 (.972)
Father ever unemployed (but no financial difficulties)	4.598 (1.308)	4.088 (1.291)	3.695 (1.280)	3.511 (1.277)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−12,823.45	−12,768.56	−12,737.43	−12,722.38
Proportion censored at zero	.586	.586	.586	.586
Sample size	6,267	6,267	6,267	6,267
	Pr[Employed]: Probit			
Low school attendance			−.345 (.057)	−.167 (.058)
			[−.131]	[−.061]
Police/probation			−.406 (.105)	−.333 (.107)
			[−.156]	[−.126]
Ever in care	−.288 (.087)	−.184 (.090)	−.146 (.091)	−.104 (.092)
	[−.110]	[−.069]	[−.054]	[−.038]
Family ever in financial difficulties	−.548 (.044)	−.403 (.046)	−.340 (.047)	−.253 (.048)
	[−.210]	[−.153]	[−.128]	[−.094]
Ever in lone-mother family (but no financial difficulties)	−.053 (.072)	−.065 (.074)	−.042 (.076)	−.007 (.078)
	[−.020]	[−.024]	[−.015]	[−.002]

Father ever unemployed (but no financial difficulties)	−.225 (.099) [−.085]	−.166 (.101) [−.062]	−.130 (.102) [−.048]	−.087 (.104) [−.032]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−3,915.25	−3,768.87	−3,725.31	−3,553.67
Sample size	6,256	6,256	6,256	6,256
Pr[Lone Mother by Age 23]: Probit				
Low school attendance			.347 (.071) [.053]	.220 (.072) [.025]
Police/probation			.389 (.125) [.063]	.342 (.126) [.045]
Ever in care	.364 (.105) [.065]	.285 (.108) [.044]	.237 (.110) [.035]	.204 (.112) [.024]
Family ever in financial difficulties	.553 (.055) [.100]	.420 (.059) [.066]	.360 (.060) [.054]	.290 (.061) [.034]
Ever in lone-mother family (but no financial difficulties)	.117 (.104) [.018]	.126 (.108) [.017]	.099 (.110) [.013]	.073 (.114) [.008]
Father ever unemployed (but no financial difficulties)	.150 (.142) [.023]	.106 (.148) [.015]	.082 (.148) [.013]	.042 (.151) [.004]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−1,688.32	−1,617.80	−1,595.51	−1,518.13
Sample size	6,270	6,270	6,270	6,270

Source: National Child Development Study, wave 4.

Note: Numbers in parentheses are standard errors. Numbers in brackets are marginal effects.

"initial conditions" variables) this reflects education's role as an important transmission mechanism that underpins the relation between disadvantage and inferior economic and social outcomes.

While we have only summarized some of the key results here, all in all we feel they are strong evidence that childhood factors linked to delinquency or social disadvantage have important linkages with age 23 economic and social outcomes. Even after netting out a variety of pre-labor-market factors and educational attainment the less advantaged individuals in the NCDS cohort are much less likely to be employed and are much more likely to have experienced longer unemployment spells and experienced detrimental social experiences. In this sense we view our measures of social disadvantage as important, albeit noisy, characterizations of the "at-risk" population of the worse performers in the early years of adulthood. In the next section we examine whether the economic effects of such disadvantages persist to age 33.

6.5 Models of Economic and Social Outcomes at Age 33

6.5.1 Age 33 Economic and Social Outcomes

The most up-to-date wave of the NCDS that we can currently access is the age 33 survey that was carried out in 1991. In this section of the paper we consider wage and employment outcomes at age 33 and relate them to our measures of delinquency and disadvantage in the same kind of approach as above where we build up progressively more detailed models that net out factors from earlier ages. The second issue on which we focus is the difficult question of whether there is potential for a "late developer" effect. We operationalize this by asking whether there exist wage returns from late educational upgrading and, perhaps more important, whether they differ for our measures of social disadvantage. A third issue we consider is the possibility of a cross-generational effect as we look at the potential for intergenerational spillovers onto the early age cognitive skills of cohort members' children.

