

Intergenerational and Life-Course Transmission of Social Exclusion: Influences of Childhood Poverty, Family Disruption, and Contact with the Police

John Hobcraft

Contents

Editorial Note	iii
Acknowledgements	iii
Abstract	iii
1. Introduction.....	1
2. The National Child Development Study	3
3. The outcomes	3
4. The explanatory variables: childhood precursors of adult outcomes	6
5. The 'focal' variables.....	9
6. The 'control' variables.....	15
7. Setting the scene: associations among the focal variables.....	21
8. Multivariate analysis.....	25
9. Links between the outcomes and focal variables: initial models	30
10. The effect of the control variables on the associations with the focal variables	33
11. The relationships of the control variables to the outcomes.....	41
12. A closer look at the individual outcomes	58
13. Discussion.....	85
14. Conclusion.....	93
References	98

CASEpaper
CASE/15
November 1998

Centre for Analysis of Social Exclusion
London School of Economics
Houghton Street
London WC2A 2AE
CASE enquiries: tel: 0171 955 6679

Centre for Analysis of Social Exclusion

The ESRC Research Centre for Analysis of Social Exclusion (CASE) was established in October 1997 with funding from the Economic and Social Research Council. It is located within the Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD) at the London School of Economics and Political Science, and benefits from support from STICERD. It is directed by Howard Glennerster, John Hills, Kathleen Kiernan, Julian Le Grand and Anne Power.

Our Discussion Papers series is available free of charge. We also produces summaries of our research in CASEbriefs. To subscribe to the series, or for further information on the work of the Centre and our seminar series, please contact the Centre Administrator, Jane Dickson, on:

Telephone:	UK+171 955 6679
Fax:	UK+171 242 2357
Email:	j.dickson@lse.ac.uk
Web site:	http://sticerd.lse.ac.uk/case.htm

© John Hobcraft

All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Editorial Note

John Hobcraft is Professor of Population Studies in the Department of Social Policy, London School of Economics and Political Science, and a Research Associate in the Centre for Analysis of Social Exclusion.

Acknowledgements

I am deeply grateful to Kathleen Kiernan in too many ways to enumerate fully here: she provided the initial idea of exploring the 'police-poverty-family' nexus and provided much help, encouragement, support and advice during the research. The work has also benefited from comments made by John Hills and by participants at presentations of this work at the Annual Meetings of the Population Association of America in Chicago, the Harris School of Public Policy at the University of Chicago, and a CASE Seminar at the LSE. A substantial part of the data analysis for this project was undertaken during a term bought out by CASE and funded by the Economic and Social Research Council. The NCDS data used in this study were supplied by the ESRC Data Archive at Essex University.

Abstract

This study uses data from the National Child Development Study to examine how experiences during childhood are linked to a wide variety of outcomes in adulthood. A cluster of childhood experiences (poverty, family disruption, and contact with the police) are given specific attention. One of the main goals is to examine the extent to which social exclusion and disadvantage is transmitted across generations and across the life-course.

Three groups of variables are examined separately for men and women, with some innovative approaches to handling the problems of missing data:

- ❖ **‘focal’** variables, which summarise childhood experience of family disruption, of poverty, and contact with the police.
- ❖ **‘control’** variables, which summarise childhood background and experiences on: social class of origin, social class during childhood, housing tenure, father’s and mother’s interest in schooling, three personality attributes (‘aggression’, ‘anxiety’, and ‘restlessness’), and educational test scores
- ❖ **adult outcomes by age 33:** *demographic* (early parenthood, extra-marital births, and three or more co-residential partnerships); *psychological* (malaise); *welfare position* (social housing, receipt of non-universal benefits, and homelessness); *educational qualifications* (none, and degree-equivalent); and *economic* (high and low income, and male unemployment).

Preliminary analysis of the focal variables highlights powerful interconnections in experiences by age 16:

- ❖ 44% of the poorest boys had contact with the police by age 16 (13% for the non-poor).
- ❖ 47% of children with divorced lone-parents experienced childhood poverty (8% in intact two-parent families).

Among the more important findings are:

- ❖ Frequent life-course and intergenerational continuities in the transmission of social exclusion:
 - ◆ Anxious children experience more malaise as adults
 - ◆ Social housing is more common if parent lived in Local Authority housing
 - ◆ Poor children have lower income as adults

- ◆ Parental interest in schooling is powerful predictor of educational success
- ❖ Social and parental factors (parental interest in schooling and family disruption) are more related to adult exclusion for females and external and structural factors (social class and housing tenure) more related to exclusion for males
 - ◆ Early parenthood, extra-marital births, and receipt of benefits are examples
- ❖ Family disruption is most clearly related to demographic outcomes
 - ◆ Children born out-of-wedlock are more than twice as likely to have extra-marital births
 - ◆ Multiple partnerships are over three times as frequent for men whose parents divorced
 - ◆ Boys with step-parents are nearly three times as likely to be homeless between 23 and 33
- ❖ Care/ fostering has a devastating effect on most adult outcomes for females
- ❖ Educational test scores are powerful predictors of a wide range of adult outcomes:
 - ◆ A three-fold difference in the incidence of early parenthood
 - ◆ A doubling of malaise
 - ◆ A three-fold difference in social housing
 - ◆ A four-fold difference in low male earnings
- ❖ The importance of father's interest in schooling for both sexes, with mother's interest proving more important for girls
- ❖ The five most powerful and consistent childhood predictors of adult outcomes include all three of the focal variables (childhood poverty, family disruption, and contact with the police), along with educational test scores and father's interest in schooling.

1. Introduction

This study uses data from the National Child Development Study (NCDS), a longitudinal study of children born in 1958, to examine the following questions. How far is social exclusion and disadvantage transmitted from parents to their children and from childhood into adulthood? In particular, how far do childhood experiences of poverty, family disruption, and contact with the police link to adult outcomes? What associations are there for a range of other parental and childhood factors - social class of origin, social class during childhood, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', and 'restlessness', and educational test scores? And how do these factors link to outcomes by age 33, including three indicators of demographic behaviour, one of psychological well-being, three of welfare position, two of educational qualifications and three of economic position? Which childhood factors have a general influence on adult exclusion and are there specific 'inheritance' patterns?

During the 1970s and early 1980s the SSRC and DHSS funded a major programme of research into transmitted deprivation (Brown and Madge 1982). A few of the studies in that programme made use of longitudinal information, but the children examined in this paper, who were born in 1958, were only aged 14 at the inception of that programme in 1972. It is only now, subsequent to the most recent interview of 1991 when the survey members were aged 33, that we can explore the extent of interconnections between childhood experiences and parental background on the one hand and a wide range of outcomes in adulthood. It is extremely rare to have the opportunity to examine the life-histories of a nation-wide sample of children as they unfold from the time they are born through to adulthood. We are not aware of other studies which have attempted to synthesise the intergenerational and life-course continuities of such a wide span of parental and childhood information through to a similarly broad selection of adult outcomes. This permits us to discover both broad general precursors of social exclusion and rather more specific pathways for linked antecedents and outcomes.

Our focus is on three important aspects of childhood that are known to have adverse effects on a child's life: namely poverty,

family disruption and contact with the police and we examine the inter-linkages between these three focal factors. The primary aim of the paper is to examine the extent to which these three experiences are associated with outcomes in adulthood across a number of domains: partnership and parenthood, mental health, welfare position, educational attainment and income. The relative strengths of the associations between the focal variables and outcomes are assessed as is the strength of association net of and with a wide range of measures relating to the child's cognitive and behavioural development, social origins and parental investment.

After some discussion of the potential consequences of missing data and the details of the derivation of the variables used, the first substantive section shows the strong interrelationships between the three focal variables: poverty, family disruption, and contact with the police during childhood. We then go on to show the pervasive nature of associations of each of these three factors to the wide range of outcomes during adulthood.

The final and most complete analysis introduces the wide selection of control variables in addition to the focal variables as predictors of the various adult outcomes. The strength of the associations with the focal variables are attenuated but they still frequently remain powerful and all of the control variables turn out to have strong associations with several of the outcomes in adulthood.

A number of other studies have used longitudinal data to examine relationships for each of the focal variables separately, but we are unaware of a similar study which examines such a wide range of childhood precursors and adult outcomes. Examples of longitudinal studies which look at crime include Wadsworth (1979), West (1982), Farrington and West (1990), and Sampson and Laub (1993); there is also a useful summary of the British evidence in Utting, Bright and Henricson (1993). There have recently been a number of major studies looking at longitudinal evidence on the consequences of childhood poverty in the U.S., including Chase-Lansdale and Brooks-Gunn (1995), Duncan and Brooks-Gunn (1997), and Mayer (1997). There is also a substantial literature on the associations between childhood experience of parental divorce or other forms lone parenthood, including McLanahan and Sandefur (1994) and an important series of papers which are direct precursors of this work by Kiernan and colleagues using the information collected in the NCDS (e.g. Kiernan 1986, Kiernan

1992, Cherlin *et al* 1991, Chase-Lansdale, Cherlin and Kiernan 1995, Cherlin, Kiernan and Chase-Lansdale 1995, Kiernan 1995, Kiernan 1996, and Kiernan 1997). Machin and colleagues (1998) have looked at a number of childhood precursors in the transmission of economic status using NCDS data.

2. The National Child Development Study

The data for this study come from the National Child Development Study (NCDS), a longitudinal study of children born throughout Britain in the first week of March 1958. The survey was originally designed to examine the social and obstetric factors associated with still-birth and death in early infancy. A total of 17,414 mothers, representing 98 per cent of all births in that week, were interviewed. The children were subsequently followed up through their school years at ages 7 (n=15,468), 11 (n=15,503) and 16 (n=14,761) and were traced and interviewed on two occasions during adulthood at ages 23 (n=12,537) and 33 years (n=11,407). During the school years all children born in the survey week were screened; thus immigrants and children whose parents refused or were untraced in the birth survey would have been included in the childhood sweeps. In total there are records with some information on 18,558 children. The main focus of the NCDS has been on the cohort members, and the available information covers a wide range of topics including medical, demographic, social and psychological, educational and economic aspects of their life histories. Further information on the surveys can be found in Fogelman (ed.) (1983), Shepherd (1985) and Ferri (ed.) (1993).

3. The outcomes

We examine variation in outcomes during adulthood across five main domains: demographic experiences, mental well-being, welfare position, educational attainment and economic position. The specific outcomes and the percentages of men and women experiencing each outcome are shown in Table 1.

Table 1: Outcome variables used and proportions experiencing each outcome by sex (per cent)

Outcome (by/at age 33)	Per cent experiencing		Number of cases	
	Males	Females	Males	Females
Young father/ Teenage mother	9.3	11.8	5365	5632
Extra-marital birth	8.8	11.9	5352	5628
Three or more partners	3.9	3.7	5569	5777
Malaise	6.9	12.2	5573	5768
Social housing	13.5	17.0	4984	5430
Any benefits	14.2	20.7	5529	5730
Homeless in previous 10 years	3.6	4.0	5586	5778
No qualifications	11.4	13.9	5456	5685
Degree-level qualifications	28.4	25.0	5456	5685
Top quartile male income/Household income for females	25.2	24.6	4704	3959
Lowest quartile male income/Household income for females	25.0	26.4	4704	3959
Ever unemployed	29.3	----	5587	----

On the demographic front we examine the timing of entry into parenthood in terms of whether the cohort member had become a father before age 22 or a teenage mother, and whether they had had their first child outside of marriage. The other demographic outcome included in this analysis is whether the cohort member had had three or more co-residential partnerships by age 33.

Mental health was assessed at age 33 by the Malaise Inventory designed by Rutter *et al* (1970). This is a 24-item list of symptoms such as anxiety, irritability, depressed mood and psychosomatic illness. Scores of seven or more have been used in previous studies to identify those at high risk of depression (Richman 1978, Rutter *et al* 1976) and we have followed this convention here.

Welfare position was broadly assessed by whether the cohort member was living in social housing at age 33, and whether they were drawing state benefits at that age, as well as whether they had ever been homeless in the 10 years before the interview at age 33. By age 33, most young people in Britain have set up home independently of their parents and have settled down into one of the two main housing sectors: owner occupation or social housing. By age 33, the great majority were buying their own homes (79 per cent) and 15 per cent were in social housing, either rented from a

local authority or housing association and the remainder were a mixed group including renting in the private sector, accommodation supplied with their job etc. As well as information on income from work the cohort members were asked about receipt of state benefits. We only included receipt of non-universal benefits, such as income support, family credit, housing benefit, unemployment benefits and one-parent family premium in our measure. At age 33 the cohort members were also asked whether at any time over the last ten years (between age 23 and 33) they had become homeless in the sense of “having to move out of a place and having nowhere permanent to live”. Going back to live with one’s parents did not count as homelessness. Doubtless, those who were homeless at the time of the interview would be less likely to be contacted.

Educational outcomes were assessed by whether the cohort member had attained any qualifications by age 33 and by whether they had attained degree level qualifications by this age.

Men and women are treated differently in the analysis with respect to the economic outcomes. The income and employment situation of women is complicated by the advent of motherhood. Whether women are in employment and their level of earnings will be predicated not only on whether they are mothers but also on the timing of motherhood in their life course, and the time elapsed since the birth of the most recent child. Moreover there are additional complexities in looking at the relationship between income and employment status at this juncture in the life-histories of women, in that women who have older children, other things being equal, will be mothers who started having children at a younger age and therefore will be selected for lower educational attainment and less earning power. Thus, for the women we only use a measure of household income in our analysis, as this is likely to be a better gauge of their income position than their individual earnings.

The specific outcome measures are whether or not the women were in the bottom or top quartile of the household income distribution at age 33. For the men, where earnings are less affected by the advent of parenthood, the outcome measures were whether they were in the bottom or top quartiles of the male earnings distribution (this information was only available for those who were earning and thus excluded the unemployed). It is anticipated that the male income measure will be more sharply associated with their own childhood attributes than the more diffuse measure of household income for the women.

We also examined whether the men had ever experienced unemployment since completing full-time education. This measure was not included for the women as women have alternatives to labour market participation that are less available to men. Moreover, our initial analysis showed there to be no association between childhood attributes and unemployment amongst the women.

4. The explanatory variables: childhood precursors of adult outcomes

The NCDS is a birth cohort panel study and a great deal of information was collected at ages 0, 7, 11, and 16 during childhood (waves 0, 1, 2, and 3). One of the difficulties in fully using such information is that there are missing values at some waves for many of the panel members. Some missing information arises because it did not prove possible to carry out the relevant interview, but there is an additional issue of non-response or don't know answers to individual questions for those interviews which were carried out. At each wave there was a serious effort to obtain information about all members of the initial birth cohort, including those who had been missed out of earlier waves. A further complexity arises from the fact that each of the main childhood waves did not consist of a single interview, but involved collection of very rich information from parents (usually the mother) by health visitors, from teachers and schools, a medical examination (including tests and consultation of records) by Local Authority medical officers, and scholastic tests completed in school; although there is heavy overlap in the groups for whom information was collected from these differing sources within each wave, non-response does differ for the various sources within waves.

In some respects, the complex nature of the missing information both within and between waves makes the analysis a nightmare. But there is the huge advantage that we can examine related variables or outcomes for individual items where information is missing. Even a cursory examination of this issue makes it overwhelmingly clear that non-response and don't know responses (e.g. about negative aspects of behaviour by teachers) are informative, in the sense that related variables or outcomes show that those with missing information are not typical. This

means that two of the most common approaches to handling missing information are likely to be seriously biased.

The first such approach would exclude all cohort members with missing information on some of the items used: out of the 18,558 births, only 5,883 have had information collected in all questionnaires in waves 0 through 3 and 6,046 in waves 1 through 3. The sample size would thus represent fewer than one-third of the members of the original cohort and the selection bias towards the less mobile, the better off, and more stable groups is considerable.

Another common strategy for handling missing information is to set missing values to the mean for the variable concerned. However, there are frequent, clear, and strong indications that this would introduce substantial bias, which can be determined from examining other related variables (e.g. from another source in the same wave, or from a very similar question at a different wave), or from examining differences in outcomes for the groups for whom information is not available compared with the groups for whom such information exists. For example, we use the information from parents on free school meals at ages 11 and 16. Among those for whom information is available at both 11 and 16, 8,268 respondents reported no free school meals at both waves and 62 per cent of these had information from every questionnaire at each of waves 1 through 3; this was the case for only 48 per cent of the 1,653 respondents for whom free school meals were reported at either or both ages 11 and 16. If we also take account of the non-response, the contrast becomes even more dramatic. There were 9,329 respondents for whom no free school meals were reported at one or both of the age 11 and 16 interviews and some information from every questionnaire of waves 1 to 3 was available for 60 per cent of these respondents, whereas among the 2,377 respondents for whom the answer was yes at one or other of ages 11 and 16, only 34 per cent met this criterion.

In order to deal with these issues, we have explicitly retained codes for missing values on all of our explanatory variables and defined values for all 18,558 survey members. Some information is available for 17,138 respondents somewhere in waves 1 through 3, or for 18,273 if we include waves 0 through 3. This contrasts with only 6,046 for whom some information is available from every instrument for waves 1 through 3 or 5,883 for waves 0 through 3. We have attempted to maximise the extent to which real

information is used, although the complexities of handling multiple waves make this difficult.

For the purposes of this paper, we have elected to concentrate on summary variables which synthesise the information available through childhood. We have adopted this approach for several reasons. Firstly, we wished to obtain as much information about childhood circumstances as we could. In order to do this we have concentrated on variables where similar questions were asked in each of the three main childhood waves, although we have also used some information from the much more limited birth wave. Secondly, we wished to concentrate on a fairly broad treatment of childhood influences on outcomes in adulthood, since this is a daunting enough challenge. We do not address the more complex issue of disentangling the pathways through the different ages in childhood in determining outcomes. We have pursued a much more elaborate analysis of the pathways through experiences at ages 0, 7, and 11 in determining contact with the police by age 16 (here one of our explanatory variables, but clearly also an intermediate outcome variable), but this will be reported elsewhere. Equally we do not here attempt to explore the nuances of the differing impact of the timing of experiences during childhood. Thirdly, there is some evidence that suggests that much experience of disadvantage is transitory and that it is cumulative and prolonged exposure which may have the most severe long-term effects (e.g. Mayer 1997).

We identify three summary 'focal' variables corresponding to our broad headings of family disruption, poverty and contact with the police. In addition, we introduce a number of other summary 'control' variables, which attempt to capture several key dimensions of childhood: social class of origin, social class of father (or father figure) during childhood, housing tenure, mother's and father's interest in the child's education, and the child's personality attributes and performance on educational tests. Since the derivation of these variables is complex, we now discuss this in some detail.

5. The ‘focal’ variables

Poverty

We began with five items drawn from waves one to three of NCDS. At each of these waves it was reported whether the family were ‘in financial difficulties’. At age 7 this was one of a series of ‘family difficulties’ reported on by the Health visitor responsible for the interview, with clear instructions that the section should be completed in confidence and without questioning the family. At ages 11 and 16, the parent or other respondent was asked directly ‘have you been seriously troubled by financial hardship in the last 12 months?’ In addition, at ages 11 and 16, information was collected from the parents concerning whether any child in the family received free school meals. All five of these reports are taken to indicate that the survey member was probably experiencing poverty at or just before the time of the surveys. The basic information is summarised in Table 2.

Table 2: Basic information on childhood poverty indicators (per cent)

	Financial difficulties Age 7	Financial difficulties Age 11	Financial difficulties Age 16	Free school meals Age 11	Free school meals Age 16
Yes	6	9	6	10	6
No	64	64	55	65	56
Don’t know	6	-	1	-	-
Missing	24	27	37	26	38
Total	100	100	100	100	100

From this basic information, we constructed counts of the number of ‘yes’ and of ‘no’ responses and then grouped all respondents into 6 categories. The first (labelled ‘not poor’) corresponds to unequivocal evidence of all five responses existing and being negative. The second (‘probably not’) takes all cases where one or more responses are missing, but all that do exist are negative. The third group (some poverty) comprises those reporting one ‘yes’ combined with two to four negative responses. The fourth category (fairly poor) is made up of those reporting one ‘yes’ combined with zero or one ‘no’, two ‘yes’ with one to three ‘no’ or three ‘yes’ with two ‘no’. The fifth group (‘clearly poor’)

contains those with the clearest indications of poverty, with zero 'no' combined with two or more 'yes' or one 'no' and three or four 'yes'. Finally, the sixth group ('missing all') has no clear response to any of the questions, with all information being either missing or 'don't know'. These groupings were chosen partly for their coherence and partly on the basis of exploratory analyses on other variables. The distribution of respondents by sex for this variable among the respondents for whom some information on adult outcomes is available and for all who completely missing on adult outcomes is shown in Table 5. The survey members who are omitted from the analysis of the adult outcomes are much more likely to have missing childhood information (no surprise), but are also more likely to have been poor during their childhood.

Police

There are three separate items of information collected at age 16 which contain information about contacts with the police or probation services. The first and simplest is a direct question to the teacher: 'has this child been in trouble with the police?' This question was followed up with more detailed questions which are not used here. The other two indications are derived from generic questions to the parent and to the teacher about the child's contact with a range of services, including social services or social work, educational welfare, careers officer or youth employment officer, voluntary agencies, police or probation department, and child guidance clinic. These items were multiple response ones, which enabled identification of contact with the police or probation service. Unfortunately, the data files distributed do not provide a code for no contact with any of these services, so it is difficult to identify the group who responded to these questions. However, since most survey members had some contact with a careers officer or youth employment officer, which is not indicative of problems, we were able to use this group as a reference point. We are further able to identify those for whom information was collected in the relevant questionnaire, but had no recorded contact with any service including careers. The basic information is summarised in Table 3.

Table 3: Basic information at age 16 on contacts with police or probation service (per cent, base=18558)

	In trouble with police since age 11 (school)		Contact with services (school)	Contact with services (parent)
Yes	6	Police/ probation	5	5
		Other Contacts	6	4
No	55	Careers Officer only	42	34
Don't know	5		15	20
Missing	33		32	37
Total	100		100	100

These variables were combined using a similar approach to the one for the poverty information. Counts of the number of 'yes' responses (either a yes or an indication of contact with police or probation services) and of the 'no' responses (either a no or the only contacts being with other services or careers only) were formed. Information was thus missing or unknown on each item for from 38 to 57 per cent of survey members and there is considerable difference between the various indicators. The summary variable identifies five categories. The first is the unequivocal 'no contact' group, with a 'no' identified on all three items. The second is a 'probably not' group with zero 'yes' and one or two 'no' responses. The third comprises the 'some evidence' group, with one 'yes' and one or two 'no' values. The fourth group shows 'clear evidence' (in the balance of probability sense) of contact with the police, containing all those with one or more 'yes' combined with zero 'no' and those with two 'yes' and only one 'no'. Again, these groupings are intelligible and do not appear to lose much in summarisation. The distribution of values by sex of the survey member is shown in Table 5 for those with information on adult outcomes and also for all where such information is missing. Evidence of contact with the police is much more frequent for the men. Those survey members who are entirely omitted from the analysis of adult outcomes were again more likely to have missing information during childhood, but were also more likely to have clear evidence of contact with the police.

Family type

This summary variable proved the most complex to construct, perhaps not surprisingly, given the range of partnership arrangements. For ages 7, 11, and 16 information is available which permits categorisation of both the ‘mother figure’ and the ‘father figure’ to identify natural, adoptive, step, and foster parents, and those with either no mother/father figure or cared for by some other type of individual, as well as the usual missing information groups. At ages 11 and 16 explicit questions were asked (but not always answered) about why the mother/father figure was not the natural or adoptive one, which enables partial distinction between widow(er)hood and separation/divorce. At age 7, the available information is less direct, comprising reports by the health visitors (again in strict confidence and without questions to the family) on family difficulties caused by death of the father, death of the mother, and divorce, separation, or desertion. In addition, direct questions were asked at each wave about whether the child had ever been in local authority or voluntary society care. There is, not surprisingly, huge overlap between those reported as ever having been in care and those being fostered at the time of the surveys.

All of this information was combined to create a ‘family type’ variable for each of the ages 7, 11, and 16, which identified those living with both natural parents, with one or more adoptive parents, with foster parents or in care, those known to be divorced or separated, those who were widows or widowers, other one parent families including those born outside marriage and those for whom we were unable to identify whether widowed or divorced, and any remarried or step-parent. It is worth clarifying that the two sexes have been treated equally in these classifications (e.g. a step-father or a step-mother identifies a remarriage). There is some further information collected at age 33 on parental divorce, including reported ages, but we have chosen not to use this here for a number of reasons, including the fact that no similar information is available on remarriage. We thus attempt to make full use of the information collected in childhood. In addition, information is available on the mother’s marital status around the time of the birth, distinguishing those who were once married, never married, stable unions (very rare), divorced/ separated, and remarried. This ‘basic’ information is summarised in Table 4.

**Table 4: Basic information on family type at ages 0, 7, 11, and 16
(per cent, base=18558)**

	Marital Status at birth		Family type at age 7	Family type at age 11	Family type at age 16
Married	89.8	Both natural	72.0	64.9	51.5
Stable union	0.2	One or both	1.3	1.0	0.9
		adoptive Care or fostering	0.9	1.3	1.1
Divorced/ separated	0.9	Divorced/ separated	2.2	2.7	3.0
		Widow/ Widower	1.0	1.9	2.8
Unmarried	2.7	One-parent other/ unknown	0.7	0.8	1.2
Remarried	0.2	Remarried	1.2	2.1	2.5
Missing	6.2	Missing	20.8	25.3	37.0
Total	100	Total	100	100	100

From this information on family type at ages 0, 7, 11, and 16 we constructed an overall summary family type variable. We began by picking out those children whose mothers were either unmarried or divorced/ separated at the time of their birth ('nodad0') and those who ever experienced care or fostering ('ever care'). For the remainder, we then identified those survey members for whom there was evidence of divorce and distinguishing those for whom we had evidence of remarriage; next we identified those where there was evidence of widow(er)hood and those among these who had remarried; the remaining group for whom there was evidence of being in a lone-parent family at some stage were also split to identify known remarriages. Finally, the remainder were divided into the group where we have positive evidence of being with both natural parents (including adoptive) at each wave, those for whom we have partial information, all of which points to being with both natural parents, and the group for whom we have no information on parental status at all. Table 5 shows the distribution by sex across the categories of our summary family type for those survey members with some information on adult outcomes and also shows the distribution for those who do not have any information

on adult outcomes. Because of the small numbers and on substantive grounds, we have combined the widow(er)ed and other lone-parent groups, while retaining the distinction by remarriage status. Children who were born out-of-wedlock and, to a lesser extent, those who were in care or fostered are selectively omitted from the adult outcome measures.

Table 5: Percentage distributions for the focal variables (poverty, police, and family type) by sex for those with information on adult outcomes and for those with missing information at age 33

	In Outcomes		Missing Outcomes
	Females N=5799	Males N=5606	Both sexes N=7153
<i>Poverty</i>			
Not poor	39.8	39.0	18.9
Probably not poor	34.8	37.2	35.0
Some poverty	11.3	10.5	8.5
Fairly poor	8.1	7.3	8.2
Clearly poor	3.3	3.3	4.5
All Missing	2.7	2.7	25.0
Total	100	100	100
<i>Police</i>			
No contact	30.4	26.6	14.4
Probably not	49.5	45.3	31.9
Some evidence	2.2	4.3	2.5
Clear evidence	2.3	8.5	6.5
All missing	15.5	15.3	44.8
Total	100	100	100
<i>Family Type</i>			
Both natural throughout	49.9	49.9	25.7
Natural, partial information	29.4	30.6	50.7
No father present at age 0	3.3	2.7	4.6
Ever in care/ fostering	1.9	2.2	2.9
Divorce/ separation, no remarriage	4.0	3.6	3.5
Other one parents, no remarriage	3.9	3.8	3.3
Divorced and remarried	1.9	1.8	2.0
Other one-parent, remarried	1.5	1.2	1.1
All missing	4.2	4.2	6.2
Total	100	100	100

6. The ‘control’ variables

We wanted to use a fairly wide range of control variables, covering social background, housing, parental interest, behavioural information on the individual, and measures of performance on arithmetic and reading tests. Information on all of these themes is available at ages 7, 11 and 16 and such availability was a major criterion for usage. But we also believe that these variables cover a wide range of factors that are likely to be of considerable importance in capturing important childhood attributes with lasting consequences into adulthood. We make no claim that this set of variables makes exhaustive use of the rich array of information collected within NCDS and can identify other likely correlates of adult outcomes (eg the legacy of having a teenage mother for early childbearing in the next generation), which are often available at single waves of the survey or in less comparable forms across waves. But we do maintain that we have included a powerful array of many of the variables that most analysts regard as important.

We include two summary variables for occupational social class groupings. The first, ‘social class of origin’, combines information on the social class of the paternal and maternal grandfathers with the social class of the father at the time of the birth. The second, ‘social class of father’ combines the information on social class of the father or the father figure at ages 7, 11, and 16. Of course, one source of missing information is the lack of a father, but this is explicitly identified by the family type variable. We only use information on the occupational class of males, partly because far fewer females, especially in the grand-parental generation, were employed and also because of the constraints imposed by the information which was collected. The data on the paternal grandfather’s occupation were collected when the survey members were aged 7, whilst those concerning the maternal grandfather were obtained at birth, but both referred to ‘around the time of the parent leaving school’. In order to work with a manageable series of combinations the social class variables were collapsed into: all non-manual, skilled manual, semi-skilled and unskilled manual, and no information. The basic information is shown in Table 6.

Housing in Britain is also socially stratified and information was collected concerning housing tenure at each wave of NCDS.

The two major tenure groups are owner-occupation and local authority housing, with a scattering of much smaller groups, mainly private renting, which we have combined into the ‘middle’ group. The basic information is shown in Table 7.

Table 6: Basic information on occupational class groupings (per cent, base =18,558)

	Paternal Grand-father	Maternal Grand-father	Father at birth	Father at Age 7	Father at Age 11	Father at age 16
Non-manual	16	19	24	24	23	21
Skilled manual	27	35	45	35	30	25
Semi- and Unskilled manual	20	23	19	17	16	11
Missing	36	23	11	24	31	43
Total	100	100	100	100	100	100

Table 7: Basic information on housing tenure at ages 7, 11, and 16 (per cent, base=18558)

	Age 7	Age 11	Age 16
Owner-occupier	33	34	31
Other	14	9	6
Local Authority	31	31	26
Missing	22	26	37
Total	100	100	100

Parental investments in children are also likely to prove important in their development to adulthood. There are a number of items relating to parenting in the various waves of NCDS. We have chosen to use the reports from teachers on the mother’s and the father’s interest in the child’s schooling. We have grouped these into very interested (including the small group reported as over-concerned), some interest, and little or no interest (see Table 8).

Table 8: Basic information on mother’s and father’s interest in the child’s schooling as reported by the teachers (per cent, base=18,558)

	Mother			Father		
	Age 7	Age 11	Age 16	Age 7	Age 11	Age 16
Very interested	31	29	24	21	22	21
Some interest	32	26	20	18	19	17
Little interest	12	10	11	12	13	11
Missing/ Don’t know	25	34	46	49	46	51
Total	100	100	100	100	100	100

We also wished to capture some features of the child’s personality or behaviour. Again, there are a number of possibilities in the various waves of the NCDS during childhood, but we have chosen the items collected in the inventory devised by Rutter *et al* (1970), which were asked of parents at each of waves one through three. There were some differences among the individual items asked at each survey, but we have taken those that were asked in broadly similar form on each occasion. Measurement of personality or behaviour is complex and due recognition has to be given to its multidimensional nature. We carried out some exploratory factor analysis on the series of items collected and then grouped those items which were fairly strongly correlated and made intuitive sense.

We picked out three groups of items. The first comprises four items concerning whether the child frequently fought with other children, was irritable, was destructive, and was disobedient; we label this ‘aggression’. The second group contains items relating to the child being a worrier, a loner, miserable or tearful, and afraid of new situations; we label this ‘anxiety’. The third cluster of items refer to the child being squirmy or fidgety, having twitches or mannerisms, and having difficulty settling or concentrating; we label this ‘restlessness’.

Each item was grouped into a three-point scale, indicating whether the child had the attribute frequently, sometimes, or never. For each cluster of items, we found that a simple sum of the scores (with never coded as 0, sometimes as 1, and frequently as 2) worked much better than more complex factor scoring approaches (in the sense that the resulting measures proved much more

clearly related to our outcome variables). This process resulted in an initial scale running from 0 to 8 for the aggression and anxiety clusters and from 0 to 6 for the restlessness cluster. These were further grouped to 0/1, 2/3, and 4/8 for the first two and to 0, 1/2, and 3/6 for the last. The resulting values are provided in Table 9.

Table 9: Summary scores at age 7, 11, and 16 on scales representing ‘aggression’, ‘anxiety’, and ‘restlessness’ (per cent, base=18,558)

Age	Aggression			Anxiety			Restlessness		
	7	11	16	7	11	16	7	11	16
Low	31	33	48	33	20	37	35	33	49
Medium	35	32	11	36	34	19	35	31	8
High	12	9	3	9	19	6	9	10	6
Missing	21	26	38	21	27	38	21	26	38
Total	100	100	100	100	100	100	100	100	100

Our final control covariate derives from information collected in tests of educational attainment at 7, 11, and 16. At each of these waves the survey members took a number of tests, including both a reading test and a mathematics test. Since different tests are appropriate for different ages and the tests contained varying numbers of items, the raw scores are not comparable. After considerable experimentation, we decided to ‘normalise’ each of the test scores to have a zero mean and unit variance and then add together the resulting score for reading and for mathematics in each wave. This type of normalisation procedure is used in factor analysis, but is really most appropriate where the test scores come from a Normal or Gaussian distribution. The test scores show varying, but sometimes considerable, skewness which makes the normalisation less secure. After normalisation and adding together of the two test scores, we divided the resulting scores into quartile groups. For the purpose of devising our overall summary variable on test scores we further grouped together the two middle quartiles. The test scores were not available for 20, 24, and 36 per cent of all survey members at ages 7, 11, and 16 respectively.

Our strategy for handling the summarisation of the control variables has common elements. For each such variable, we have

constructed similar measures at ages 7, 11, and 16, and devised three real groupings plus a further category for non-response. Thus, each individual variable comprises four categories, which we shall call, for convenience low, middle, high, and missing. From the three time points we formed a full cross-classification of all 64 combinations of these values. We then collapsed this into a 12-category grouping and explored the association with each of our outcome and focal variables separately by sex of the survey member. On the basis of an examination of this material we were further able to reduce the overall number of groups to a much more manageable five, which lost little real information and corresponded fairly closely in spirit to the handling of the categories for the focal variables.

The grouping used, which appears to work reasonably well for all our control variables, identifies a 'clearly' disadvantaged group where two or three of the relevant variables at 7, 11, and 16 fall into the 'low' category, a 'somewhat' disadvantaged group with one 'low' response, a 'middling' group with zero 'low' values and zero or one 'high' values, and an 'advantaged' group with two or three 'high' responses; the final group comprises those with no clear response on any of the three waves for that cluster of variables. The distributions for the resulting control variables are shown by sex of the survey member for those with information on some adult outcome at age 33 and for the remainder without such information in Table 10. In general, those for whom we do not know adult outcomes were also much more likely to have missing information in all of the childhood waves and are also selected for childhood disadvantage.

Table 10: Percentage distributions of summary control variables (social class of origin, social class of father, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', 'restlessness', and test scores) by sex for those with some information on adult outcomes and for all with missing adult outcome information.

	In Outcomes		Missing Outcomes
	Females N=5799	Males N=5606	Both sexes N=7153
<i>Social class of origin</i>			
Two or three IV or V	15.0	13.9	13.7
One IV or V	32.3	32.5	31.0
0 IV or V, 0/1 NM	34.6	34.9	37.5
Two or three NM	14.8	15.1	10.9
All missing	3.4	3.6	6.9
<i>Social class of father</i>			
Two or three IV or V	14.5	13.8	10.8
One IV or V	15.3	15.8	13.5
No IV or V, 0/1 NM	40.5	39.5	35.1
Two or three NM	25.2	26.4	13.1
All missing	4.6	4.5	27.5
<i>Housing tenure</i>			
2/3 Council	34.2	33.3	25.1
1 Council	10.6	10.2	11.1
0 Council, 0/1 Owner-occ.	15.3	15.1	18.0
2/3 Owner-occupier	37.7	39.2	21.3
All missing	2.1	2.2	24.5
<i>Father's interest in school</i>			
2/3 Little	7.0	8.1	7.5
1 Little	20.2	20.7	19.2
0 Little, 0/1 Very	40.5	40.0	30.4
2/3 Very	21.3	21.7	10.0
All missing	11.1	9.5	32.9
<i>Mother's interest in school</i>			
2/3 Little	6.5	6.9	7.2
1 Little	17.6	19.4	17.6
0 Little, 0/1 Very	41.2	41.4	35.7
2/3 Very	31.6	28.7	14.9
All missing	3.1	3.6	24.6

	In Outcomes		Missing Outcomes
	Females N=5799	Males N=5606	Both sexes N=7153
<i>'Aggression' scores</i>			
2/3 High	3.8	6.1	4.7
1 High	12.2	17.4	13.0
0 High, 0/1 Low	36.3	40.0	36.1
2/3 Low	45.5	34.1	21.5
All missing	2.2	2.4	24.7
<i>'Anxiety' scores</i>			
2/3 High	7.0	7.0	4.7
1 High	23.1	22.8	17.4
0 High, 0/1 Low	40.8	39.1	37.1
2/3 Low	26.9	28.6	16.1
All missing	2.2	2.4	24.7
<i>'Restlessness' scores</i>			
2/3 High	4.8	6.5	4.0
1 High	13.2	17.0	12.9
0 High, 0/1 Low	34.6	36.8	35.0
2/3 Low	45.2	37.2	23.4
All missing	2.2	2.4	24.7
<i>Test scores</i>			
2/3 Low quartile	15.7	17.0	16.5
1 Low quartile	15.9	16.4	17.0
0 Low, 0/1 High quartiles	48.8	43.4	34.7
2/3 High quartile	18.0	21.6	10.0
All missing	1.5	1.6	21.8

7. Setting the scene: associations among the focal variables

An examination of the inter-linkages between being poor in childhood, coming into contact with the police and family disruption showed the expected powerful associations between these childhood experiences. As can be seen in Table 11 children who had experienced family disruption were more likely to have experienced poverty in childhood than those brought up by both natural parents - with noticeably high probabilities of poverty amongst cohort members who were ever in care or fostered and

those who lived with a lone parent. This paper does not address the important issue as to whether disrupted families are more likely to disrupt because they are poor or that the disruption leads to poverty or both, although there is evidence of poverty being an important precursor of separation (Kiernan and Mueller, 1998).

Table 11: Proportions clearly or fairly poor during childhood and with any evidence of being in contact with the police by age 16, by family type and sex (per cent, base = 8960 females, 9593 males)

	Poverty		Police	
	Females	Males	Females	Males
Both natural throughout	8.3	8.3	4.9	15.1
Natural, partial information	8.5	8.8	4.8	15.5
No father present at age 0	26.1	24.1	11.9	29.1
Ever in care/ fostering	44.4	47.8	20.3	51.6
Divorce/ separation, no remarriage	47.5	46.3	9.8	29.4
Other one parents, no remarriage	30.4	31.8	5.0	20.8
Divorced and remarried	26.5	25.1	10.2	24.2
Other one-parent, remarried	13.1	13.8	9.7	17.9
All missing	15.2	12.0	4.9	12.5
Total	13.2	13.1	5.9	17.5

With respect to coming into contact with the police, we see in Table 11 that men and women who were ever in care or fostered had the highest probabilities of police contact and also observe high probabilities amongst young people whose fathers were absent when they were born and amongst those who had experienced parental divorce. Amongst the women there also appears to be a heightened association between coming from a step-family (formed after a divorce or the death of a parent) and contact with the police.

Table 12 shows the association between poverty and contact with the police and its corollary, contact with the police and poverty. There is a clear association between degree of poverty experienced and police contact with, for example, men who were categorised as being clearly poor being some three times more likely to be in contact with the police than their contemporaries who did not experience poverty. Similarly, men and women with the most

robust evidence of being in contact with the police were three times as likely to be poor as those with no contact with the police.

Table 12: Proportions with any evidence of being in contact with the police by age 16 by extent of childhood poverty and sex and proportions clearly or fairly poor during childhood by extent of contact with the police and sex, (per cent, base = 8960 females, 9593 males)

Poverty	Contact with police		Police	Poor	
	Females	Males		Females	Males
Not poor	4.1	12.6	No contact	13.2	10.2
Probably not poor	4.3	14.9	Probably not	11.9	10.6
Some poverty	9.1	22.4	Some evidence	21.0	18.2
Fairly poor	10.9	30.7	Clear evidence	33.2	30.0
Clearly poor	14.8	43.7	All missing	13.2	12.4
Missing	6.3	16.5	Total	13.2	13.1
Total	5.9	17.5			

Additionally, we performed stepwise backwards elimination logistic regressions to assess the strength of the inter-linkages between our three focal variables. Table 13 shows two models: one with poverty, defined as being either fairly or clearly poor as the outcome of interest, and the other with any contact with the police as the outcome. The powerful association between family disruption and poverty is clearly illustrated, with extremely high odds ratios amongst the care and fostered group and the divorced lone parent groups, who are some 8 to 11 times more likely to have experienced childhood poverty than those brought up with both biological parents. But most of the other forms of family disruption also entail a high risk of experiencing childhood poverty. We also see odds of the order around two of having experienced poverty for those who have had contact with police.