Table 6.9 reports a set of descriptive statistics for the pay and employment of NCDS cohort members at age 33 in 1991. The structure of the table is the same as for the earlier 1981 data. Hourly wages and employment rates are clearly lower for the first four measures (low school attendance, police/probation, ever in care, and ever in financial difficulties) though there is less difference for the family structure (in the absence of financial difficulties) variables.

Continuing with the same kind of modeling approach that we have adopted thus far in the paper, our fourth-stage multivariate models take the form:

Table 6.9 **Age 23 Outcomes and Age 16 Juvenile Delinquency and Social Disadvantage**

Characteristic	Hourly Pay	Pr[Employment]
	Males	
All	7.628	.905
Low school attendance	5.796	.805
Police/probation	6.429	.816
Ever in care	6.355	.752
Ever in financial difficulties	6.276	.834
Ever in lone-mother family (no financial difficulties)	7.729	.905
Father ever unemployed (no financial difficulties)	7.191	.907
	Females	
All	5.240	.760
Low school attendance	3.947	.615
Police/probation	4.489	.627
Ever in care	4.781	.620
Ever in financial difficulties	4.223	.649
Ever in lone-mother family (no financial difficulties)	5.939	.702
Father ever unemployed (no financial difficulties)	4.751	.691

$$Y_i^{\text{age 33}} = \alpha_4 + \beta_4 DELINQ_i + \psi_3 DISADV_i + \Gamma_4 X_i^{\text{pre 16}} + \Omega_4 ED_i^{\text{age 23}} + \varepsilon_4,$$

where Y^{age33} denotes the relevant age 33 outcomes (wages and employment).

Table 6.10 reports least squares estimates of wage equations and probit models of employment for males and females in 1991. The structure of the table is the same as for the age 23 models reported in table 6.8. The estimated models make it clear that the effects of childhood disadvantage do not die out by age 33. This is especially the case for men where there are negative wage effects, after controlling for education, from low school attendance or growing up in a family facing financial difficulties or in a lone-mother family. Male employment rates are significantly lower for low school attendance and ever being in care. For females, significant associations are less common, but there do seem to be significant negative wage effects for the financial difficulty variable. There is much less of an effect on female employment rates at age 33. The male-female comparisons are interesting because it is clear that between ages 23 and 33, the position of disadvantaged females did not worsen and some of the earlier effects were ameliorated. These gender-based differences after age 23, with

Table 6.10 **Age 33 Wage and Employment Models**

A. Males

Variable	(1)	(2)	(3)	(4)
	Ln Hourly Wage: Least Squares			
Low school attendance			−.123 (.031)	−.042 (.030)
Police/probation			−.045 (.033)	−.005 (.032)
Ever in care	−.114 (.044)	−.037 (.042)	−.032 (.042)	.009 (.040)
Family ever in financial difficulties	−.204 (.024)	−.107 (.023)	−.088 (.023)	−.049 (.023)
Ever in lone-mother family (but no financial difficulties)	−.077 (.039)	−.070 (.037)	−.067 (.037)	−.058 (.035)
Father ever unemployed (but no financial difficulties)	−.080 (.046)	−.029 (.044)	−.026 (.044)	.002 (.041)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
R^2	.026	.137	.144	.229
Sample size	3,367	3,367	3,367	3,367
	Pr[Employment]: Probit			
Low school attendance			−.350 (.090)	−.234 (.091)
			[−.060]	[−.035]
Police/probation			−.218 (.098)	−.152 (.100)
			[−.035]	[−.022]
Ever in care	−.593 (.112)	−.409 (.118)	−.367 (.121)	−.324 (.122)
	[−.130]	[−.075]	[−.028]	[−.052]
Family ever in financial difficulties	−.369 (.069)	−.241 (.073)	−.184 (.075)	−.128 (.076)
	[−.067]	[−.039]	[−.028]	[−.018]