Turning to contact with the police as an intermediate outcome, we note the importance of poverty in increasing the odds of being in contact with the police, with an especially clear gradient for the males. We see that compared with poverty as an intermediate outcome, only a limited number of the family structure categories were associated with police contact, though for both sexes those ever in care or fostered were much more likely to have had contact with the police and weaker associations for those with little evidence of a co-residential father at around the time of birth and amongst the

boys those living with a divorced parent and for girls those whose parents had remarried.

Table 13: Odds ratios from stepwise logistic models relating evidence of childhood poverty or of contact with the police by age 16 to each other and to family type during childhood, by sex.

	Contact with police		Poverty	
	Females	Males	Females	Males
Poverty			Police	
Other	1.00	1.00	Other	1.00
Some poverty	2.38	1.77	Some evidence	2.16
Fairly poor	2.38	2.29	Clear evidence	2.16
Clearly poor	2.38	3.54	All missing	0.75
Family Type			Family Type	
Other	1.00	1.00	Other	1.00
Some natural, partial	0.62	0.61	No father at age 0	3.36
No father at age 0	1.67	1.47	Ever care/foster	8.48
Ever care/foster	2.79	2.83	Divorced/ separated	10.86
Divorced/ separated	1.00	1.26	Other one-parent	5.13
Divorce and remarried	1.61	1.26	Divorced/ remarried	3.96
Other 1-par, remarr.	1.61	1.00	Other 1-par, remarr.	1.87
Missing	1.00	0.68	Missing	1.76

Some of the selection effects of missing information also become apparent in these simple logistic models. For example, for both men and women, those who had no reported information on contact with the police were less likely to have been clearly or fairly poor during childhood, whereas those for whom information was entirely missing on family type were more likely to have experienced childhood poverty.

We also scrutinised the association between our focal and control variables. In sum, this showed that all the control variables were clearly associated with the poverty indicator and also with police contact. But noteworthy highlights with respect to the latter were that low levels of fathers interest and mothers interest in their child's education and the personality measures tapping aggression and restlessness were prominently associated with being in contact

with the police. There were weaker associations between family type and the controls with, for example, little variation with respect to social class. But it was clear that the children who were in care or fostered were at the disadvantaged end of the spectrum on the controls. There were also some strong associations with respect to father's absence, either from birth or due to subsequent divorce and separation: in particular, lower levels of reported interest for the mothers in their child's education and lower test scores amongst the children. Father's absence around birth was also associated with higher levels of aggression amongst boys and girls.

8. Multivariate analysis

Since all of our outcome variables are defined only where information is available and are binary, the appropriate general linear model is the logistic. All of our analysis was carried out using Stata. Our retention of a category corresponding to missing information on the explanatory variables precludes the use of continuous covariates and we have treated all covariates as categorical in the models.

For the focal variables, the natural reference categories are 'not poor', 'no contact with police', and 'both natural parents throughout'. For the control variables we have used the most advantaged group as the reference category: two or three non-manual for social class of origin and social class of father; two or three owner-occupier for housing tenure; two or three very interested for the mother's and father's interest in schooling; two or three scores of zero or one on the 'aggression' and 'anxiety' scales and of zero on the 'restlessness' scale; and two or three combined reading and mathematics test scores in the top quartile.

Since most of our categorical variables have clearly ordered categories (with the all missing group being the exception to this ordering and family type being much more complex in this respect), we have chosen to create a series of dummy variables for each of our variables which can be illustrated for contact with the police, but all have been handled similarly. For contact with the police, our reference category is 'no contact'; we create a dummy which corresponds to 'all missing' information; our next dummy picks out the three categories which show any possibility of contact with the police – 'probably not', 'some evidence', and clear

evidence'; we then capture the effect of being in either of the latter two groups with a further dummy; and our final dummy identifies the most extreme or disadvantaged group, in this case the 'clear evidence' group. We term this strategy for generating the dummy variables a hierarchical approach. The advantages include being able to pick up differing thresholds of disadvantage in the association with the various outcomes.

Thus, in Table 14, for the association of young fatherhood with poverty in the model which only includes the 'focal' variables, we see that the odds of becoming a young father compared with the reference group 'not poor' are 1.57 for all the other substantive groups, but the next step up the hierarchy (to 'some poverty') increases the odds to 2.20, but there is no evidence that an increase to 'fairly poor' exerts any increase in the odds ratio; however, there is a further increase associated with the most disadvantaged point in this hierarchy ('clearly poor'), taking the overall odds ratio up to 3.40; we also see that those for whom no evidence was available on childhood poverty are estimated to have an odds ratio of 1.79 compared with the 'not poor' group. For the same outcome, young fatherhood, we see a much more parsimonious structure emerge for the association with contact with the police: any evidence of contact ('some' or 'clear') shifts the odds to 2.35 compared with the reference category ('no contact') and there is no evidence that missing information or partial information on this variable is associated with early fatherhood.

The family type variable does not contain such a simple ordered hierarchy. The reference category is taken as 'both natural throughout' and simple dummies identify the categories 'natural, partial information', 'no father at age 0', 'ever in care or fostering', and 'all information missing'. The remaining information is captured by four further dummies: 'disruption' (any divorce or lone parenthood, regardless of subsequent marital status), 'divorce' (regardless of subsequent marital status), 'remarriage' (regardless of type of disruption), and 'divorced & remarried' to complete the coverage. Once again, the combination of these for the original categorisations are shown in the Tables of odds ratios.

Taken together, the focal and control variables have 51 distinct values and would thus require 51 degrees of freedom in a full model. Statistical models with large numbers of non-significant parameters involve a great deal of unnecessary clutter and the inclusion of insignificant relationships can distort those for

which there is clear evidence. For each outcome, separately for men and women, we have fitted a model which includes a parameter for every category (the 'full' model), a model which uses forward stepwise inclusion (with deletion of terms which become insignificant later), and a model which uses backwards elimination (with inclusion of already deleted terms which become significant later). The statistically significant terms in each of these models are reassuringly similar, despite concerns about entering each category for each variable as a separate dummy variable. In order to reduce clutter in our already complex tables, we present the results of the backwards elimination models throughout. Close examination of the forward inclusion and backwards elimination models led to a marginal preference for the backwards approach, although in many instances the resulting models were identical. The main differences which do occur arise from mother's and father's interest in schooling occasionally being quite close competitors in the selection.

Table 14: Odds ratios for focal variables in initial model without controls, males (backwards selection logistic models)

	Young Dad	Extra marital birth	Three or more partners	Malaise	Social housing	Any benefits	Home-less
Poverty							
Not poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not poor	1.57				1.29		
Some poverty	2.20	1.51			2.30	1.40	
Fairly poor	2.20	1.51		2.26	4.26	2.51	1.63
Clearly poor	3.40	2.49		2.26	4.26	2.51	1.63
Missing	1.79			1.74	2.42	1.74	
Police							
No contact	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not							
Some evidence	2.35	2.12	1.73		2.37	1.72	
Clear evidence	2.35	2.12	1.73	1.89	2.37	1.72	2.35
All missing			1.69	1.41			
Family Type							
Both natural throughout	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.							
No father present at age 0		2.08			1.74		
Ever in care/fostering				2.48	1.97	1.69	
Divorce/separation, no remarriage			3.27				
Other one parents, no remarriage							
Divorced and remarried		2.56	3.27				2.72
Other one-parent, remarried							2.72
All missing							

Table 14 continued

	No qualifications	Degree level qualifications	Top quartile male income	Bottom quartile male income	Ever unemployed
Poverty					
Not poor	1.00	1.00	1.00	1.00	1.00
Probably not poor					
Some poverty	2.83	0.577	0.594	1.83	1.72
Fairly poor	2.83	0.391	0.594	1.83	1.72
Clearly poor	5.90	0.0791	0.594	1.83	1.72
Missing	2.18			1.80	
Police					
No contact	1.00	1.00	1.00	1.00	1.00
Probably not	1.32	1.18			
Some evidence	3.07	0.553		1.58	1.74
Clear evidence	5.51	0.264	0.637	1.58	1.74
All missing	2.00				1.19
Family Type					
Both natural throughout	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.	1.44				
No father present at age 0		0.629			
Ever in care/ fostering	1.96	0.543			1.96
Divorce/ separation, no remarriage					
Other one parents, no remarriage					
Divorced and remarried					
Other one-parent, remarried					
All missing		1.34			

9. Links between the outcomes and focal variables: initial models

We begin by examining the relationships of the outcomes to our focal variables without further controls. As shown above, there are quite strong interrelationships among the focal variables themselves with an especially strong association between incidence of poverty and family type. The odds ratios for the categories included in this ‘initial’ model are shown in Table 14 for the men and in Table 15 for the women. The reference group for each focal variable is identified, with all the odds ratios set at 1.00; those categories where the association with the outcome is statistically significant (at the five per cent level) have values shown; all other cells in the table are left blank, although each has an odds ratio of 1.00 – it is thus easier to pick out the significant associations visually and no information is lost (as would be the case if we had used the full model and suppressed the insignificant odds ratios).

For both men and women, there is a clear and often very strong association of most outcomes in the expected direction (i.e. childhood disadvantage begets adverse outcomes in adulthood) with childhood poverty, with the odds ratios for each of the two most impoverished groups being statistically significant for each sex. The only exception to this statement is the lack of association of childhood poverty with having had three or more partners for men. The association with clear childhood poverty in this initial model is most powerful (in the sense of the magnitude of the odds ratios) for lack of qualifications (odds ratio 5.9 for men and 8.2 for women) and degree-level qualifications (odds against of 12.7 for men and 3.8 for women), early childbearing (3.4 for men and 3.2 for women) and social housing (4.3 for men and 4.0 for women). Moreover, the odds ratios for childhood poverty in relation to all outcomes for both sexes act in the expected direction and are orderly in that they progress further away from unity, or remain the same, with increasing evidence of poverty.

Contact with the police before age 16 is also generally related to the outcome variables. Indeed, where there is clear evidence of contact with the police every single one of our twelve outcomes is significantly related for both the men the women. Since so few girls had contact with the police, this powerful association across

the board (with most odds ratios being two or more for the 'clear evidence' category) is more surprising. We would also have expected that the infrequency of contacts with the police for the girls would mean that the patterns of the odds ratios are less orderly, but this is not the case. The links with contact with the police are generally weaker for the economic outcomes and particularly strong for lack of qualifications.

On the whole, there are fewer significant associations with the summary family type, once poverty and contact with the police have been controlled. This probably arises both because several of the family types contain relatively few individuals (recall Table 5) and from the powerful association between family type and poverty (recall Tables 11 to 13).

Having been in care or fostered during childhood is clearly associated with all the adverse outcomes in adulthood for women (i.e. excepting the two positive outcomes of degree-level qualification and high household income). For men, the significant associations with care or fostering during childhood are fewer and weaker, but include malaise, social housing, receipt of any benefits, lack of qualifications and experience of unemployment – these are five out of seven non-demographic adverse outcomes.

Having been born to an unmarried or divorced/ separated mother is also associated for women with all three demographic outcomes, malaise, and social housing, but only for two of these five outcomes for the men (extra-marital births and social housing), although also being linked for males to a lower propensity to obtain higher qualifications.

Parental divorce, regardless of subsequent remarriage status, is strongly linked for both sexes with frequent partnership during adulthood. Remarriage is one of the few strong correlates of homelessness and shows some association with extra-marital births for both sexes and, for women, with teenage motherhood, social housing and a lower propensity to obtain degree-level qualifications.

Table 15: Odds ratios for focal variables in initial model without controls, females (backwards selection logistic models)

	Teenage mother	Extra marital birth	Three or more partners	Malaise	Social housing	Any benefits	Homeless
Poverty							
Not poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not poor		1.33	1.52			1.20	
Some poverty	2.12	1.82	1.52	1.85	2.02	2.02	1.61
Fairly poor	3.18	2.86	1.52	2.45	3.95	2.02	1.61
Clearly poor	3.18	2.86	1.52	2.45	3.95	3.19	1.61
Missing				1.76			
Police							
No contact	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not		1.29			1.25		
Some evidence	2.83	2.65	1.74	2.30	2.85	1.54	2.13
Clear evidence	2.83	2.65	1.74	2.30	2.85	2.92	2.13
All missing	1.30	1.41			1.59		
Family Type							
Both natural throughout	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.							
No father present at age 0	1.88	2.20	1.85	1.51	1.87		
Ever in care/ fostering	2.83	3.54	3.02	2.07	1.99	1.89	2.16
Divorce/ separation, no remarriage		1.48	2.23				
Other one parents, no remarriage							
Divorced and remarried	1.68	0.85	2.23		1.67		2.21
Other one-parent, remarried	1.68	1.88			1.67		
All missing							

Table 15 continued

	No qualifications	Degree level qualification	Top quartile household income	Bottom quartile household income
Poverty				
Not poor	1.00	1.00	1.00	1.00
Probably not poor		0.872		
Some poverty	2.82	0.624	0.762	1.60
Fairly poor	4.72	0.263	0.414	2.48
Clearly poor	8.18	0.263	0.188	2.48
Missing	2.24	0.595		
Police				
No contact	1.00	1.00	1.00	1.00
Probably not	1.35		1.19	0.857
Some evidence	1.35	0.443	1.19	1.40
Clear evidence	4.31	0.443	1.19	1.40
All missing	1.98		1.29	
Family Type				
Both natural throughout	1.00	1.00	1.00	1.00
Some natural, partial info.				
No father present at age 0				
Ever in care/ fostering	2.79			2.18
Divorce/ separation, no remarriage				
Other one parents, no remarriage				
Divorced and remarried		0.546		
Other one-parent, remarried		0.546		
All missing		1.39		

10. The effect of the control variables on the associations with the focal variables

Our second (and ‘final’) set of models for the outcomes introduces all of the powerful and varied range of control variables in addition to the focal variables. The purpose of this is two-fold. Firstly, we wished to test fairly rigorously the associations found with the focal variables. The second goal was to examine the associations of the control variables with the wide range of

outcomes in their own right, since it is extremely rare for analyses to make use of economic, social, behavioural, educational, and parental input information in combination. The strengths of our summary variables not only include variety, but also the depth of cumulative information about childhood experiences. Moreover, with the probable exception of lack of qualifications, we can at least claim that all of our explanatory variables are causally prior to the outcomes in adulthood that we examine.

On the basis of bivariate associations between each of the control variables and each of the focal variables (not shown), it was evident that childhood poverty was consistently closely associated with disadvantage on virtually all of the control variables. We would thus expect the introduction of the control variables to attenuate the relationship between childhood poverty and many of the outcomes. Contact with the police was also regularly associated with disadvantage, although lack of parental interest in education by the mother or the father is especially strongly linked to contact with the police for both sexes, as is aggression for the men. Having been in care or fostered (heavily overlapping) is generally associated with childhood disadvantage on the control variables. Having been born to an unmarried or divorced mother and having experienced childhood divorce regardless of remarriage status are especially related to lack of reported parental interest in education, both from the father (unsurprisingly) and from the mother.

So how do the focal variables survive our attempt to destroy their association with adult outcomes? The results are shown in Tables 16 and 17 for the men and women respectively. With some exceptions, most of the associations which appeared in the initial analysis without controls remain statistically significant, although the odds ratios are usually attenuated as would be anticipated. As expected, it is the associations with childhood poverty that are attenuated most and even lost from the models in several instances. Relatively fewer of the associations of outcomes with contact with the police become insignificant, although many are considerably weakened. The associations with family type, albeit initially less common, often survive almost unscathed, with the odds ratios rarely changing, although there are some exceptions.

Among the ten adverse outcomes for men, poverty was significantly associated for all but multiple partnerships before introduction of the controls and the only association which became

completely insignificant after control was for homelessness; for contact with the police all ten were significantly related before and only low income was lost after controls; and for family type, all but young fatherhood were significantly related before and the introduction of the control variables removed the associations with receipt of benefits and low income, but produced a significant association with young fatherhood. The patterns for the nine adverse outcomes for the women are not dissimilar. All were linked to poverty and to family type in the initial models and remained so in the final models; all were also initially associated with contact with the police and only the association with low income became completely insignificant after the controls were introduced.

The apparently strong reverse associations with childhood poverty for the two positive adult outcomes (degree-level qualifications and high income) are almost completely accounted for by the control variables for both sexes – out of 14 significant odds ratios in the initial models only three remain. Though it is still estimated that a man who experienced clear poverty during childhood has odds of over four to one against acquiring a degree-level qualification compared with others after the wide range of other powerful controls and that women who were fairly or clearly poor have net odds of over two to one against being in the top quartile of household income.

But it is perhaps more remarkable that the significant associations with childhood poverty remain for both sexes, albeit reduced, for most adult outcomes and remain reasonably strong for lack of qualifications (odds ratios of 2.8 for men and 2.6 for women who were ‘clearly poor’ during childhood) and show odds ratios in excess of 1.5 for both sexes for extra-marital births, malaise, social housing and above 1.5 for men for any benefits and for women for teenage motherhood. The significant ‘net’ associations of adult outcomes with childhood poverty are well-behaved, having the expected sign and plausible gradients, with the one exception of extra-marital births to men.

Table 16: Odds ratios for focal variables in final model with controls, males (backwards selection logistic models)

	Young Dad	Extra marital birth	Three or more partners	Malaise	Social housing	Any benefits	Homeless
Poverty							
Not poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not poor	1.27						
Some poverty	1.27	1.40					
Fairly poor	1.27	0.91		1.80	1.70	1.61	
Clearly poor	1.27	1.54		1.80	1.70	1.61	
Missing					2.55		
Police							
No contact	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not	1.27						
Some evidence	1.27	1.69	1.88		1.71		
Clear evidence	2.11	1.69	1.88	1.59	1.71	1.46	2.32
All missing			1.68	1.41			
Family Type							
Both natural throughout	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.							
No father present at age 0		2.01			1.84		
Ever in care/fostering				2.08	1.79		
Divorce/separation, no remarriage	1.50		3.23				
Other one parents, no remarriage							
Divorced and remarried	1.50	2.70	3.23				2.79
Other one-parent, remarried							2.79
All missing							

Table 16 continued

	No qualifications	Degree level qualifications	Top quartile male income	Bottom quartile male income	Ever unemployed
Poverty					
Not poor	1.00	1.00	1.00	1.00	1.00
Probably not poor					
Some poverty	1.45			1.30	1.41
Fairly poor	1.45			1.30	1.41
Clearly poor	2.80	0.232		1.30	1.41
Missing	2.79			1.85	
Police					
No contact	1.00	1.00	1.00	1.00	1.00
Probably not	1.59				
Some evidence	1.59				1.52
Clear evidence	3.68	0.470			1.52
All missing	2.69				1.19
Family Type					
Both natural throughout	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.					
No father present at age 0					
Ever in care/ fostering					1.76
Divorce/separation, no remarriage	0.719				
Other one parents, no remarriage	0.719				
Divorced and remarried	0.719				
Other one-parent, remarried	0.719				
All missing					

Table 17: Odds ratios for focal variables in final model with controls, females (backwards selection logistic models)

	Teenage mother	Extra marital birth	Three or more partners	Malaise	Social housing	Any benefits	Home- less
Poverty							
Not poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not poor			1.61				
Some poverty	1.56		1.61	1.50	1.32	1.41	1.47
Fairly poor	1.56	1.60	1.61	1.50	1.89	1.41	1.47
Clearly poor	1.56	1.60	1.61	1.50	1.89	1.41	1.47
Missing							
Police							
No contact	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably not					1.25		
Some evidence	2.06	1.83	1.89	1.91	2.04		1.95
Clear evidence	2.06	1.83	1.89	1.91	2.04	2.09	1.95
All missing				1.29	1.64		
Family Type							
Both natural throughout	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some natural, partial info.		1.32		0.738			
No father present at age 0	1.76	2.46	1.85		1.78		
Ever in care/ fostering	2.44	3.74	3.32	1.60	1.66	1.64	2.08
Divorce/separation, no remarriage	1.35	1.67	2.30		1.27	0.92	
Other one parents, no remarriage	1.35	1.67			1.27	1.34	
Divorced and remarried	1.35	0.82	2.30		1.27	0.92	1.97
Other one-parent, remarried	1.35	1.67			1.27	1.34	
All missing							

Table 17 continued

	No qualifications	Degree level qualification	Top quartile household income	Bottom quartile household income
Poverty				
Not poor	1.00	1.00	1.00	1.00
Probably not poor				
Some poverty	1.69			1.47
Fairly poor	1.69		0.569	1.47
Clearly poor	2.59		0.569	1.47
Missing				
Police				
No contact	1.00	1.00	1.00	1.00
Probably not	1.39		1.24	
Some evidence	1.39		1.24	
Clear evidence	2.43		1.24	
All missing	2.30	1.26	1.43	
Family Type				
Both natural throughout	1.00	1.00	1.00	1.00
Some natural, partial info.				
No father present at age 0				
Ever in care/ fostering	2.15			1.94
Divorce/ separation, no remarriage			1.59	
Other one parents, no remarriage				
Divorced & remarried			0.704	
Other one-parent, remarried				
All missing				

Similarly, the associations of contact with the police remain powerful for both sexes in relation to lack of qualifications, with net odds ratios of 3.7 for men and 2.4 for women where there was ‘clear evidence’ of such contact. For several other adult outcomes the odds ratios for the ‘clear evidence’ group (and sometimes the ‘some evidence’ group too) are about two to one: these include for both sexes early parenthood, extra-marital births, multiple partnerships, social housing, and homelessness, and for women

also encompass malaise and any benefits. The odds ratios for contact with the police also remain coherent.,

Many of the relationships of family type during childhood to the adult outcomes remain virtually untouched by the addition of the controls, although this is not so for degree-level qualifications, low income, and receipt of benefits for men, nor for malaise for the women. The association with social housing also weakens a little for the women. But the remainder of the significant effects, encompassing extra-marital births, multiple partnerships, and homelessness for both sexes, malaise and unemployment for the men, and lack of qualifications and low income for the women, change very little and are often large.