Ever in lone-mother family (but no financial difficulties)	−.087 (.121) [−.013]	−.071 (.124) [−.010]	−.059 (.126) [−.009]	−.028 (.129) [−.004]
Father ever unemployed (but no financial difficulties)	−.161 (.152) [−.027]	−.131 (.156) [−.020]	−.117 (.157) [−.018]	−.075 (.159) [−.010]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−1,338.75	−1,272.94	−1,261.19	−1,221.94
Sample size	4,655	4,655	4,655	4,655

B. Females

Variable	(1)	(2)	(3)	(4)
	Ln Hourly Wage: Least Squares			
Low school attendance			−.125 (.033)	−.023 (.031)
Police/probation			−.027 (.061)	.019 (.056)
Ever in care	−.041 (.057)	−.001 (.055)	.014 (.055)	.040 (.050)
Family ever in financial difficulties	−.230 (.026)	−.132 (.026)	−.107 (.026)	−.068 (.024)
Ever in lone-mother family (but no financial difficulties)	.048 (.042)	.048 (.040)	.071 (.041)	.079 (.037)
Father ever unemployed (but no financial difficulties)	−.090 (.056)	−.069 (.053)	−.056 (.053)	−.045 (.049)
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
R^2	.024	.126	.137	.268
Sample size	3,540	3,540	3,540	3,540

(*continued*)

Table 6.10 (continued)

B. Females

Variable	(1)	(2)	(3)	(4)
	Pr[Employment]: Probit			
Low school attendance			−.142 (.064)	−.053 (.067)
			[−.051]	[−.019]
Police/probation			.009 (.121)	.032 (.122)
			[.003]	[.011]
Ever in care	−.043 (.104)	.039 (.106)	.045 (.107)	.069 (.108)
	[−.015]	[.014]	[.015]	[.024]
Family ever in financial difficulties	−.071 (.051)	−.011 (.053)	.000 (.054)	.037 (.054)
	[−.025]	[−.004]	[.000]	[.013]
Ever in lone-mother family (but no financial difficulties)	.080 (.083)	.066 (.083)	.046 (.085)	.062 (.086)
	[.028]	[.023]	[.016]	[.021]
Father ever unemployed (but no financial difficulties)	.057 (.113)	.085 (.114)	.093 (.114)	.107 (.115)
	[.020]	[.029]	[.032]	[.036]
Age 7 controls and parental education	No	Yes	Yes	Yes
Controls for age 23 educational qualifications	No	No	No	Yes
Log likelihood	−3,067.09	−3,034.55	−3,031.27	−2,995.44
Sample size	4,972	4,972	4,972	4,972

Source: National Child Development Study, wave 5.

Note: Numbers in parentheses are standard errors. Numbers in brackets are marginal effects.

disadvantaged men doing worse than womenn in terms of economic success, seem to be in line with recent labor market trends for younger cohorts of men and women in Britain (as discussed in section 6.2 above).

6.5.2 Late Developers and the Potential to Catch Up

We now go on to see if there exists any potential for catch-up or late development for individuals who look relatively unsuccessful in the early years of adult life (i.e., as characterized by our relative disadvantage measures). We consider one possible route through which this might happen, namely, educational upgrading. We defined a variable *Upgrade* equal to one if individuals improved their educational qualifications between 1981 and 1991 and entered this into equations modeling wage growth between ages 23 and 33.[15] Basic regressions show clear evidence of wage gains associated with educational upgrading for both men and women, with slightly larger gains for women:

$$\text{Males:} \quad \ln Wage^{\text{age 33}} - \ln Wage^{\text{age 23}} = \underset{(.025)}{.122}\ Upgrade,$$

$$\text{Females:} \quad \ln Wage^{\text{age 33}} - \ln Wage^{\text{age 23}} = \underset{(.133)}{.171}\ Upgrade.$$

These are least squares estimates; standard errors in parentheses.