Experience of fostering or being in care is especially devastating for the women, being clearly associated with all nine adverse outcomes and with odds ratios ranging from about one and two-thirds for malaise, social housing, and benefit receipt up to over three for extra-marital births and multiple partnerships. For men care or fostering is only related to three adult outcomes after the introduction of the controls: malaise, social housing, and unemployment, all with odds ratios of 1.75 to 2.1.

Survey members of either sex who were themselves born out of wedlock have odds ratios of over two of themselves experiencing an extra-marital birth and are also about 1.8 times as likely to be in social housing at age 33, net of all the other controls. Moreover, the women in this group are much more likely to have been teenage mothers (odds ratio 1.76) and to have had multiple partnerships (odds ratio 1.85).

The most powerful association with having experienced parental divorce during childhood is the increased risk of experiencing multiple partnerships (odds ratios of 3.23 for men and 2.3 for women), regardless of whether a parental remarriage occurred. Men whose parent divorced and remarried are 2.7 times as likely to have had an extra-marital birth, although curiously this group of women seem relatively protected from extra-marital births, whilst all other women who experienced any spell of lone parenthood through marital disruption regardless of remarital status do show an increased propensity to experience extra-marital births. Men who lived with a step-parent during childhood have an odds ratio of 2.8 of experiencing homelessness between ages 23 and 33; women whose divorced parent remarried during their childhood also experience increased homelessness from ages 23 to

33. Early parenthood is also linked to experience of parental divorce during childhood for men and to any experience of family disruption for women.

11. The relationships of the control variables to the outcomes

Consistent and often strong relationships are apparent for some outcomes for every control variable. The full set of statistically significant odds ratios for the adult outcomes in relation to the control variables in the final logistic models, which potentially included all the 51 categories of the three focal variables and of the nine control variables and were fitted by a backwards elimination stepwise procedure (with the possibility of re-entry) using the hierarchical specification of dummy variables outlined above, are shown in Table 18 for the men and in Table 19 for the women.

In order to provide an overview, since the full tables of odds ratios for the twelve outcomes by sex are voluminous, we further summarise the impact of each of the focal and control variables using ‘indices’ of the size of the association. Where the odds ratios are greater than unity, which is the usual case for the adverse outcomes, we compute the indices by subtracting one from the odds ratios and then summing these residuals across the categories of the control (or focal) variable except the ‘all missing’ category. Thus, for example, the odds ratios associated the social class of father for the outcome of young fatherhood (shown in Table 18) are 2.53, 2.53, and 1.84 for the three informative categories; after subtraction of one these become 1.53, 1.53, and 0.84 respectively; the total of these values, 3.9, is our index of the overall extent of the association of young fatherhood with the father’s social class during childhood and is shown in the relevant cell in Table 20. Where the odds ratios are less than unity, as is typical for the positive outcomes, we take the reciprocal of the values before carrying out the calculation of the index. For example, the odds ratios associated with social class of the father for male survey members achieving degree-level qualifications are 0.74, 0.74 (and 1.0); the reciprocals are 1.35, 1.35 (and 1.0); after subtraction of one, the residuals are 0.35, 0.35 (and 0.0); the index is thus 0.7, as shown in Table 20. The indices are shown as positive numbers wherever the association is in the expected direction (i.e.

childhood disadvantage is positively associated with adverse outcomes in adulthood or negatively with positive adult outcomes). In the few instances where the association is in the other direction (for example having three or more partners is less likely for both men and women who had lower test scores during their childhood) we show the index as negative.

For simplicity, we arbitrarily take indices which have the value of two or greater as being large (for example an index of two corresponds to one odds ratio of three or two odds ratios of two, etc.), and indices of one or more to be fairly large (for example an index of one corresponds to one odds ratio of two, or two of 1.5, etc.). The last few rows in each panel of Table 20 provide an overall summary of the strength of association across all of the different adult outcomes for each of the control and focal variables, showing the number of indices which are large (greater than two), fairly large (greater than one), and are non-zero (indicating some statistically significant association). In addition, we show the sum of the indices (regardless of sign) across all adult outcomes to help guide our initial account of the extent and power of the various associations, before going on to a more detailed examination of the individual outcomes.

This overview is a critical component of our study, since one of the key goals in examining a wide range of adult outcomes is to try to discover commonalities in the transmission of social exclusion, either across generations or through the life-course from childhood experience to adulthood. Which elements of childhood background or experience have more pervasive and lasting effects during adulthood? In more detail, there are also a number of issues about gender differences in this transmission and about the particular transmission of related experiences. For example, are children of divorced parents themselves more likely to experience multiple partnerships? Are anxious children more likely to experience malaise in adulthood?

The most frequent effective predictor of adult outcomes is the summary of **educational test scores** during childhood: the total indices are considerably greater than for any other variable; there is a statistically significant relationship for 21 of the 23 outcomes by gender considered and this is fairly large for 19 of these and large for 14 sex-outcome combinations. As might be expected, these test scores are especially powerfully associated with educational outcomes: for both lack of and degree-level

qualifications the indices are huge, exceeding ten for both men and women; the odds ratios of 46 and 27 to one (shown in Tables 18 and 19) for the group with consistently low test scores during childhood (compared with the consistently high test score group) for having no qualifications for the men and women respectively are among the highest we have seen. But there is also a consistent and strong association between test scores and early childbearing, social housing, high and low incomes, any receipt of benefits, and malaise scores for both sexes, with the impact on low income being much stronger for the men, perhaps because of the sharper income measure used. The only adult outcome not significantly related to test scores during childhood is experience of homelessness during the ten years from age 23 to age 33 for both men and women. Lower scores on these educational tests are generally associated with negative outcomes in adulthood, with the only exception being that this group are less likely to have experienced three or more coresidential partnerships by age 33.

The next most powerful predictor of adult outcomes, judged by the criterion of the index values, is **family type**, with the total across all outcomes ranking second for both men and, much more clearly, for women; eight of the 18 significant associations are large. The associations with family type during childhood have already been examined in some detail, but are clearest for multiple partnerships, extra-marital births, homelessness, social housing, and teenage motherhood.

Father's interest in schooling, experience of childhood poverty, and reported contact with the police by age 16 are the next three most consistently and powerfully related correlates of the range of adult outcomes. All three have totals of the indices of around 15 for both women and men; the two focal variables of childhood poverty and contact with the police show significant relationships in 19 out of 23 possible sex-outcome combinations and of these 17 and 16 respectively are fairly large, though only four for police and five for poverty are greater than two. Father's interest in schooling is less frequently significantly related to the outcomes (15 of 23), but shows a strong association more frequently (six times).

Table 18: Odds ratios for control variables (social class of origin, social class of father, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', 'restlessness', and test scores), males (from final backwards selection logistic models).

	Young father	Extra marital birth	Three plus partners	Malaise	Social housing	Any benefits	Home-less
<i>Social class of origin</i>							
Two or three IV or V		1.31		1.50			
One IV or V				1.50			
0 IV or V, 0/1 NM				1.50			
Two or three NM	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing				2.07			
<i>Social class of father</i>							
Two or three IV or V	2.53	1.41			2.27	1.22	
One IV or V	2.53	1.41			1.34	1.22	
No IV or V, 0/1 NM	1.84	1.41			1.34		
Two or three NM	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing	2.72	1.81	2.22				
<i>Housing tenure</i>							
2/3 Council	1.71		0.701		2.45	1.35	2.05
1 Council			0.701		2.45	1.35	2.05
0 Council, 0/1 Owner-occ.					1.56		2.05
2/3 Owner-occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing							2.42
<i>Father's interest in school</i>							
2/3 Little					1.34	1.65	
1 Little					1.34	1.65	
0 Little, 0/1 Very						1.65	
2/3 Very	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing		1.37			1.50	1.94	
<i>Mother's interest in school</i>							
2/3 Little	1.64	2.13			1.56		
1 Little		1.36			1.56		
0 Little, 0/1 Very		1.36			1.56		
2/3 Very	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing			0.389		1.95		

Table 18 continued

'Aggression' scores							
2/3 High	1.38	1.28	1.83	1.54		1.36	
1 High	1.38	1.28		1.54			
0 High, 0/1 Low	1.38	1.28		1.54			
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing				2.34		2.11	
'Anxiety' scores							
2/3 High	0.605	0.663		1.59		1.40	
1 High	0.605	0.663		1.59			
0 High, 0/1 Low							
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing							
'Restlessness' scores							
2/3 High				1.28		1.22	
1 High				1.28		1.22	
0 High, 0/1 Low							
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing							
Test scores							
2/3 Low quartile	3.37	1.52	0.564	2.18	4.25	2.28	
1 Low quartile	3.37	1.52		1.48	2.74	1.44	
0 Low, 0/1 High quartiles	2.56			1.48	1.82		
2/3 High quartile	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing	3.65				2.42		

Table 18 (continued): Odds ratios for control variables (social class of origin, social class of father, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', 'restlessness', and test scores), males (from final backwards selection logistic models).

	No qualification	Degree level qualification	Top quartile male income	Bottom quartile male income	Ever unemployed
<i>Social class of origin</i>					
Two or three IV or V	1.29	0.633	0.608	1.18	
One IV or V	1.29	0.633	0.608	1.18	
0 IV or V, 0/1 NM		0.633	0.608		
Two or three NM	1.00	1.00	1.00	1.00	1.00
All missing					
<i>Social class of father</i>					
Two or three IV or V	1.33	0.736	0.739	1.37	1.19
One IV or V	1.33	0.736	0.739		1.19
No IV or V, 0/1 NM					
Two or three NM	1.00	1.00	1.00	1.00	1.00
All missing					
<i>Housing tenure</i>					
2/3 Council	1.45	0.634	0.750		1.15
1 Council	1.45	0.634	0.750		1.15
0 Council, 0/1 Owner-occ.					
2/3 Owner-occupier	1.00	1.00	1.00	1.00	1.00
All missing		0.191			
<i>Father's interest in school</i>					
2/3 Little	4.34	0.337	0.739	1.63	
1 Little	4.34	0.577	0.739	1.63	
0 Little, 0/1 Very	2.30	0.777		1.33	
2/3 Very	1.00	1.00	1.00	1.00	1.00
All missing	2.76	0.659		1.70	1.24
<i>Mother's interest in school</i>					
2/3 Little		0.828			1.46
1 Little		0.828			1.46
0 Little, 0/1 Very		0.828			
2/3 Very	1.00	1.00	1.00	1.00	1.00
All missing			1.59		

Table 18 continued

'Aggression' scores					
2/3 High		0.777			
1 High		0.777			
0 High, 0/1 Low					
2/3 Low	1.00	1.00	1.00	1.00	1.00
All missing		4.53			
'Anxiety' scores					
2/3 High	0.774	1.27			
1 High	0.774	1.27			
0 High, 0/1 Low	0.774	1.27			
2/3 Low	1.00	1.00	1.00	1.00	1.00
All missing					
'Restlessness' scores					
2/3 High	1.94	0.762		1.25	
1 High	1.94	0.762		1.25	
0 High, 0/1 Low	1.46	0.762			
2/3 Low	1.00	1.00	1.00	1.00	1.00
All missing					
Test scores					
2/3 Low quartile	45.90	0.0552	0.245	3.88	1.22
1 Low quartile	17.55	0.158	0.342	2.41	
0 Low, 0/1 High quartiles	6.25	0.322	0.584	1.80	
2/3 High quartile	1.00	1.00	1.00	1.00	1.00
All missing	19.89	0.279	0.323		

Table 19: Odds ratios for control variables (social class of origin, social class of father, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', 'restlessness', and test scores), females (from final backwards selection logistic models).

	Teenage mother	Extra marital birth	Three plus partners	Malaise	Social housing	Any benefits	Home- less
<i>Social class of origin</i>							
Two or three IV or V	1.56		0.545		2.35	1.31	
One IV or V	1.56		0.545		2.35	1.31	
0 IV or V, 0/1 NM	1.56				2.35	1.31	
Two or three NM	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing					2.44		
<i>Social class of father</i>							
Two or three IV or V	1.25			0.908	1.44		
One IV or V	1.25			1.31	1.44		
No IV or V, 0/1 NM					1.44		
Two or three NM	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing		0.574					
<i>Housing tenure</i>							
2/3 Council	1.23			1.26	1.83	1.16	
1 Council				1.26	1.83		
0 Council, 0/1 Owner-occ.				1.26			
2/3 Owner-occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing	2.17				1.93		
<i>Father's interest in school</i>							
2/3 Little	1.61	2.24		1.58	1.40	1.42	
1 Little	1.61	2.24		1.58	1.40	1.42	
0 Little, 0/1 Very		1.55					
2/3 Very	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing	1.50	2.43				1.32	
<i>Mother's interest in school</i>							
2/3 Little	1.96	1.38			1.53	1.30	1.56
1 Little	1.96	1.38			1.53	1.30	
0 Little, 0/1 Very	1.96	1.38			1.53	1.30	
2/3 Very	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing						1.74	

Table 19 continued

'Aggression' scores							
2/3 High	1.94	1.51		1.45	1.66	1.27	
1 High	1.94	1.51			1.66	1.27	
0 High, 0/1 Low	1.38				1.22		
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing				2.69			
'Anxiety' scores							
2/3 High				1.65			1.04
1 High				1.65			1.04
0 High, 0/1 Low				1.26			0.661
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing							
'Restlessness' scores							
2/3 High					1.39		1.68
1 High					1.39		
0 High, 0/1 Low							
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing							
Test scores							
2/3 Low quartile	3.67	1.48	0.708	2.33	2.66	2.33	
1 Low quartile	3.67	1.48	0.708	2.33	2.66	2.33	
0 Low, 0/1 High quartiles	2.52		0.708	1.48	1.44	1.38	
2/3 High quartile	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All missing	7.04	2.84		2.44	4.53	2.39	

Table 19 (continued): Odds ratios for control variables (social class of origin, social class of father, housing tenure, father's and mother's interest in schooling, 'aggression', 'anxiety', 'restlessness', and test scores), females (from final backwards selection logistic models).

	No qualification	Degree level qualification	Top quartile household income	Bottom quartile household income
<i>Social class of origin</i>				
Two or three IV or V	2.02	0.498	0.592	1.20
One IV or V	2.02	0.679	0.592	1.20
0 IV or V, 0/1 NM	1.63	0.679	0.782	
Two or three NM	1.00	1.00	1.00	1.00
All missing				
<i>Social class of father</i>				
Two or three IV or V	1.42	0.722		
One IV or V	1.42	0.722		
No IV or V, 0/1 NM				
Two or three NM	1.00	1.00	1.00	1.00
All missing				
<i>Housing tenure</i>				
2/3 Council	1.71	0.699	0.807	1.30
1 Council	1.71	0.699	0.807	
0 Council, 0/1 Owner-occ.	1.71	0.699		
2/3 Owner-occupier	1.00	1.00	1.00	1.00
All missing	3.94			
<i>Father's interest in school</i>				
2/3 Little	3.71	0.600	0.780	1.35
1 Little	3.71	0.600	0.780	1.35
0 Little, 0/1 Very	2.04	0.600	0.780	1.35
2/3 Very	1.00	1.00	1.00	1.00
All missing	3.88	0.624	0.612	1.69
<i>Mother's interest in school</i>				
2/3 Little	2.53	0.413	0.726	1.36
1 Little	1.36	0.413	0.726	1.36
0 Little, 0/1 Very		0.709		
2/3 Very	1.00	1.00	1.00	1.00
All missing				

Table 19 continued

'Aggression' scores				
2/3 High	1.28	0.778		1.31
1 High	1.28	0.778		1.31
0 High, 0/1 Low	1.28			1.31
2/3 Low	1.00	1.00	1.00	1.00
All missing				
'Anxiety' scores				
2/3 High			0.828	
1 High			0.828	
0 High, 0/1 Low				
2/3 Low	1.00	1.00	1.00	1.00
All missing				
'Restlessness' scores				
2/3 High				
1 High				
0 High, 0/1 Low				
2/3 Low	1.00	1.00	1.00	1.00
All missing				
Test scores				
2/3 Low quartile	26.76	0.110	0.374	1.70
1 Low quartile	14.20	0.169	0.374	1.70
0 Low, 0/1 High quartiles	4.31	0.373	0.611	
2/3 High quartile	1.00	1.00	1.00	1.00
All missing	15.73	0.142	0.480	2.24

Table 20: Indices of strength of association for each outcome with focal and control variables by sex

Outcome	Poverty		Police		Family		S.C. Orig.		Dad S.C.		Tenure	
	M	F	M	F	M	F	M	F	M	F	M	F
Young Parent	1.1	1.7	1.6	2.1	1.0	3.6	---	1.7	3.9	0.5	0.7	0.2
Extra-mar. birth	0.9	1.2	1.4	1.7	2.7	6.5	0.3	---	1.2	---	---	---
3+ Partners	---	2.4	1.8	1.8	4.5	5.8	---	-1.7	---	---	-0.9	---
Malaise	1.6	1.5	0.6	1.8	1.1	0.6	1.5	---	---	0.3	---	0.8
Social Housing	1.4	2.1	1.4	2.3	1.6	2.5	---	4.1	2.0	1.3	3.5	1.7
Any benefits	1.2	1.2	0.5	1.1	---	1.3	---	0.9	0.4	---	0.7	0.2
Homelessness	---	1.4	1.3	1.9	3.6	2.1	---	---	---	---	3.2	---
No qualifications	2.7	3.0	3.9	2.2	-1.6	1.2	0.6	2.7	0.7	0.8	0.9	2.1
Degree qualifcs.	3.3	---	1.1	---	---	---	1.7	2.0	0.7	0.8	1.2	1.3
High income	---	1.5	---	-0.7	---	(--)	1.9	1.7	0.7	---	0.7	0.5
Low income	0.9	1.4	---	---	---	0.9	0.4	0.4	0.4	---	---	0.3
Unemployment	1.2		1.0		0.8		---		0.4		0.3	
No. indices>2	2	3	1	3	3	5	0	3	2	0	2	1
No. indices>1	7	10	8	8	7	7	3	6	3	1	3	3
No. significant	9	10	10	9	8	10	6	8	9	5	9	8
Total of indices	14.3	17.4	14.6	15.6	16.9	24.5	6.4	15.2	10.4	3.7	12.1	7.1

Outcome	Dad Int.		Mum Int.		Aggress.		Anxiety		Restless.		Tests	
	M	F	M	F	M	F	M	F	M	F	M	F
Young Parent	---	1.2	0.6	2.9	1.1	2.3	-1.3	---	---	---	6.3	6.9
Extra-mar. birth	---	3.0	1.9	1.1	0.8	1.0	-1.0	---	---	---	1.0	1.0
3+ Partners	---	---	---	---	0.8	---	---	---	---	---	-0.8	-1.2
Malaise	---	1.2	---	---	1.6	0.5	1.2	1.6	0.6	---	2.1	3.1
Social Housing	0.7	0.8	1.7	1.6	---	1.5	---	---	---	0.8	5.8	3.8
Any benefits	2.0	0.8	---	0.9	0.4	0.5	0.4	---	0.4	---	1.7	3.0
Homelessness	---	---	---	0.6	---	---	---	(--)	---	0.7	---	---
No qualifications	8.0	6.5	---	1.9	---	0.8	-0.9	---	2.3	---	66.7	42.3
Degree qualifcs.	3.0	2.0	0.6	3.3	0.6	0.6	-0.8	---	0.9	---	24.6	14.7
High income	0.7	0.8	---	0.8	---	---	---	0.4	---	---	5.7	4.0
Low income	1.6	1.1	---	0.7	---	0.9	---	---	0.5	---	5.1	1.4
Unemployment	---		0.9		---		---		---		0.2	
No. indices>2	3	3	0	2	0	1	0	0	1	0	7	7
No. indices>1	4	6	2	5	2	3	3	1	1	0	9	10
No. significant	6	9	5	9	6	8	6	3	5	2	11	10
Total of indices	16.0	17.4	5.7	13.8	5.3	8.1	5.6	2.0	4.7	1.5	120.0	81.4

Note to Table 20: Indices of strength of association are calculated by subtracting one from the odds ratios (or the reciprocal of the odds ratio if it is less than unity) and summing these across the categories (other than missing information) for each of the focal or control variables. Indices of 2.0 or greater are deemed large and shown in bold type.

Thus, all three of our focal variables (family, poverty, and police) are among the five variables most strongly and consistently related to adult outcomes for both sexes, with test scores and father's interest in schooling being the others.

Father's interest in schooling proves a somewhat more frequent predictor of adult outcomes than mother's interest, although these two were occasionally close competitors for a few of the models of outcomes. Father's interest in schooling for both sexes is especially strongly related to educational outcomes. The odds ratios for the link to no qualifications are very high by most standards and all the more remarkable in view of the overwhelming association of this outcome with test scores. There is also a consistent association, regardless of gender, with both high and low income, social housing, and receipt of benefits, although the association for the latter is stronger for men. Father's interest in schooling seems to play an especially important role for girls: in addition to the already mentioned associations, there are clear and consistent links to extra-marital childbearing and weaker, but still notable, correlations with malaise and teenage motherhood.

Mother's interest in schooling mainly emerges as a more consistent predictor for women than for the men (as does social class of origin), with the totals of the indices being 13.8 for the women and only 5.7 for the men, reflecting both more frequent significant relationships and more powerful ones too. Thus, women whose mothers were reported as being less interested in their schooling are much more at risk of early parenthood and not obtaining degree-level qualifications than are their male counterparts, even though there is a significant association for both sexes. There are reasonably large associations with extra-marital childbearing and being in social housing for both men and women and for male unemployment. But mother's interest in schooling is also significantly related in the expected direction for women but not men to receipt of benefits, lack of qualifications, high and low income, and homelessness.

Social class of origin (a summary encompassing both grandfathers and the father) also appears to be of greater importance for women with the sum of the indices being 15.2 for the women and only 6.4 for the men and the relationships being both more frequent and more powerful for the women. The association is fairly strong and about equal for both sexes with both of the positive outcomes (high income and degree-level qualifications) and weaker but consistent by gender for low income. A lower social class of origin is a particularly strong predictor for women of social housing and of lack of qualifications (with a weak statistically significant association for the men) and has a further fairly clear association for women with teenage motherhood and receipt of benefits, but is associated with less frequent multiple partnerships. On the other hand, a lower social class of origin for men is fairly clearly associated with a higher incidence of adult malaise and weakly with a greater propensity to have extra-marital births.

In contrast with mother's interest in schooling and social class of origin, which are more closely related to adult outcomes for the women, the **father's social class** during childhood and housing tenure in childhood are both more strongly and frequently linked with adult outcomes for the men. The association of father's social class is especially large for young fatherhood, although there is a smaller significant association with teenage motherhood. There is also a clear association with being in social housing for both sexes, though again stronger for the men, and a weaker one with obtaining degree-level qualifications and with lack of qualifications. Father's social class during childhood is only significantly related for men to extra-marital births, high and low income, receipt of benefits, and unemployment.

The strongest association with experiencing **local authority housing** as a child is being in social housing as an adult, with this link being even stronger for the men. This is an example of direct transmission of childhood patterns into replication in adulthood. For men, experience of local authority housing during childhood is also clearly linked with greater prevalence of homelessness during adulthood. Housing tenure is significantly related for both sexes with high income and degree-level qualifications (both negatively), and early parenthood and receipt of benefits. In addition, there is a fairly a propensity for men who were in local

authority housing as children to have had fewer cohabitational partners by age 33.

The final group of control variables comprise the personality attributes of aggression, anxiety, and restlessness during childhood. Among these, aggression is most frequently associated with adult outcomes, with significant relationships for nine of eleven outcomes for the women and six of the twelve for the men. In contrast, both anxiety and restlessness are more frequently significantly associated for the men, though both have the fewest significant relationships overall with adult outcomes.

Aggressive children of both sexes are more likely to become young parents (especially powerful for girls), to have extra-marital births, to experience adult malaise (stronger for boys) and, to a lesser extent, receive benefits and fail to obtain degree-level qualifications. Moreover, aggressive boys are more likely to have multiple partners and female childhood aggression is linked to greater likelihood of being in social housing, lacking any qualifications, and having low household income in adulthood.

Anxious children of either sex are more likely to experience malaise during adulthood, a further example of persistence of characteristics during life. Otherwise, most of the associations with childhood anxiety are protective against adverse outcomes for men, but not women. Thus, anxious boys are less likely to become young fathers, to have an extra-marital birth, or to be unqualified, and are more likely to have degree-level qualifications. There are weaker associations with an increased chance of being in receipt of benefits for anxious boys and not achieving high household income for anxious girls, with a mixed association for homelessness for women.

Restless boys are considerably less likely to achieve any qualifications and somewhat more prone to malaise, to being in receipt of benefits, to low income, and to lack degree-level qualifications by age 33. Restless girls are somewhat more likely to reside in social housing and to have experienced recent homelessness by age 33.

11.1 Missing information

Our regression models include the possibility of missing information on any of the control or focal variables proving to be selectively associated with the adult outcomes. Not many such associations are retained in our final models, partly because small

numbers in these categories can lead to large standard errors. In addition, lack of information on one variable is moderately strongly correlated with lack of information on other variables, since the greatest source of missing information is complete omission from a relevant instrument or wave. However, there are quite a few instances, several of which are substantively meaningful, of significant differences emerging for the groups where there was no information on these variables. These odds ratios for the final models are shown in Tables 16 and 17 for the focal variables and in Tables 18 and 19 for the control variables.

Where no information was available at ages 7, 11, or 16 on childhood experience of poverty, there are three instances for the men where this lack of information is strongly associated with adverse outcomes, namely social housing, lack of qualifications and being in the lowest quartile of male earners; in all three cases the group for whom no information was available were at least as or more likely to experience an adverse outcome as were the clearly poor group.

Lack of information on contact with the police (all collected in the round at age 16) is clearly selectively associated with lack of qualifications and incidence of malaise for both sexes, with multiple partnerships, and being in the lowest quartile of male earners for men, and with being in social housing for women.

No information on social class of either grandfather or the father around the time of the survey member's birth is strongly associated with malaise scores for men and with being in social housing for women. Lack of knowledge of the social class of the father at ages 7, 11, and 16 (undoubtedly associated with lack of a father) is strongly associated with young fatherhood, extra-marital births, and multiple partnerships for men, but is seemingly protective against extra-marital births for women.

Where men's housing tenure at ages 7, 11, and 16 was unknown, they are much more likely to have experienced homelessness whilst adults and much less likely to have obtained degree-level qualifications. Young women for whom this information was unavailable during childhood were more likely to become teenage mothers, and to live in social housing.

Missing information on father's interest in schooling at ages 7, 11, and 16 is again associated with lack of a father at these ages and is quite strongly related to a wide range of adult outcomes. This category has the most extreme odds ratio for any category of

father's interest in schooling for extra-marital births, social housing, receipt of benefits, low earnings and unemployment for men, and for extra-marital births, lack of qualifications, and high or low household income for women. These most extreme odds ratios for the missing information group on father's interest in schooling indicate real selectivity, quite probably due to no father being present, but anyway show strong relationships. There are a number of other clear, but slightly less extreme, relationships of adult outcomes to complete missing information on father's interest in schooling, including lack of degree-level qualifications for both sexes, no qualifications for men, and teenage motherhood and benefit receipt for women. Undoubtedly, some of these multiple and powerful associations with missing information should more correctly be attributed to family type, but nevertheless their emergence despite controls for family type is striking. However, we note that no odds ratio for all information missing on family type does emerge as significant in any of the final models.

In contrast, missing information on mother's interest in schooling during childhood (rarer than for father's interest) is rarely significantly associated with adult outcomes, net of all the other controls. The only exceptions are that this lack of information for men is associated with a considerably reduced incidence of multiple partnerships and with an increased chance of being in social housing and in the top quartile of male earnings; for women this missing information is associated with a high chance of having been in receipt of non-universal benefits.

The missing information for the three personality or behavioural measures from childhood is captured by a single summary all missing category, since the scores on aggression, anxiety, and restlessness were all derived from the same inventories at ages 7, 11, and 16. Lack of information in these behavioural inventories is quite strongly associated with malaise in adulthood for both sexes, suggesting that a failure to report by the teacher is informative about personality. Missing information on these variables for men is also associated with an increased propensity to receive benefits and, more unusually, with a large increase in degree-level qualifications (though we suspect some confounding with the extremely low value associated with missing housing tenure information).

Finally, and generally unsurprisingly, missing information on test scores at ages 7, 11, and 16 is often very strongly associated with the adult outcomes for both sexes, in the sense that the odds ratios for the comparisons with the reference category of fairly consistently high test scores are quite large. These odds ratios are the most extreme observed for *any* category of the test scores in a few instances (though the contrasts with the lowest test score group would not be statistically significant), including the risks of early parenthood for both sexes and of extra-marital childbearing, malaise, social housing, receipt of benefits, and low household income for women.

12 A closer look at the individual outcomes

We now turn to a different view of our results, which synthesises the associations for each outcome in turn, drawing out the most powerful associations, the similarities and differences between the sexes, and emphasising inter-generational and life-course continuities in the transmission of social exclusion. Once again, our discussion will be guided by the indices of the overall strength of association and these are shown by sex for each of the adult outcomes in Table 21. To facilitate digestion of a great deal of material we have ranked the focal and control variables according to the values on the overall indices described in the previous section. Values of two or more are highlighted in bold type and the focal variables are picked out in italics.

12.1 Demographic outcomes

Early childbearing is most strongly associated with lower scores on educational tests during childhood, with the indices shown in Table 21 being over six for both men and women. Compared with the reference group, who scored two or three measures of performance on test scores which were in the top quartile of the distribution at ages 7, 11, or 16, the large intermediate group (no score in lowest quartile and one or no score in the top quartile – about 40 per cent of the sample) have odds of about two and a half to one of experiencing early parenthood regardless of gender (Tables 18 and 19) . Any of the three test scores being in the lower quartile further increases the odds of early parenthood to three and one-third for men and to three and two-thirds for women.

Those for whom no test scores were available at any of the three childhood waves of NCDS have the highest odds of any group of experiencing early parenthood, with odds ratios of three and two-thirds for the men and seven for the women.

Table 21: Indices of strength of association for each outcome with focal and control variables by sex

Demographic Outcomes and Malaise

Young Parent				Extra Marital Births			
Males		Females		Males		Females	
Tests	6.3	Tests	6.9	<i>Family</i>	2.7	<i>Family</i>	6.5
Dad S.C.	3.9	<i>Family</i>	3.6	Mum int.	1.9	Dad int.	3.0
<i>Police</i>	1.6	Mum int.	2.9	<i>Police</i>	1.4	<i>Police</i>	1.7
Anxiety	-1.3	Aggress	2.3	Dad S.C.	1.2	<i>Poverty</i>	1.2
Aggress	1.1	<i>Police</i>	2.1	Tests	1.0	Mum int.	1.1
<i>Poverty</i>	1.1	<i>Poverty</i>	1.7	Anxiety	-1.0	Tests	1.0
<i>Family</i>	1.0	S.C. Orig.	1.7	<i>Poverty</i>	0.9	Aggress.	1.0
Tenure	0.7	Dad int.	1.2	Aggress.	0.8		
Mum int.	0.6	Dad S.C.	0.5	S.C. Orig.	0.3		
		Tenure	0.2				

Three Plus Partners				Malaise			
Males		Females		Males		Females	
<i>Family</i>	4.5	<i>Family</i>	5.8	Tests	2.1	Tests	3.1
<i>Police</i>	1.8	<i>Poverty</i>	2.4	<i>Poverty</i>	1.6	<i>Police</i>	1.8
Tenure	-0.9	<i>Police</i>	1.8	Aggress.	1.6	Anxiety	1.6
Aggress.	0.8	S.C. Orig.	-1.7	S.C. Orig.	1.5	<i>Poverty</i>	1.5
Tests	-0.8	Tests	-1.2	Anxiety	1.2	Dad int.	1.2
				<i>Family</i>	1.1	Tenure	0.8
				<i>Police</i>	0.6	<i>Family</i>	(0.6)
				Restless.	0.6	Aggress.	0.5
						Dad S.C.	(0.3)

Table 21 (continued)

Welfare Position

Social Housing				Any Benefits			
Males		Females		Males		Females	
Tests	5.8	S.C. Orig.	4.1	Dad int.	2.0	Tests	3.0
Tenure	3.5	Tests	3.8	Tests	1.7	<i>Family</i>	(1.3)
Dad S.C.	2.0	<i>Family</i>	2.5	<i>Poverty</i>	1.2	<i>Poverty</i>	1.2
Mum int.	1.7	<i>Police</i>	2.3	Tenure	0.7	<i>Police</i>	1.1
<i>Family</i>	1.6	<i>Poverty</i>	2.1	<i>Police</i>	0.5	S.C. Orig.	0.9
<i>Police</i>	1.4	Tenure	1.7	Dad S.C.	0.4	Mum int.	0.9
<i>Poverty</i>	1.4	Mum int.	1.6	Aggress.	0.4	Dad int.	0.8
Dad int.	0.7	Aggress.	1.5	Anxiety	0.4	Aggress.	0.5
		Dad S.C.	1.3	Restless.	0.4	Tenure	0.2
		Dad int.	0.8				
		Restless.	0.8				
Homelessness				Unemployed			
Males		Females		Males			
<i>Family</i>	3.6	<i>Family</i>	2.1	<i>Poverty</i>	1.2		
Tenure	3.2	<i>Police</i>	1.9	<i>Police</i>	1.0		
<i>Police</i>	1.3	<i>Poverty</i>	1.4	Mum int.	0.9		
		Restless.	0.7	<i>Family</i>	0.8		
		Mum int.	0.6	Dad S.C.	0.4		
		Anxiety	??	Tenure	0.3		
				Tests	0.2		

Table 21 (continued)

Qualifications and Income

No qualifications				High qualifications			
Males		Females		Males		Females	
Tests	66.7	Tests	42.3	Tests	24.6	Tests	14.7
Dad int.	8.0	Dad int.	6.5	<i>Poverty</i>	3.3	Mum int.	3.3
<i>Police</i>	3.9	<i>Poverty</i>	3.0	Dad int.	3.0	Dad int.	2.0
<i>Poverty</i>	3.7	S.C. Orig.	2.7	S.C. Orig.	1.7	S.C. Orig.	2.0
Restless.	2.3	<i>Police</i>	2.2	Tenure	1.2	Tenure	1.3
<i>Family</i>	-1.6	Tenure	2.1	<i>Police</i>	1.1	Dad S.C.	0.8
Tenure	0.9	Mum int.	1.9	Restless.	0.9	Aggress.	0.6
Anxiety	-0.9	<i>Family</i>	1.2	Anxiety	-0.8		
Dad S.C.	0.7	Aggress.	0.8	Dad S.C.	0.7		
S.C. Orig.	0.6	Dad S.C.	0.8	Mum int.	0.6		
				Aggress.	0.6		

Low income				High income			
Males		Females		Males		Females	
Tests	5.1	Tests	1.4	Tests	5.7	Tests	4.0
Dad int.	1.6	<i>Poverty</i>	1.4	S.C Orig.	1.9	S.C Orig.	1.7
<i>Poverty</i>	0.9	Dad int.	1.1	Dad S.C.	0.7	<i>Poverty</i>	1.5
Restless.	0.5	<i>Family</i>	0.9	Tenure	0.7	Dad int.	0.8
S.C. Orig.	0.4	Aggress.	0.9	Dad int.	0.7	Mum int.	0.8
Dad S.C.	0.4	Mum int.	0.7			<i>Police</i>	-0.7
		S.C. Orig.	0.4			Tenure	0.5
		Tenure	0.3			Anxiety	0.4
						<i>Family</i>	??

Note: Indices of strength of association are calculated by subtracting one from the odds ratios and summing these across the categories (other than missing information) for each of the focal or control variables. Indices of 2.0 or greater are deemed large and shown in bold type.

The other strong childhood correlates of early childbearing (index scores of two or more) are the father's social class for men, and family type, mother's interest in schooling, aggression, and contact with the police for women. The only childhood factors which are eliminated entirely from the final models for early parenthood are restlessness scores for both sexes, social class of origin and father's interest in schooling for the men, and anxiety scores for the women. Each of the three focal variables remains significantly associated with early childbearing for both sexes after introduction of all the controls. All of the significant odds ratios

shown for this outcome in Tables 16 to 19 operate in the direction of raising the risk of early parenthood for adverse experiences during childhood, with the one exception that anxious boys are less likely to become fathers before age 22.

The association of father's social class with early parenthood is much stronger for men, with the odds of fatherhood before age 22 being 1.8:1 for the large intermediate category where the father was not in social classes IV or V at any of ages 7, 11, and 16 and was recorded as non-manual at zero or one of these interviews, compared with those whose fathers were recorded as being in non-manual occupations at two or three of the childhood interviews. These odds of early parenthood increase to 2.5:1 where there is any evidence that the father was in social classes IV or V at ages 7, 11, or 16 and to 2.73:1 where all information about father's occupation at these ages is missing, which is undoubtedly partially indicative of family disruption. The association with social class for teenage motherhood is more complex but weaker, involving elements of social class of origin and social class of father during childhood: the odds of teenage motherhood are 1.56:1 for all women who have some information on social class of origin recorded but did not have two or three of their two grandfathers or their father at the time of their birth recorded as being in non-manual occupations; in addition, there is an even weaker association with father's social class during childhood, with those whose fathers were recorded as being in social classes IV or V on any of the three occasions having an odd ratio of 1.25:1.

Family type is more closely associated with teenage motherhood than with early fatherhood. Women who were in care or fostered during their childhood have odds of 2.4:1 of becoming teenage mothers, compared with their peers who spent childhood with both their natural parents; being born out-of-wedlock raises the odds to 1.8:1; any evidence of experience of lone-parenthood subsequent to the period around their birth, regardless of whether through divorce or widow(er)hood or of subsequent remarriage, is also associated with an excess risk of teenage motherhood (odds ratio of 1.35:1). For men, the association with family type during childhood is much weaker, with the only significant association emerging for experience of parental divorce, regardless of whether or not a remarriage had occurred, with an odds ratio of 1.5:1.

Parental interest in schooling is also more clearly associated with early motherhood, suggesting that girls are much more

vulnerable to family and parental background and inputs in relation to early parenthood than are boys. Where the mother was not reported as being very interested in her daughter's education at two or three of the childhood waves, the daughter was about twice as likely to become a teenage mother (odds ratio 1.96:1). Moreover, if there was any response that indicated that the father showed little interest in her schooling, or all responses concerning father's interest were missing, the odds of experiencing teenage motherhood were further increased (odds ratios of 1.61:1 and 1.5:1 respectively). This contrasts with the much weaker association for men, for whom the only residually significant association with parental interest in their schooling emerged for the much smaller group where the mother was reported as showing little interest in their schooling on more than one of the three childhood interviews: this more extreme lack of interest was associated with an odds ratio of 1.64:1.