This pattern of results remains robust to the inclusion of the 1981 wage and a variable *Outtime* measuring the number of months spent out of the labor force between ages 23 and 33 (which, especially in the case of women in this age group, is an important variable to control for in wage change equations):

$$\text{Males:} \quad \ln Wage^{\text{age 33}} - \ln Wage^{\text{age 23}} = \underset{(.025)}{.120}\ Upgrade$$

$$- \underset{(.027)}{.628}\ \ln Wage^{\text{age 23}} - \underset{(.071)}{.677}\ Outtime,$$

$$\text{Females:} \quad \ln Wage^{\text{age 33}} - \ln Wage^{\text{age 23}} = \underset{(.027)}{.139}\ Upgrade$$

$$- \underset{(.024)}{.487}\ \ln Wage^{\text{age 23}} - \underset{(.050)}{.874}\ Outtime.$$

Next we consider whether the potential returns to upgrading one's education differ for individuals whom we characterize as childhood delinquents or from disadvantaged backgrounds. To do this we estimate wage

15. Upgrading one's educational qualifications is significantly more likely for individuals with higher age 7 math and reading scores and for those with parents with lower educational attainment. It is not significantly related to the measures of delinquency and disadvantage.

growth models including interactions between *Upgrade* and the delinquency and disadvantage measures considered above. This produced the following estimates:

Males: $\ln Wage^{age\,33} - \ln Wage^{age\,23} = .145$ *Upgrade*
(.026)
$- .134$ *Upgrade* * *Low school attendance*
(.086)
$- .040$ *Upgrade* * *Ever in care*
(.112)
$- .038$ *Upgrade* * *Contact with police/probation*
(.097)
$- .102$ *Upgrade* * *Ever in financial difficulties*
(.064)
$- .102$ *Upgrade* * *Ever in lone-mother family (no fin. diff.)*
(.097)
$+ .050$ *Upgrade* * *Father ever unemployed (no fin. diff.)*
(.150)
$- .629 \ln Wage^{age\,23} - .677$ *Outtime*,
(.023) (.069)

Females: $\ln Wage^{age\,33} - \ln Wage^{age\,23} = .152$ *Upgrade*
(.035)
$+ .002$ *Upgrade* * *Low school attendance*
(.122)
$+ .030$ *Upgrade* * *Ever in care*
(.236)
$- .145$ *Upgrade* * *Contact with police/probation*
(.268)
$- .103$ *Upgrade* * *Ever in financial difficulties*
(.093)
$+ .068$ *Upgrade* * *Ever in lone-mother family (no fin. diff.)*
(.111)
$- .171$ *Upgrade* * *Father ever unemployed (no fin. diff.)*
(.150)
$- .488 \ln Wage^{age\,23} - .873$ *Outtime*.
(.025) (.051)

Because these are wage change equations, the delinquency and disadvantage variables cannot be entered in levels (as they would be differenced out), but their interactions with *Upgrade* can be considered. The results that emerge show that if anything, men with low school attendance in their last year or who were in low-income families benefit less from educational upgrading. For women, the picture is less depressing because all interaction terms are insignificant, suggesting no difference in the potential to achieve wage gains from increasing levels of education at a later age. This gender difference is clearly in line with the background trends we presented in section 6.2, with women doing better than men in the 1980s and early 1990s.

6.5.3 Children of NCDS Cohort Members in 1991

Because the NCDS cohort members are old enough to have their own children, the survey coordinators have now incorporated information on cohort members' children in the survey. The NCDS contains data on test score outcomes from a battery of tests administered to the cohort members' children. These data permit us to introduce an intergenerational aspect to our study and to ask the very important question of whether social disadvantage faced by NCDS cohort members in their childhood years has any clear relationship with their own children's cognitive abilities.

Table 6.11 reports information on two tests administered to cohort members' children aged 6–9. The tests are the well-known Peabody Individual Achievement Tests (for math and reading recognition) and are standardized for age differences (see Social Statistics Research Unit, n.d., for more details). Children have been classified into percentiles of the test score distribution, and we report the mean percentile broken down by parents' social disadvantage in the table. A clear and strong pattern emerges. For math and reading tests children of a parent who faced social disadvantages in his or her own childhood have lower percentile rankings.