There is a reasonably clear association of early parenthood with childhood poverty, contact with the police, and childhood aggression, although in each case the association is probably stronger for teenage motherhood than for early fatherhood. Any evidence of childhood poverty for girls is associated with increased odds of teenage motherhood (1.56:1), whilst lack of clear evidence for not experiencing childhood poverty (excepting complete missing information) is linked to a small increase in the risk of fatherhood before age 22 (odds ratio 1.27:1). Any evidence of contact with the police for girls is associated with a substantial increase in teenage motherhood (odds ratio 2.06:1), with clear evidence of such contact for boys being linked to a similar odds ratio for early fatherhood of 2.11:1; in addition, the two categories of boyhood contact with the police corresponding to some evidence or probably not are also at higher risk of early fatherhood (odds ratio 1.27:1). Any evidence of high aggression scores during childhood is linked to teenage motherhood, with an odds ratio of 1.94:1, whilst lack of clear evidence of non-aggression for boys and the intermediate category for girls are correlated with early parenthood (odds ratio 1.38:1).

In addition, spending much of childhood in local authority housing is allied with an increased propensity to become a parent early, with the odds ratio (1.71:1) being higher for men than for women (1.23:1).

Finally, boys who were in the most anxious category at any of the three childhood interviews were less likely to become fathers before age 22 (odds ratio 0.61:1).

Extra-marital births are most strongly related for both men and women to experience of family disruption during childhood, followed by parental interest in schooling and contact with the police. After introduction of all the variables to the final model, extra-marital childbearing appears unrelated to housing tenure or restlessness during childhood for either sex, and to social class of origin or anxiety scores for women. The relationships with social class of origin and father's interest in schooling are weak for the men. All three focal variables retain some significant associations with extra-marital childbearing for both sexes.

Children who were born out-of-wedlock are more likely to themselves have extra-marital births in adulthood, with the odds ratios (compared with intact families where both parents are recorded at ages 0, 7, 11, and 16) being 2.01:1 for the men and 2.46:1 for the women. Women who had been in care or fostered during childhood are also much more likely to have out-of-wedlock births (odds ratio 3.74:1). Men whose parents had divorced and then had lived with a step-parent are also more likely to have had an extra-marital birth by age 33 (odds ratio 2.70:1). However, although women who lived with a lone parent as a result of divorce or death generally experienced a higher risk of extra-marital childbearing (odds ratio 1.67:1), there is the curious exception of those whose parents had divorced and then had lived with step-parent (odds ratio of 0.82:1, not significantly different from unity).

Parental interest in schooling is also fairly clearly linked to extra-marital childbearing. Unless the mother was reported as being very interested in their schooling by teachers at two or three of the childhood interviews both men and women are about a third more likely to have births outside marriage (odds ratios of 1.36:1 and 1.38:1 respectively), and men whose mothers were reported more than once as showing little interest in their schooling were even more likely to have out-of-wedlock births (odds ratio 2.13:1). For women, this association is reinforced even more strongly by reported father's interest in schooling: any report of little interest (at one or more childhood interviews) is associated with a high risk of extra-marital births (odds ratio 2.24:1), and the intermediate group for whom there fewer than two reports of the

father being very interested but none of him showing little interest have an odds ratio of 1.55:1. In addition, lack of any reports of father's interest in schooling is slightly more strongly allied to extra-marital childbearing in later life for both sexes than any other pattern of reporting on this factor, with odds ratios of 2.43 for women and 1.37 for men, being strongly suggestive of further family disruption linkages.

Children for whom there is any evidence of contact with the police by age 16 are consistently more likely to have extra-marital births in later life (odds ratios of 1.83:1 for women and 1.69:1 for men).

Experience of childhood poverty is also related to out-of-wedlock births to both sexes, with odds of 1.60:1 for women who were fairly or clearly poor during childhood, and a more confused pattern for men, with excess risks for the groups experiencing some poverty (1.40:1) or being clearly poor (1.54:1), but no excess risk for the intermediate group who were fairly poor (odds of 0.91, not significantly different from unity).

Both educational test scores and aggression during childhood are also moderately related to childbearing outside marriage for both sexes. Any of the three possible educational test scores falling in the lowest quartile for either sex is associated with about a 50 per cent increase in extra-marital births (odds 1.52:1 for men and 1.48:1 for women). In addition, women for whom all three childhood educational test scores are missing have very high odds of births outside marriage (2.84:1). Girls for whom there is any indication (at one or more of the childhood interviews) of high aggression (odds ratio 1.51) and boys without two or three reports of low aggression levels (odds ratio 1.28) also tend to have more extra-marital births.

Although not strong, the structural factors of social class emerge as being more associated with extra-marital childbearing for men (as was also the case for early parenthood), with those whose fathers were not reported as being in non-manual occupations in at least two of the three childhood interviews having an odds ratio of 1.41:1, further reinforced where two or three of the reports concerning the two grandfathers and the father around the time of their birth were in social classes IV or V (odds ratio 1.31:1).

Finally, anxious boys (those with a high anxiety score at any of the three childhood waves) are not only less likely to become

young fathers but are also less likely to have births outside marriage, with odds of 0.663:1.

Frequent cohabitational partnerships are related to fewer of the control variables and the models capture less of the variation than for the other two demographic outcomes (see Appendix Table 1). Once again, family type emerges as having the largest index values for both sexes (see Table 21), with a particularly unambiguous association for both sexes with experience of parental divorce during childhood. There is a fairly clear association with contact with the police by age 16 for both sexes and with childhood experience of poverty for the women. Thus, all of the most powerful associations are with the focal variables. The few other significant correlates of multiple partnerships include educational test scores for both sexes, housing tenure and aggression scores (and all missing information on father's social class) for men, and social class of origin for women. Most of these associations with the control variables operate in the reverse direction to that usually observed, with greater childhood disadvantage being linked to fewer adult multiple partnerships.

Men and women who experienced parental divorce during their childhood are much more likely to have had three or more cohabitational partnerships by age 33 (odds ratios of 3.23:1 and 2.30:1 respectively), regardless of whether or not they subsequently lived with a step-parent. Once again women prove more vulnerable to other family patterns during childhood, with those who were born outside marriage or cohabitation having odds of 1.85:1 and those who experienced fostering or residential care having odds of 3.32:1, of living in three or more partnerships by age 33.

Men or women for whom there is any evidence of contact with the police by age 16 are about equally likely to have increased risk of multiple partnerships during adulthood (odds ratios of 1.88:1 and 1.89:1 respectively). In addition, men for whom all information on contact with the police is missing are more prone to repeated partnerships (odds 1.68:1).

Compared with those girls who were unequivocally not poor during childhood, all girls for whom poverty status was either ambiguous or for whom there was any evidence of poverty (except for complete missing information) have odds of 1.61:1 of having had three or more co-residential partners by age 33.

There are two other groups of men who experienced heightened risk of multiple partnerships: boys who had high aggression scores at two or three of the childhood interviews (odds ratio 1.83:1); and those for whom all information on father's social class was missing at ages 7, 11, and 16, which is presumably in part a further indication of family disruption (odds ratio 2.22:1).

The remaining associations with multiple partnerships are protective, in the sense that the more disadvantaged during childhood are less likely to have multiple partners as adults. Thus, women who did not record at least two educational test scores in the highest quartile at the three childhood waves are less likely to have had multiple cohabitational partners in adulthood (odds ratio 0.71:1), as are men who were in the bottom quartile of the educational test scores two or more times (odds ratio 0.564:1). Women whose fathers were recorded in social classes IV or V at one or more of ages 7, 11, or 16 are also less likely to have had many partners (odds ratio 0.545:1), as are men who were in local authority housing at any of these ages (odds ratio 0.701:1).

All three demographic outcomes are clearly associated with family type during childhood. Fostering or residential care and being born outside marriage are very strongly associated with teenage motherhood, extra-marital births, and repeated partnerships for women, but not generally for men. The only exception to this gender difference is the intergenerational continuity observed for men as well as women in extra-marital childbearing: those who are born outside a marriage are much more likely to have out-of-wedlock births themselves. A further intergenerational continuity arises through the clear association of childhood experience of parental divorce with multiple cohabitational partnerships in adulthood. It is also well documented elsewhere from NCDS that having been born to a teenage mother is strongly associated with subsequent early parenthood (Kiernan 1995 and 1997).

There is a moderately clear tendency for the 'structural' or external factors of social class of origin and of father during childhood and housing tenure to appear as stronger and more frequent correlates with the demographic outcomes in adulthood for men. Conversely, social and parental factors (mother's and father's interest in schooling and, perhaps, family type) emerge more powerfully and consistently for women in relation to these adult demographic outcomes.

12.2 Malaise

Malaise scores of seven or higher at age 33, deemed indicative of those at high risk of depression, are most strongly associated for both sexes with educational test scores, but are also reasonably clearly linked with childhood poverty and anxiety scores in childhood for both men and women. Significant, but not necessarily very strong associations emerge for both sexes in relation to all three focal variables. In addition, this single personality outcome in adulthood is related to all three measures of personality/ behaviour in childhood for men and to two of these for the women: this is another domain where there seem to be especial life-course continuities. There are indications of parental interest in schooling (father's) emerging as a reasonably strong factor for women, while social class of origin is a fairly clear correlate for men: the gendered social/ structural contrast thus emerges again (although housing tenure is weakly related for women but not men).

Men with two or three lowest quartile educational test scores in childhood and women with any low test scores have high odds of experiencing malaise at age 33 (odds ratios of 2.18:1 and 2.33:1 respectively). Moreover, the remainder without two or three highest quartile scores on educational tests are also more likely to have malaise scores above six at age 33 (odds ratios 1.48:1 for both men and women). Women for whom all educational test scores are missing are also more likely to experience malaise (odds 2.44:1).

All three focal variables are linked to adult malaise. The only family type which is clearly linked to malaise is where the child was in care or fostered, with odds ratios of 2.08:1 for men and 1.60:1 for women. For women, any evidence of contact with the police by age 16 is associated with a higher incidence of adult malaise (odds 1.91:1), while clear evidence of such contact for men is also associated with this outcome (odds 1.59:1). Lack of any information on contact with the police by age 16 is also associated with a higher incidence of malaise at age 33 (odds ratios of 1.41 for men and 1.29 for women). The men who were fairly or clearly poor during childhood have odds of 1.80:1 of adult malaise, and women with any evidence of childhood poverty are also at greater risk (odds 1.50:1).

Perhaps the most striking associations with adult malaise emerge with respect to the childhood personality measures. Firstly, where the childhood personality inventories were all

missing (shown arbitrarily as all missing under the aggression scores), both men and women are at much greater risk of adult malaise (odds ratios 2.34:1 and 2.69:1 respectively). Perhaps unsurprisingly, the clearest and most consistent of these associations is with the childhood 'anxiety' scores: any high anxiety score at one or more of the childhood interviews is linked to a greater incidence of adult malaise (odds ratios of 1.59 for men and 1.65 for women); further, the remaining intermediate group of women who did not have two or three low anxiety scores also have slightly higher odds (1.26) of adult malaise. Among the boys, all those who did not exhibit low aggression scores on at least two of the three childhood inventories are at greater risk of adult malaise (odds ratio 1.54), whilst only the most aggressive girls, with two or three high scores, show such excess risk (odds ratio 1.45). In addition, boys who had one or more high restlessness scores experience greater adult malaise (odds ratio 1.28).

The only other significant associations with adult malaise to emerge, net of all other controls, are with social class of origin for the men, and with father's interest in school, housing tenure, and, less clearly, social class of father for the women. Boys for whom two or three of their two grandfathers and their father at the time of their birth were recorded as being in non-manual occupations experience less adult malaise, with the odds ratio for the remainder being 1.50:1. This ratio increases to 2.07:1 where all information on social class of origin is missing for men. Women whose teachers reported little father's interest in their schooling at one or more of the three childhood waves of NCDS have odds of 1.58:1 of experiencing malaise at age 33. Women who were not reported as being in owner-occupied housing in at least two of these waves also exhibit somewhat higher incidence of malaise (odds ratio 1.26:1). Lastly, and more puzzling, there is an indication of excess risk of adult malaise for those women whose fathers were recorded in social classes IV or V on only one but not more occasions in the three childhood interviews (odds ratio, for what it is worth, 1.31).

12.3 Welfare Position

Social housing: Residence in local authority housing or property rented from a housing association is fairly strongly related to several childhood measures for both men and women: educational test scores and housing tenure both show especially strong

associations for the men, though test scores are also powerful correlates for the women; the three focal variables (family, police, and poverty) are somewhat more strongly related for the women, though again fairly clearly for the men; the relationship with parental interest in education is very similar for both sexes, with mother's interest being slightly more influential than father's. However, there are considerable differences in the relation to social class: social class of origin is perhaps the most powerful net predictor of being in social housing at age 33 for the women and father's social class during childhood moderately reinforces this relationship, whereas social class of origin is not clearly related to social housing for men, although the father's social class during childhood shows a reasonably strong association (index=2.0, see Table 21). The propensity to live in social housing at age 33 is also higher for women who were aggressive or restless during childhood, but no childhood behavioural measures emerge as net correlates for men. Indeed, it is notable that the only childhood factor which does not appear in the model of the propensity to be in social housing for women is anxiety; for all the remaining eleven factors there is some evidence of childhood disadvantage increasing the risk of being in social housing as adults for women. The associations are less pervasive for men, with none of the childhood personality factors nor social class of origin appearing in our final model.

Children who performed poorly on educational tests are much more likely to live in social housing at age 33. For men, there is an especially clear gradation, with the odds ratios of being in social housing being as high as 4.25:1 for those who had two or more test scores in the lowest quartile at ages 7, 11, and 16, reducing to 2.74:1 for men who had only one of these educational test scores in the lowest quartile, and still being 1.82:1 for all those who did not obtain two or more scores in the highest quartile. For women, the effects are not quite so strong, with the group who had any of the three test scores in the lowest quartile having an odds ratio of 2.66:1, and the large intermediate group who did not achieve two or more results in the highest quartile having odds of 1.44:1.

Both men and women who were in local authority housing at any of the three childhood waves are much more likely themselves to be in social housing a generation later (odds ratios 2.45:1 for men and 1.83:1 for women), despite the major changes in

the housing market over this period (their childhood situation or parental housing tenure was observed in 1965, 1969, and 1974, whilst their own housing situation was assessed in 1991, when owner-occupation had become much more prevalent). In addition, men who were not in owner-occupied housing at two or three of the childhood interviews, but not in local authority housing on any of these three occasions either, also show a greater propensity to be in social housing at age 33 (odds ratio 1.56:1). Women whose tenure status as children is completely unknown at any of the three childhood waves are also at greater adult risk of being in social housing (odds ratio 1.93:1). It must be recalled that this evidence of the intergenerational 'transmission' of propensities to live in social housing is net of a wide range of other factors, including measures of childhood poverty, family disruption, and social class.

Children of either sex who were born outside wedlock or who experienced fostering or residential care are all more likely to be in social housing at age 33 (odds ratios of 1.84:1 and 1.79:1 respectively for men and 1.78:1 and 1.66:1 respectively for women). In addition, those women who experienced any form of parental partnership breakdown or loss, regardless of remarriage status, showed a small excess risk of being in social housing at age 33 (odds ratio 1.27:1).

Childhood poverty also increases the risk of being in social housing as an adult, with those who were fairly or clearly poor showing odds ratios of 1.70:1 for the men and 1.89:1 for the women. A complete lack of information about childhood poverty for men is associated with an even greater propensity to be in social housing at age 33 (odds ratio 2.55:1), while there is also a weaker effect of experiencing some poverty as a child for women (odds ratio 1.32:1).

Those who had any contact with the police before age 16 are also more likely to be in social housing as adults (odds ratios 1.71 for men and 2.04 for women). Moreover, women for whom we cannot ascertain whether or not they had contact with the police have odds of 1.64:1 and those for whom information is incomplete but gives no evidence of such contact have odds of 1.25:1 of being in social housing as adults.

Girls who had two or three of their two grandfathers and their father around the time of birth in non-manual occupations (our reference group for social class of origin) are particularly

unlikely to be in social housing as adults, with all other groups for whom we have any information having an odds ratio of 2.35:1 and those with no information having odds of 2.44:1. This association is further reinforced if her father was in a non-manual occupation at two or three of the childhood interviews, with the odds ratio for three remaining categories being 1.44:1. But these associations do not involve stronger effects where the father or grandfather was ever (or even frequently) observed as being in the less skilled manual groups (IV or V), which might have been anticipated. The overall extent of association with social class is weaker for men, though still reasonably strong. There is no net association with social class of origin for men, but the pattern of relationship with father's social class during childhood is slightly more differentiated. Men whose fathers were in social classes IV or V at two or three of the childhood interviews are at particularly greater risk of being in social housing as adults (odds ratio 2.27:1) and the remainder whose fathers were not in non-manual occupations at two or three childhood waves also show some excess risk of living in social housing at age 33 (odds ratio 1.34:1).

Links to social housing of parental interest in schooling are remarkably similar for men and women. The key contrast for mother's interest in schooling identifies anyone whose mother was not reported on at least two of the three occasions as being very interested in her child's schooling (odds ratios 1.56:1 for men and 1.53:1 for women). The association for father's interest in schooling is slightly weaker and confined to the group where there were one or more negative reports of little interest (odds ratios 1.34:1 for men and 1.40:1 for women). Men whose reports on mother's interest in schooling were all missing at ages 7, 11, and 16 are also more likely to be in social housing as adults (odds ratio 1.95:1).

Lastly, two childhood personality/ behavioural factors emerge as related to social housing for women only. Aggressive girls (those with a high score at any one of the three child waves) have odds of 1.66:1 of being in social housing as adults and those girls who did not have any high score recorded but did not achieve two or three low scores on aggression are also slightly more likely to be in social housing at age 33 (odds ratio 1.22:1). Girls for whom a high restlessness score was recorded at any one of the three child waves have odds of 1.39:1 of being in social housing as adults.

Receipt of non-universal benefits is less well explained by our models (Appendix Table 1), although both educational test scores and childhood poverty emerge as fairly clear correlates regardless of gender, as does parental interest in schooling albeit with differing combinations of father's and mother's interest by gender. There are a considerable number of statistically significant but not especially strong associations with the range of childhood factors, especially for the men. Net of the other factors, there is no association with receipt of benefits for women with social class of father during childhood, nor with anxiety or restlessness scores, and none for the men in relation to family type, social class of origin, or mother's interest in schooling.

The clearest association to emerge for receipt of benefits is with educational test scores, especially for women: women with any of the three childhood test scores in the lowest quartile have odds of 2.33:1 of getting non-universal benefits in adulthood, those women with no information on test scores are about equally likely to receive such benefits (odds ratio 2.39:1) and the large intermediate group with no lowest quartile scores but fewer than two top quartile scores also show slight excess risk (odds 1.38:1). For men, the relationship only appears for more extreme poor test scores, with those having two or three in the lowest quartile having odds of receiving benefits of 2.28:1 and those men with just one test score in the lowest quartile during childhood having odds of 1.44:1.

Parental interest in schooling is also linked to subsequent receipt of benefits. The association is simplest for the men, where anyone whose father was not reported as being very interested in their schooling on at least two of the three childhood waves experiences a heightened risk of getting benefits (odds 1.65:1) and those men for whom no information on father's interest was reported at any of the three waves are also more likely to get benefits (odds 1.94:1). For women, this association is more complicated: unless the mother was reported as being very interested in her schooling at least twice during childhood, the risk of being on adult benefits was increased (1.30:1); in addition, if there were one or more reports of the father showing little interest in her schooling the risk of getting benefits as an adult also rises (odds ratio 1.42). Lack of information at all three childhood waves about parental interest in girls' schooling is also associated with

later receipt of benefits (odds ratios of 1.74:1 for mother's interest and 1.32:1 for father's).

Poor children grow up more likely to receive benefits as adults, with men who were fairly or clearly poor having an odds ratio of 1.61:1 and women who had any evidence at all of experiencing childhood poverty having odds of 1.41:1 of getting benefits as an adult. Those men and women for whom there is clear evidence of contact with the police are also more likely to get benefits as adults (odds ratios 2.09:1 for women and 1.46:1 for men). The association of benefit receipt with family type during childhood is non-existent for men and somewhat unclear for women. Girls who were fostered or in care have odds of 1.64:1 of getting benefits as an adult; those who were identified as living with only one parent in at least one childhood interview, but with no clear evidence that this was a result of partnership breakdown, show a small excess risk of getting benefits (1.34:1), but those women who experienced parental divorce or breakdown as children essentially show no excess risk (odds 0.92:1, not significant).

Associations with benefit receipt also emerge for structural factors. If more than one of her grandfathers or father at the time of her birth were not non-manual, there is a small excess risk of benefit receipt for a woman (odds ratio 1.31:1). Men whose fathers were identified as being in social classes IV or V at any time during their childhood show a slightly higher propensity to get benefits in adulthood (odds 1.22:1). Boys who lived in local authority housing at any one of the childhood waves and girls who were in such housing more than once show small increases in chances of getting benefits during adulthood (odds ratios 1.35:1 for men and 1.16:1 for women).