Table 6.12 reports regressions that include social disadvantage measures and also consider the intergenerational correlations of test scores.[16] Two specifications are reported for the math and reading tests, and these differ in whether they include the parental test score quintile dummy variables. The results show a strong negative relation between the cognitive skills of cohort members' children and whether (one of) their parents faced social disadvantages while growing up. In almost all cases the effects are large

16. Notice that the tests are not identical for cohort members and their children. As noted above the children's tests are Peabody Individual Achievement Tests and the tests administered to NCDS cohort members at age 7 were the Southgate Group reading test and a problem arithmetic test. For more work on intergenerational mobility in terms of the earnings and education of NCDS cohort members and their parents, see Dearden, Machin, and Reed (1997).

Table 6.11 Math and Reading Test Score Percentiles for Children of NCDS Cohort Members

Characteristic	Math: Peabody Individual Achievement Test Score (percentile)	Sample Size	Reading: Peabody Individual Achievement Test Score (percentile)	Sample Size
All	51.89	1,007	51.28	1,008
Parent had low school attendance	48.31	104	44.48	105
Parent was in contact with police/probation	41.45	56	37.16	56
Parent was ever in care	37.49	37	34.84	37
Parent grew up in family ever in financial difficulties	45.17	182	43.96	183
Parent ever in lone-mother family (no financial difficulties)	55.88	65	52.69	65
Parent's father ever unemployed (no financial difficulties)	54.19	31	47.58	31

Note: The age range of children is 6 years, 0 months to 9 years, 0 months inclusive (at the time of taking the tests).

and show that test scores are somewhere between 5 and 10 percentile points lower for each of the parental disadvantage measures. The results also show an important intergenerational correlation of test scores (especially for reading), and while boys do better on the math test, girls seem to outperform boys on the reading test.

These results demonstrate a further effect of social disadvantage when growing up, namely, the existence of an intergenerational spillover. The children of parents who grew up in socially disadvantaged situations are more likely to have lower scores on tests administered to them at an early age. Because early age math and reading ability are important determinants of economic and social success or failure as an adult this suggests that the effects of childhood disadvantage persist over generations (see also Machin 1997).

6.6 Concluding Remarks

The basic message of this study is clear. Economic and social disadvantages faced during childhood display a persistent association with the subsequent economic success of British individuals. We use unique longitudinal data from a cohort of all individuals born in a week of March 1958 to examine models of relative success or failure in the early years of adulthood. Our results suggest that individual and family characteristics, especially those associated with adverse economic and social child

Table 6.12 **Math and Reading Test Score Percentiles for Children of NCDS Cohort Members: Intergenerational Correlations**

	Math: Children's Peabody Individual Achievement Test Score (percentile)		Reading: Children's Peabody Individual Achievement Test Score (percentile)	
Variable	(1)	(2)	(3)	(4)
Parent had low school attendance	−2.680 (3.099)	−2.008 (3.106)	−5.792 (3.044)	−3.305 (3.000)
Parent was in contact with police/probation	−7.289 (4.107)	−7.253 (4.093)	−10.950 (4.048)	−9.623 (3.953)
Parent was ever in care	−10.018 (5.072)	−9.558 (5.054)	−13.163 (4.999)	−11.654 (4.890)
Parent grew up in family ever in financial difficulties	−6.762 (2.463)	−6.070 (2.469)	−7.742 (2.425)	−5.287 (2.388)
Parent ever in lone-mother family (no financial difficulties)	2.394 (3.844)	1.700 (3.838)	−.321 (3.789)	−.645 (3.701)
Parent's father ever unemployed (no financial difficulties)	1.477 (5.276)	2.948 (5.276)	−5.153 (5.200)	−1.452 (5.093)
Child = boy	2.975 (1.843)	2.920 (1.839)	−3.874 (1.815)	−4.193 (1.769)
Parents test scores (age 7)				
2d Lowest quintile of math and reading test scores		2.563 (2.800)		5.340 (2.711)
Middle quintile of math and reading test scores		3.171 (2.692)		11.655 (2.630)
2d Highest quintile of math and reading test scores		2.258 (2.777)		13.072 (2.828)
Highest quintile of math and reading test scores		10.142 (2.952)		19.604 (2.828)
R^2	.034	.046	.050	.102
Sample size	983	983	984	984

Note: Age range of children is 6 years, 0 months to 9 years, 0 months (at time of taking the tests). Numbers in parentheses are standard errors.

development, display an important association with subsequent success or failure in the labor market. In particular, children whom we characterize as juvenile delinquents or from socially disadvantaged backgrounds fare badly in terms of employment and unemployment, and their social disadvantages persist and still have a strong effect even at age 33.[17] An important transmission mechanism that underpins these links is educational attainment, which is vastly inferior for those we classify in the delinquent and disadvantaged groups. However, over and above this, factors such as poor school attendance and growing up in a family in financial distress matter (and in our work matter more than lone motherhood, which seems to be dominated by such family poverty measures). Furthermore, the children of parents who grew up in socially disadvantaged situations during their own childhoods have lower early age cognitive abilities, suggesting a potentially important cross-generational link that may well spill over to the subsequent economic fortunes of children of disadvantaged individuals.

17. For related work on an earlier cohort of British individuals born in 1946, see Kuh and Wadsworth (1991). They report that the earnings of men aged 36 were substantially affected by early life factors after controlling for education, social class, and early age abilities. In their study very few men from disadvantaged backgrounds achieved success in terms of reaching the upper third of the earnings distribution, and the impact of early life factors seemed to persist into the midlife years.

Appendix

Table 6A.1 **Labor Force Status for People Aged 16/17 in 1975**

	Males (%)					Females (%)				
				Student					Student	
Year	Employed	Unemployed	Inactive	Not Working	Working	Employed	Unemployed	Inactive	Not Working	Working
1975	60.5	4.8	0.4	34.2	n.a.	52.7	5.4	3.4	38.6	n.a.
1977	78.0	7.1	1.5	13.4	n.a.	70.6	6.7	10.2	12.5	n.a.
1979	82.0	6.6	1.5	9.9	n.a.	66.0	5.4	20.6	8.0	n.a.
1981	79.0	14.3	1.7	5.0	n.a.	61.1	7.6	28.8	2.6	n.a.
1983	78.9	14.6	4.0	2.6	n.a.	53.4	7.6	37.0	2.0	n.a.
1984	80.3	15.0	2.9	1.8	n.a.	54.3	9.1	35.3	1.3	n.a.
1985	78.0	13.0	6.6	0.5	0.0	53.9	8.8	37.0	0.2	0.1
1986	83.2	11.3	5.4	0.1	0.0	53.1	7.8	39.0	0.1	0.0
1987	84.6	11.1	4.0	0.3	0.0	54.8	9.3	35.7	0.3	0.0
1988	85.7	8.7	5.3	0.3	0.0	58.7	6.2	35.2	0.0	0.0
1989	88.7	6.6	4.5	0.2	0.1	59.2	5.7	35.2	0.0	0.0
1990	88.4	5.9	5.5	0.2	0.0	60.6	5.4	33.9	0.1	0.0
1991	87.1	7.9	4.8	0.2	0.1	65.4	4.4	30.1	0.1	0.0
1992	85.9	9.7	4.3	0.1	0.0	64.7	4.4	30.9	0.1	0.0
1993	86.0	8.3	5.6	0.1	0.0	65.2	4.4	30.3	0.1	0.0
1994	86.0	7.9	5.8	0.2	0.1	65.1	3.9	31.0	0.0	0.0
1995	85.4	7.2	7.3	0.1	0.0	70.4	3.4	26.2	0.0	0.0

Source: Labour Force Survey.

Note: n.a. = data not available.

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