Finally, there are scattering of significant associations of benefit receipt with childhood personality scores, especially for the men. Girls with any high aggression score and boys with multiple high scores on aggression are more likely to get benefits as adults (odds ratios 1.27:1 for women and 1.36:1 for men). In addition, boys with repeated high anxiety scores during childhood (odds 1.40:1) and with one or more high restlessness scores (odds 1.22:1) are more likely to get benefits as adults. Moreover, men for whom we have no personality inventory during childhood are quite a bit more likely to receive benefits (odds ratio 2.11:1).

Homelessness experience at any time during the ten years from age 23 to age 33 is only clearly linked with relatively few of the childhood factors identified here. This may in part arise from those who are homeless being less likely to have been interviewed at age 33. The few clear associations which do emerge include contact with the police by age 16 and having a step-parent during childhood for both men and women, housing tenure during childhood for men, and being in care or fostered, being poor, being restless, and having a mother who was not interested in her schooling for women. Remarkably, only three of the twelve childhood factors are significantly related to homelessness for men, of which two are focal variables, and the three most strongly associated factors (of six) for women are the three focal variables.

Men who lived with a step-parent at any of the childhood interviews are much more likely to be homeless after age 23 (odds 2.79:1); women who lived with a divorced parent who remarried during their childhood also experience greater homelessness (odds ratio 1.97:1). Girls who were in care or fostered during childhood are also more likely to be homeless as adults (odds 2.08:1).

Contact with the police before age 16 is also linked to a greater incidence of homelessness later in adulthood: for women, any evidence of such contact raises the odds of homelessness (1.95:1), whilst only men with clear evidence of such contact show higher risk (odds ratio 2.32).

Boys who largely grew up in owner-occupied housing (two or more reports at the three childhood waves) are especially unlikely to report homelessness between ages 23 and 33, with the odds ratio for all other childhood housing tenure experiences being 2.05:1 and 2.42:1 if information on housing tenure is missing at all three childhood waves.

Women with any history of childhood poverty are more likely to be homeless as adults (odds ratio 1.47:1). Girls whose mothers were reported as showing little interest in their schooling on more than one of the childhood waves have increased risk of adult homelessness (odds 1.56:1). Particularly restless girls, with two or more high scores on this scale during childhood also become homeless more frequently (odds 1.68:1). The association of homelessness with childhood anxiety for women is uninterpretable.

Male unemployment: We have only modelled unemployment as an outcome for the men for the reasons outlined

earlier, including the complexities introduced by motherhood and the fact that there was little evidence of clear association of female unemployment with childhood experience. For men, lower maternal interest in their schooling, contact with the police by age 16, having been fostered or in care, and childhood experience of poverty were all associated with higher odds of later unemployment. Thus, three of the four main associations are for the focal variables. Weaker associations appear with educational test scores, housing tenure, and social class of father during childhood.

Boys who were fostered or in care are more likely to have been unemployed in later life (odds 1.76:1), as are those whose mothers were ever recorded as showing little interest in their education (odds 1.46:1), those with any evidence of experiencing childhood poverty (odds 1.41:1), and those for whom there is any evidence of contact with the police by age 16 (odds 1.52:1). Weaker associations with subsequent unemployment include multiple educational test scores in the lowest quartile (odds 1.22:1), no information at any childhood wave on father's interest in schooling (1.24:1), any spell in local authority housing at ages 7, 11, or 16 (odds 1.15:1), and having a father in social class IV or V at any of the three childhood interviews (odds 1.19:1).

12.4 Educational Qualifications

Lack of qualifications at age 33 is, not surprisingly, very powerfully associated with educational performance during childhood for both sexes; but it is also powerfully linked to *paternal* interest in their schooling over and above the massive effects of test scores. Childhood poverty and contact with the police are other strong correlates of a failure to achieve qualifications, as are coming from a more disadvantaged housing tenure background and having a father of lower social status. Poor educational outcomes are also indicated by greater restlessness of boys and by lower social class of origin, lower maternal interest in schooling, and having been in care for the women. Anxious boys were more likely to obtain a qualification of some kind.

The association of lack of qualifications by age 33 with educational test scores during childhood is massive and highly progressive for both men and women. This is hardly surprising and some readers may feel particularly concerned about inclusion of test scores for age 16 in any such model as being almost circular.

We deal with this concern shortly, by re-estimating the models omitting the educational test scores entirely. However, even in the presence of such a powerful predictor, a number of quite powerful associations of lack of qualifications with other childhood factors do emerge and are thus more secure. Even more remarkably, the already strong association with father's interest in schooling emerges as much stronger still once the test scores are removed from the models and this is the only major change in the results between the two models.

Compared with the reference group who had two or three of their combined childhood reading and numerical test scores in the upper quartile, those with no combined test score in the lowest quartile (a large intermediate group) are much more likely to be unqualified at age 33 (odds ratios 6.25:1 for men and 4.31:1 for women); having a score in the lowest quartile on one of the three test scores is even more strongly linked to having no qualifications by age 33 (odds ratios 17.55:1 for men and 14.20:1 for women; two or three lowest quartile scores show a massive excess risk of being unqualified (45.90:1 for men and 26.76:1 for men); lack of any information on test scores is also associated with high incidence of no qualifications compared with the reference group (odds ratios 19.89 for men and 15.73 for women – roughly equivalent to those who recorded one lowest quartile score).

Of more real interest is the very strong association of lack of qualifications with reported levels of father's interest in schooling – the index of the strength of association shown in Table 21 is the highest for any variable (other than educational test scores) on any outcome for both sexes (though rivalled for women by the index for family type for extra-marital births). Any report at one or more of the three childhood waves that the father showed little interest in the child's schooling (by the teachers) is linked to big excess risk of failing to obtain a qualification of any kind (odds ratios 4.34 for men and 3.71 for women) *net of educational test scores*. Fewer than two reports of the father being very interested in his child's schooling, but with no report of little interest, is still associated with an approximate doubling of the risk of the child failing to obtain qualifications by age 33 (odds ratios 2.30:1 for men and 2.04:1 for women). Where there is no report on father's interest in his child's schooling, perhaps either because the teacher was aware of there being no father figure or because the teacher had no evidence of paternal involvement, the child was also at high risk of

not getting qualifications (odds ratios 2.76:1 for men and higher still for women at 3.88). For women, but not for men, there is a further link to mother’s interest in their schooling, with any report of little interest showing a small further excess risk (odds 1.36:1) and multiple reports of little maternal interest being more clearly linked to lack of qualifications for their daughters (odds 2.53:1).

As mentioned above, we have re-estimated our models for educational outcomes omitting all the information about educational test scores and comparison of these models with those shown in Tables 16 to 19 permits an assessment of the changes. What is quite remarkable is that most of the relationships are more or less unchanged: there is a small increase in the association with childhood poverty and with social class of father for men, and with housing tenure for women. But there is a huge increase in the association with paternal interest in schooling, particularly for men, and a big increase in the link to maternal interest in education for women, with a smaller effect also emerging for men. The resulting odds ratios are summarised below:

Odds ratios of no qualifications for parental interest in schooling from models without test scores, backwards selection hierarchical logistic models.

	Parental Interest in schooling		
	Father’s	Mother’s	Both
Men			
2/3 Little interest	11.16	1.51	16.85
1 Little interest	7.13	1.51	10.77
0 Little, 0/1 Very	2.99	1.51	4.51
2/3 Very interested	1.00	1.00	1.00
All missing	5.08	(1.00)	5.08
Women			
2/3 Little interest	6.85	5.27	36.10
1 Little interest	4.64	2.92	13.55
0 Little, 0/1 Very	2.26	1.85	4.18
2/3 Very interested	1.00	1.00	1.00
All missing	4.55	2.60	11.83

Thus we see that father’s interest in schooling has a particularly strong link to whether men obtain qualifications, with an extreme odds ratio of 11.2:1 for the multiple reports of little

paternal interest; this is reinforced somewhat by anything but the highest maternal interest, with odds of 1.51:1. Combining these we obtain an estimate of the odds ratio for a boy with both parents identified by his teachers as showing little interest in his education at more than one of the three childhood waves, where the odds ratio is as high as 16.8:1 ($16.85 = 11.16 * 1.51$). Although paternal interest in their daughter's education is less strongly related to lack of qualifications, with the extreme odds ratio being 6.85:1, the very substantial reinforcement from maternal interest in schooling for girls (odds ratio 5.27:1 for the extreme group), means that the combined effect of parental education is stronger for girls, if both parents show interest at the same level. Where both parents have repeated measures of little interest in their daughter's schooling she is very unlikely to gain any qualification (combined odds ratio of 36.1:1, being $6.85 * 5.27$).

Returning to the results from our original model (shown in Tables 16 to 19), which does include educational test scores and does not otherwise differ dramatically from the model omitting these scores, we also see quite strong links of lack of qualifications to poverty. Boys and girls who were clearly poor are much more likely to get no qualifications (odds ratios 2.80:1 for men and 2.59:1 for women); any other evidence of childhood poverty is also associated with an excess risk of being unqualified (1.45:1 for men and 1.69:1 for women); totally missing information on childhood poverty for men also raises the odds of this outcome (2.79:1). Again, this fairly strong association of lack of qualifications with childhood poverty survives the massive control for educational test scores.

Similarly, clear evidence of contact with the police by age 16 is strongly related to failure to obtain qualifications (odds ratios 3.68:1 for men and 2.43:1 for women); moreover, complete lack of information on contact with the police is also associated with a higher risk of lacking qualifications (odds ratios 2.69:1 for men and 2.30:1 for women); and partial information or some evidence of contact with the police raise the risk somewhat (odds ratios 1.59 for men and 1.39 for women).

There are remarkably few associations of family type to lack of qualifications, though as always girls who were in care or fostered are disadvantaged (odds ratio 2.15:1). For men experience of parental divorce or widow(er)hood during childhood has a

mildly protective direct net effect on lack of qualifications (odds 0.72:1).

Negative educational outcomes are also linked to social class, with the strongest association being with social class of origin for women: if one or more of the grandfathers or the father at birth were in social classes IV or V the odds of having no qualifications are 2.02:1 (compared with only 1.29:1 for their male counterparts); and if two or three were not in non-manual occupations the excess risk of no qualifications for women is 1.63:1. There are further associations with social class of the father during childhood: where the father was in social class IV or V at one or more of the childhood interviews women have odds ratios for no qualifications of 1.42:1 and men of 1.31:1.

Housing tenure is linked to qualification levels, with odds of 1.71:1 for women who were not in owner-occupied housing for at least two of the childhood interviews and of 1.45:1 for men who were in local authority housing at one or more of these interviews. In addition, complete lack of information about housing tenure during childhood for girls is linked to very high risk of no qualifications (odds 3.94:1).

There are also a few linkages to childhood personality measures. In particular, boys with any high score on restlessness have odds of 1.94:1 and the other boys who did not have at least two low restlessness scores are also more likely to be unqualified (odds 1.46:1). Girls who had fewer than two low scores on aggression have fewer qualifications (1.28:1). Boys who were not recorded as having low anxiety scores on two or more childhood interviews are somewhat *more* likely to have gained a qualification (odds 0.77:1).

Degree-level qualifications: A further partition of the educational outcomes involves an examination of the correlates of obtaining degree-level qualifications. Once again, the strongest predictor is educational test scores, although of course the effect is in the opposite direction, as are most associations for positive outcomes. There are also quite strong associations with high qualifications for parental interest in schooling, social class of origin, and housing tenure for both sexes, with childhood poverty also having a clear link to this outcome for men. Some association with high qualification levels is apparent for all but one of the twelve childhood correlates, with the exception being family type, which is unrelated for both sexes. There are fewer significant

childhood factors for women, with none of the three focal variables appearing in the final model and only one of the childhood behavioural measures being associated.

Educational test scores are powerful predictors of achieving degree-level qualifications, with the reference group most likely to succeed and the more disadvantaged groups having progressively lower chances of getting high qualifications. In the text, we shall quote odds ratios for the positive outcomes in the same metric as those for negative outcomes. Thus, for example, the odds ratio for men who had two or more childhood educational test scores in the lowest quartile is shown in Table 18 as 0.0552:1; we shall here convert this to a ratio of 1:18.1, with the reciprocal of the odds ratio for the positive outcome in the second position. The equivalent odds ratio for women is 1:9.09. These are very large effects indeed. Only one lowest quartile test score is associated with odds of 1:6.33 for men and 1:5.92 for women. The remainder who did not obtain more than one test score in the highest quartile are still considerably less likely to get high qualifications (odds ratios 1:3.11 for men and 1:2.68 for women). Complete lack of information on test scores during childhood is also associated with a reduced chance of obtaining degree-level qualifications (odds ratios 1:3.58 for men and 1:7.04 for women).

Father's interest in schooling is again particularly strongly related to educational achievement for men, but also moderately strong for women. Maternal interest is more closely related to high achievement for women, but also associated for men. As with the negative educational outcome of no qualifications, the odds ratios associated with parental interest in schooling sharpen considerably if test scores are removed from the models and these are the most dramatic changes. We do not elaborate this point further here.

For men, the net association with father's interest in schooling is considerable and progressive: those whose fathers were not identified as very interested on more than one occasion, but who were also never identified as showing little interest have reduced odds of educational success of 1:1.29; a single indication of little paternal interest reduces the chances further, to odd of 1:1.73; two or more such indications lead to the lowest chance of achieving degree-level qualifications with an odds ratio of 1:2.97; totally missing reports on paternal interest give odds of 1:1.52. These effects are somewhat reinforced if the mother was not

perceived as being very interested in her son's education at least twice in the childhood waves (odds ratio of 1:1.21). Thus, the extreme combination of both parents showing persistent low interest in a boy's schooling would be linked to very low chances of high qualifications, with a combined odds ratio of 1:3.59 (= 2.97 * 1.21).

For women, the association with achievement of high qualifications is stronger for maternal interest: if any one of the teachers' reports indicate low maternal interest in the daughters' education there is a considerably reduced chance of educational success (odds of 1:2.42); if two or more of these reports do not indicate that the mother is very interested there is still a smaller chance degree-level qualifications for their daughters (odds of 1:1.41). The reinforcement of these associations from paternal interest in education is greater for girls than the secondary effect of maternal interest for boys: if the father was not very interested at two or more childhood waves the reduction in the propensity to get high qualifications is 1:1.67, and 1:1.60 if there is no information concerning father's interest in schooling at any of the childhood interviews. The combined reduction in the odds of achieving educational success for daughters of parents who both showed consistently little interest in their education is 1:4.04.

Both men and women from lower social class backgrounds are less likely to get high qualifications. If more than two of the grandfathers and father about the time of the birth were not in non-manual occupations there is a reduction in the attainment of high qualifications (odds ratios 1:1.58 for men and 1:1:1.47 for women; in addition, where two or more of the immediate male forbears were in social classes IV or V this reduction is still larger for women, with odds of 1:2.01. These associations are further reinforced if the father was in social class IV or V at any of the childhood waves, with odds ratios of 1:1.36 for men and 1:1.39 for women.

Boys who were clearly poor are much less likely to gain educational success (odds of 1:4.31). Boys with clear evidence of contact with the police by age 16 are also less likely to get degree-level qualifications (odds of 1:2.13). Men who were in local authority housing at any of the childhood waves and women who were not in owner-occupied property at more than one of these waves have fewer degrees, with odds ratios of 1:1.58 for men and 1:1.43 for women. There are clear indications of multi-collinearity

between having no childhood information on housing tenure and on personality inventories.

There are also a few significant associations of the propensity to get high qualifications with the childhood personality measures. Any indication of high childhood aggression is linked to lower success (odds ratios 1:1.29 for both men and women). Men who had fewer than two low restlessness scores as children are also less likely to achieve high qualifications (odds 1:1.31). Boys who had fewer than two low measures of childhood anxiety (those who were more anxious) are more likely to achieve degree-level qualifications (odds 1:0.79).

12.5 Income

High income: Being in the top quartile of male earnings or the top quartile of household income for women are both strongly associated with educational test scores in childhood and fairly clearly to social class of origin; parental interest in education and housing tenure are less strongly related to high income for both sexes. None of the focal variables is linked to high male earnings, but childhood poverty has a reasonably strong association for women.

Fewer than two top quartile educational test scores, without any bottom quartile ones, are linked to lower chances of getting high income (odds of 1:1.71 for men and 1:1.64 for women); a single lowest quartile score is associated with a further reduction in propensity to have high income (1:2.92 for men and 1:2.67 for women; for men, having two or more childhood test outcomes in the lowest quartile lowers the odds of high income even more (1:4.08). Missing information on all tests is also linked to lower fractions with high income (odds of 1:3.10 for men and 1:2.08 for women).

Men for whom no more than one of their grandfathers or father at the time of birth was in a non-manual occupation (a group which includes all lower social classes of origin) have odds of 1:1.64 against being in the highest quartile of male earners; women with one or more of these male forbears in social classes IV or V have similar odds (1:1.69) against high income. For men, this association is further reinforced if their father was in social classes IV or V at any of the childhood interviews (odds 1:1.35). There is a further moderate reduction in the propensity to have high income at age 33 linked to having been resident in local authority housing

at any of the childhood waves (odds ratios of 1:1.33 for men and 1:1.24 for women).

Girls who experienced childhood poverty (fairly or clearly poor) are less likely to have high household income as adults (odds ratio 1:1.76) and girls who had at least on high anxiety score also have lower income (odds 1:1.21).

Low income: Turning to the other end of the income spectrum, our final adult outcome and another indicator of disadvantage, we find that educational test scores, father's interest in schooling and childhood poverty are all associated with low income for both sexes, with lower test scores being especially strongly associated for the men. Once more, girls who had been in care or fostering during their childhood emerge as disadvantaged in later life, this time in relation to lower income.

The risk of male earners being in the lowest quartile at age 33 increases progressively with poorer educational test scores during their boyhood, with the odds ratios being 1.80:1 with intermediate test scores, 2.41:1 where one test score was in the lowest quartile and 3.88:1 for men with two or more educational test scores in the lowest quartile. The association is less clear-cut for women's household income, with the odds of low income being 1.70:1 for any who had one to three test scores in the lowest quartile.

Father's interest in schooling also shows a clear, but somewhat weaker association with high male earnings: where the father showed little interest at any time during their childhood the risk of low earnings is higher (odds 1.63:1) and if the dad was otherwise not said to be very interested at two or more childhood waves the odds are 1.33:1. For women, the contrast is for any father who was not reported as being very interested at least twice, with odds of 1.35:1; but this is reinforced where the mother was said to have shown little interest at any of the childhood interviews, with odds of 1.36:1. A complete lack of reports on levels of parental interest in schooling during childhood is linked to higher risk of low income (odds ratios 1.70 for men and 1.69 for women).

Any experience of childhood poverty is also associated with a higher incidence of low income as an adult, with the odds ratios being 1.30:1 for men and 1.47:1 for women, and men for whom no information on childhood poverty exists were at even higher risk of low adult income (odds 1.85:1). This is a further example of

intergenerational continuities, albeit not an especially powerful one.

Men and women who had any of their father or two grandfathers in social classes IV or V have a small increase in incidence of low income (odds of 1.18:1 and 1.20:1 respectively, and men whose father was in these semi-skilled or unskilled occupations for at least two of the childhood waves experience odds of 1.37:1 of being at the low end of the earning spectrum at age 33.

Girls with fewer than two low aggression scores in childhood tend to have lower household incomes at age 33 (odds ratio 1.31), as do boys with one or more high restlessness scores (odds ratio 1.25:1)

13 Discussion

We began this study with the intention of examining the extent to which our three childhood focal variables (experience of poverty, family disruption, and contact with the police) were associated with outcomes in adulthood. We have clearly shown that these focal variables are related to a wide range of such outcomes. But, since we believe that a proper research strategy involves trying to subject hypothesised relationships to serious test, rather than simply suggesting theoretical linkages and then acting as though any simple relationship with the focal variables somehow supports or proves the theory, we have also included a series of wide-ranging control variables, which set about summarising evidence on childhood experiences at ages 7, 11, and 16.

Although not exhaustive, these controls do cover proxies for ability (educational test scores), parental inputs (father's and mother's interest in schooling), sociological structural attributes (social class of origin, social class of father during childhood, and housing tenure), and personality (scores on aggression, anxiety, and restlessness). Along with the three focal variables, which tap into family structure, economic circumstances (poverty), and anti-social behaviour (contact with the police), these constitute a formidable and unusually wide-ranging set of controls and deliberately avoid the trap of disciplinary hegemony.

This wide range of childhood factors may still contain omissions and is certainly imperfect in many respects, but does

make almost complete use of information that was collected in a similar way at each of the childhood waves in the NCDS. There is other, more fragmentary information in some waves (e.g. on truancy at 11 and 16, on parental attitudes at age 16, etc.) which can be brought to bear in subsequent studies.

Similarly, the goal was to examine a wide, but by no means exhaustive, range of adult outcomes, so as to assess how far differing elements of social exclusion in adulthood have common childhood antecedents. These outcomes by age 33 again cover a range of social science domains, including demography (early parenthood, extra-marital births, and repeated cohabitational partnerships), psychology (malaise), social policy (social housing, receipt of benefits, and homelessness), education (high and no qualifications), and economics (high and low income, and male unemployment). There are many other outcomes which could be examined using the NCDS adult waves, including position at age 23, and measures of health or social class at 33 for example, but the range covered here is still quite wide.

Although we have inevitably had to devote considerable space to a discussion of the results for each outcome in turn, the main goal was to seek for commonalities and differences across the range of adult outcomes and answer questions as to how far the various childhood antecedents are linked to the different outcomes, whether some childhood factors are more closely related to particular classes of adult outcomes, and which antecedents are most powerful predictors.

The results do show a remarkable (and perhaps worrying) degree of continuity across the generations and the life-course. There is fairly general evidence of the transmission of social exclusion and disadvantage from parents to their children and from childhood to adulthood, although we remain cautious about inferring any causality from the associations observed. In addition, there are a large number of very specific continuities, where parental or childhood measures relating to a particular domain emerge as clearly linked to outcomes in the same domain. Examples of such continuities include out-of-wedlock births, partnership breakdown, psychological measures, social housing, and low income.

13.1 Missing information and selectivity

The advantage of using and summarising information collected in a similar way at all three main childhood waves is that we can maximise the leverage in terms of using partial information. Many studies using data from longitudinal surveys (and inevitably all for cross-sectional surveys) effectively assume that individuals with missing information are just like those for whom information is available, or else contain a few homilies about possible selection effects. In many respects analyses of longitudinal data are often worse, since some analysts simply include those with full information. As we have indicated earlier, this kind of restriction with the wide range of instruments and information used here would lose something like two-thirds of the full sample. A different approach involves imputation of missing information. One tactic often used is simply to set missing values to the mean: again, our exploratory analyses indicate that such an approach is both naïve and wrong; it is overwhelmingly clear that the omitted respondents in NCDS are selected for disadvantage and we illustrated this for reports on free school meals, making use of the panel nature of the available information. A more sophisticated approach involves imputation of missing values through estimation procedures using information on other variables or at other waves; sometimes this involves elaborate multivariate regressions to produce attrition weights, but can also involve very simple substitution techniques (e.g. if occupational class of the father is missing, take that of the mother at the same interview; if that is missing use information from an earlier interview). We find most of these procedures indefensible: some are clearly biased, many invent data. Our strong preference is to accept the data as they are and to retain indications that information is missing, rather than to selectively throw away individuals or to invent data. In order to do this, we choose to work with all variables as categorical, so that a missing values group can be retained. We thus maximise the sample of individuals who can be included in our analysis, but treat missing information with respect.

We are, however, still faced with a fairly intractable problem from missing information on our adult outcome variables and have only included in each analysis those individuals for whom the relevant outcome information was available. It is clear from the results shown in Tables 5 and 10 that omitted adults are selected for disadvantage. Although we do not show the results here, we

have also examined logistic regression models for exclusion from any of the adult outcomes, which demonstrate that selection into the adult interviews is related to a considerable number of our childhood indicators and that it is the advantaged who are more likely to have been retained in the sample. Dealing further with this issue is difficult, but one of our future goals.

13.2 The focal variables

This analysis was begun, at the inspiration of Kathleen Kiernan, in the light of a number of findings that suggested that family disruption (mainly partnership breakdown) was associated with adverse outcomes in later life, that childhood poverty is both intimately inter-linked with partnership breakdown (well documented in section 7 above) and is also related to several adult outcomes in its own right, and a number of clues that contact with the police during childhood (or ‘crime’) was a precursor to adult exclusion. The initial goal was thus to look at these factors in relation to adult outcomes.

The measurement of these focal variables is not ideal. A thorough assessment of childhood poverty would ideally entail having information on all sources of income (and probably assets too) for all members of the household where the child was resident throughout their childhood and about any spells in institutions. The only income information collected during childhood within the NCDS was at the age 16 interview in 1972, during the disruptions surrounding the three-day week. We have had to rely on much weaker measures of the economic circumstances of childhood, drawing on statements concerning the experience of financial difficulties at ages 7, 11, and 16 and on whether children were getting free school meals. The weakest information is at age 7. These questions are quite often used as simple proxy indicators of poverty, since full income information is notoriously complex to collect and often engenders high levels of non-response.

As a measure of criminal tendencies or delinquency, the information on contact with the police is even less secure. There is a well-known problem in the NCDS that the responses of the parents and of the teachers on this issue when the child was aged 16 do not agree at all well. Moreover, as discussed in Section 5, there are problems in retrieving the universe for whom answers to the generic questions about contact with various services were available. It was thus with some scepticism and trepidation that

we set about synthesising and using this information for use in our models. In view of these problems, it is remarkable that such frequent and clear associations arise with this measure.

The measurement of family type during childhood is also subject to some problems. Some information is missing at some of the childhood waves and this poses additional problems where some of the categories involve sequential events, such as divorce and remarriage. In addition, the information collected at age 7 is again weaker. Sometimes we have been able to identify a spell with a lone-parent but unable to tell how the partnership ended (through breakdown or death); unless there was a clear indication of divorce, we signal this as being in the other one-parent category. Similarly, there are cases where we identify a step-parent but do not know about the nature of breakdown (divorce or widow(er)hood). This is an inevitable problem of relying on four 'snapshots', with some non-response and some retrospective information, to infer partnership history. We chose not to use the additional information collected about parental divorce at age 33, partly because no similar information was available on re-partnership nor in coded form on parental deaths and also because the differing sources were not always consistent.

Despite all of these measurement difficulties, which would generally be expected to attenuate relationships, we find persistent and interpretable relationships for each of the focal childhood measures with many or most of the adult outcomes. This is all the more remarkable in view of the extensive range of control variables used in the analysis. According to our indices of the strength of association summarised in Table 20, these three factors emerge behind educational test scores, as being three of the four next most powerful and consistent correlates of the range of adult outcomes. If we restrict consideration to outcomes where the index of association is one or more, indicative of a reasonably strong relationship, 17 of the 23 sex-outcome combinations are linked to childhood poverty, 16 to contact with the police by age 16, and 14 to family type during childhood. Moreover, quite a few of the exceptions to a clear relationship for the focal variables arise for the two positive outcomes of high income and degree-level qualifications. If we restrict attention to the associations as antecedents of adult disadvantage childhood poverty is clearly linked to 15 out of 19 sex-outcome combinations, contact with the police to 15 of 19, and family type to 14 of 19. This pervasive

association of the focal variables with outcomes which indicate exclusion rather than inclusion is only rivalled by educational test scores among the other nine control variables (with 15 of 19 indices greater than one), with the next most pervasive being father's interest in schooling (8 of 19). Thus, there is a compelling suggestion that our three focal variables each play a role in the genesis of a wide range of aspects of adult social exclusion.

The largest odds ratios for childhood poverty arise in respect to qualifications as an adult: for men, but not women, the clearly poor group have extremely low odds of obtaining high qualifications (1:4.31); and being clearly poor is also highly related to lack of qualifications for both sexes (odds ratios 2.80:1 for men and 2.59 for women), with less extreme childhood poverty also linked to being unqualified. Most of the remaining significant associations of adult outcomes to childhood poverty become of consequence because they have an effect from a lower poverty threshold, typically for any positive indication of childhood poverty, but sometimes for the fairly or clearly poor groups combined. Once again, this indicates the benefits of creating gradations of poverty experience and retaining partially missing information.

In general the odds ratios associated with contact with the police are larger than those for childhood poverty, but cover fewer groups and, for the women, smaller fractions of the population. The largest odds ratios for contact with the police for both sexes again arise in the model for lack of qualifications when there was clear evidence of contact with the police by age 16 (3.68:1 for men and 2.43:1 for women), closely followed by the odds for the groups where no information on contact with the police was available from the interviews at age 16 (2.69:1 for men and 2.30 for women). But there are a number of other large associations of contact with the police to adult outcomes, with individual odds ratios in excess of 2:1: early parenthood and homelessness for men and early motherhood, social housing, and receipt of benefits for women. Many other odds ratios for contact with the police are close to two to one. Once again, there are many adult outcomes where the association with the measure of contact with the police covers a wider group, including the some evidence category as well as the clear evidence group and finding no statistically significant difference between these two groups.

Most of the categories of the summary family type variable contain relatively small percentages of the respondents (recall Table 5), partly because partnership dissolution was relatively infrequent before 1974 (when the survey members reached age 16). Moreover, family type is different from all our other variables in that there is no natural ordering to the categories, so that we could not simply create hierarchical dummy variables. The combinations that we did identify were a combined divorced group which disregarded remarriage, and a combined remarriage or step-family group, with the categories then completed by identifying the divorced and remarried.

Girls who were in care or fostered were particularly likely to have had extra-marital births (odds 3.74:1), three or more live-in partnerships (odds 3.32:1), and become teenage mothers (odds 2.44:1), and have odds of about two to one of experiencing several other negative adult outcomes (homelessness, lack of qualifications, and low household income). In fact, the lowest odds ratio for any negative adult outcome (all of which are statistically significant) for women who were fostered or in care as girls was 1.60:1 for malaise. Boys seem less vulnerable to negative consequences of care or fostering, though significant and fairly large effects emerge for adult malaise, social housing, and unemployment. This gender difference in the effects of care as an antecedent to adult exclusion is dramatic.

The largest odds ratio for having been born out-of-wedlock arises in connection with having extra-marital births for both men and women (odds 2.46:1 for women and 2.01 for men). But fairly large excess risks from being an extra-marital birth oneself also arise for the propensity to be in social housing for both sexes and for teenage motherhood and multiple partnerships for women.

For the remaining groups, covering partnership dissolution (through death or divorce) and reconstitution, a few particularly high excess risks merit reiteration. Both men and women who experienced parental divorce are much more likely themselves to have had multiple cohabitational partnerships (odds ratios 3.23:1 for men and 2.30:1 for women). Sons who were living with a step-parent at some time during their childhood are much more likely to have been homeless between ages 23 and 33 (odds 2.79:1) as are daughters who lived with a step-parent following parental divorce (odds 1.97:1). Sons (but not daughters) who lived with a step-

parent following parental divorce are also much more likely to have had extra-marital births (odds 2.70:1).

The associations of family type with adult outcomes are more complex than for most other variables, at least in part because the patterns are more complex and less hierarchical. The linkages are strongest for the three demographic outcomes (but weaker for early fatherhood) and homelessness, with social housing also being moderately large. But care or fostering have profound, pervasive and lasting negative consequences for girls.

13.3 The control variables

Although the control variables were not the prime focus of this study, many of the associations that emerged with outcomes in adulthood are of considerable interest in their own right. For purposes of this discussion, we only wish to recall the most powerful associations and a few other interesting intergenerational or life-course associations.

Inevitably, we begin by emphasising the huge and pervasive strength of the association of educational test scores during childhood with outcomes in adulthood. In the immediately preceding discussion of the focal variables we have highlighted odds ratios that were relatively large, exceeding two, or sometimes three, to one. By this criterion, the odds ratios in our final models for the test scores are often large. It is, of course, unsurprising that the association with educational outcomes is massive and progressive. But there are several other outcomes where the odds ratios for one or more of the categories of educational test scores exceed two to one (or one to two for high income): early parenthood, malaise, social housing, receipt of benefits and high income for both men and women; and low earnings for men.

Father's interest in schooling is a particularly powerful and progressive predictor of lack of qualifications (highest odds for men 4.34:1 and for women 3.71:1), and quite strongly reinforced by measures of maternal interest for women (odds 2.53:1), but not men. As we showed earlier, these associations become much sharper still if the educational test scores are removed from the models. Quite large odds ratios (two to one or greater) are also evident for parental interest in schooling in connection with degree-level qualifications and extra-marital births, though switching between paternal and maternal interest by gender.

Relatively large associations with the structural variables of social class (of origin or of father during childhood) and housing tenure, with odds ratios of two to one or higher, emerge fairly infrequently. For women, these large odds only occur for social class of origin in relation to both educational outcomes (inverse for high qualifications); for men there are particularly large odds ratios for social class of father during childhood on early fatherhood and social housing, and of housing tenure on the two housing outcomes of social housing and homelessness.

Perhaps because of the personality measures used being based on inventories of very few items and therefore not having high reliability, or possibly because personality effects are weaker, we do not see a single example of the odds ratio exceeding two to one for any of our three childhood behavioural scores (except for complete lack of information on these inventories). The biggest associations are for aggressive girls, who are quite a bit more likely to have had a teenage birth and to have had multiple partnerships, and for restless boys who are quite likely to have failed educationally.

Childhood anxiety possesses some interesting features, since it has significant protective effects on some negative outcomes but increases the risks for others. Anxious boys and girls are more likely to experience adult malaise, but anxious boys are less likely to have become young parents, to have had extra-marital births, and to be unqualified; moreover, anxious boys are more likely to have degree-level qualifications.

14 Conclusion

Our review of the most extreme associations found, net of all the other childhood factors, makes it tempting to propound a generational or life-course determinism, since so many of the most plausible linkages (those that scholars from less empiricist disciplines than my own one of demography would claim had theoretical justification) do appear quite regularly among the strongest predictors. Let us sketch this case a little further (for brevity we replace the careful 'contact with the police by age 16' with 'delinquency'):

- ❖ Poorly socialised girls appear more likely to become young mothers (contact with the police, in care/ fostering or born

out-of-wedlock, aggressive, low performance on educational tests, and lacking maternal interest in schooling are the factors with the highest odds). Young fathers are quite likely to have had contact with the police, to come from a lower social class, and to have performed poorly at school.

- ❖ Extra-marital births are more frequent for children of either sex who were themselves born out-of-wedlock, for girls who were in care or fostered and, to a lesser extent and less consistently, for men and women who experienced post-birth family disruption; there is also a heightened risk for those of either sex whose parents were less interested in their schooling and who had been in contact with the police.
- ❖ Multiple partnerships are particularly common for men and women who had experienced parental divorce during their childhood, for 'delinquents' who had childhood contact with the police and for aggressive men.
- ❖ Adult malaise is more common for anxious children, those with poor educational performance as a child, delinquent girls, children who were in care, poor children, and aggressive and restless males.
- ❖ Being in social housing as an adult is strongly associated with being in local authority housing as a child, coming from a lower social class background, poor performance on educational tests, being poor, and delinquent.
- ❖ Dependence on benefits in adulthood is linked to poor educational testing as a child, poverty and delinquency.
- ❖ Adult homelessness is most common among those with step-parents in childhood, but also for delinquents, girls who were poor or in care, and boys who were not sons of owner-occupiers.
- ❖ Boys who were delinquent, poor, in care, or had mothers who were not interested in their schooling are more likely to have been unemployed as adults.
- ❖ Educational failure is increased by lack of parental interest in schooling, by childhood poverty, and by delinquency; girls who were in care or from lower social class of origin, and boys who were fidgety or restless also fail educationally.
- ❖ Educational success is unlikely for children from the lower social classes, or whose parents are uninterested in their schooling, or who were aggressive; very poor and

delinquent boys are also much less likely to achieve degree-level qualifications.

- ❖ Low income in adulthood is related to poor performance at school and lack of paternal interest in schooling, more sharply for men; and, to a lesser extent, to childhood poverty for both sexes. Conversely, failure to achieve high income is also linked to poor school performance, lower parental interest in education, and a lower social class of origin.

Thus, there is little doubt that social exclusion, as captured by the adult outcomes and childhood factors used here, is transmitted across the generations and through the life-course. There is also little doubt that there are a large number of very specific continuities from childhood experience into adulthood.

But it is essential to emphasise that all of these associations captured here are just aggregate tendencies and in no sense determinist. Specific and general disadvantage during childhood is echoed in adulthood in specific and general forms. The predictive power of our models is hard to measure, but the pseudo R-squared statistics shown in Appendix Table A.1 serve to emphasise that our models do not capture all of the variation. We can never expect perfect prediction of binary adult outcomes and thus 100 per cent is an unattainable goal in such models. This point is well illustrated by the models for educational outcomes: clearly we would expect educational test scores to be pretty powerful predictors of qualification outcomes and the fitted odds ratios confirm this supposition. However, the pseudo R-squared measures for these models are only about 30 per cent for no qualifications and 20 per cent for degree-level ones; these reduce to just over 20 per cent and about 15 per cent respectively once educational test scores are removed from the models. A number of the models clearly capture only a small part of the variation across individuals (particularly for multiple partners, homelessness, and male unemployment, where this fraction is less than five per cent).

Thus, there is huge scope for many, if not most, individuals to escape from the patterns and tendencies observed. An important potential area for further research is to examine more closely the characteristics of individuals who escape the general tendencies. Such work will involve much more detailed examination of individual records and of clusters and combinations of childhood factors (and intervening experience during adulthood) than has so far been possible.

Another open question arises with respect to whether the timing of particular forms of disadvantage during childhood is crucial or at least further aids the understanding of how people reach adult outcomes. This study of pathways is again more complex and raises greater difficulties with respect to missing information.

Despite the general, but not complete, causal priority of our explanatory variables both in time and in their measurement, we remain cautious about attaching causality to the associations observed, regardless of the plausibility of the links. Without a much more thorough understanding of pathways and protective factors it is extremely unwise to jump to facile policy implications from this work. The problems studied here have been the focus of much social policy and governmental intervention over the years. Just to give one interpretational difficulty, let us look at education.

Everyone agrees that improving the effectiveness of schooling is an important and desirable goal. But there are a number of possible policy levers which may have differing appeals to differing political persuasions: increasing parental interest in schooling; a sub-theme for some would then be to try to prevent family disruption and retain interested fathers, and for others would be to accept family breakdown but intervene to keep both parents more engaged. Making education super-efficient may also fail to prevent some of the associations examined here. Since all of our educational test scores are relative, dividing the scores into quartiles, it is clear that this distribution cannot change very much. Indeed, it is quite likely that the differentials would sharpen rather than reduce with greater educational efficiency, since sorting on potential would become more efficient.

What is overwhelmingly clear from this work is the extent and pervasiveness of both specific and general continuities across the generations and across the life-course in the transmission of aspects of social exclusion. Interpretation depends heavily on assumptions about causality, on debates about nature versus nurture, and on debates about structural constraints and individual opportunity. It is hardly surprising that we have not answered such thorny questions.

Appendix Table A.1: Model chi-squared statistics (and degrees of freedom) and pseudo R² for the initial and final backwards selection logistic models for each outcome variable

Outcome	Initial model (only focal variables)		Final model (focal and control variables)			
	Males	Females	Males		Females	
	Chi ² (df)	Chi ² (df)	Chi ² (df)	Ps-R ²	Chi ² (df)	Ps-R ²
Young father/Teenage mother	118 (5)	244 (7)	322 (14)	9.7	552 (17)	13.5
Extra-marital birth	98 (5)	207 (11)	193 (15)	6.1	336 (15)	8.2
Three or more partners	43 (3)	42 (5)	73 (8)	3.9	66 (7)	3.6
Malaise	86 (5)	142 (6)	159 (12)	5.7	300 (16)	7.0
Social housing	282 (7)	325 (8)	619 (17)	15.7	792 (21)	16.0
Any benefits	132 (5)	167 (6)	306 (12)	6.8	398 (15)	6.8
Ever homeless	36 (3)	35 (4)	50 (4)	2.9	53 (8)	2.7
No qualifications	421 (9)	443 (8)	1133 (20)	29.2	1417 (21)	30.9
Degree-level qualifications	303 (9)	172 (7)	1419 (19)	21.8	1220 (14)	19.1
Top quartile male earnings/ Household income for females	48 (2)	75 (5)	392 (9)	7.4	311 (15)	7.1
Lowest quartile male earnings/ Household income for females	90 (3)	115 (5)	343 (11)	6.5	268 (10)	5.9
Ever unemployed	141 (4)	---	213 (9)	3.2	---	---

References

- Brown, M. and Madge, N. (1982) *Despite the Welfare State: A Report on the SSRC/DHSS Programme of Research into Transmitted Deprivation*. SSRC/DHSS Studies in Deprivation and Disadvantage. London: Heinemann Educational Books.
- Chase-Lansdale, P.L. and Brooks-Gunn, J. (eds.) (1995) *Escape from Poverty: What Makes a Difference for Children?* Cambridge: Cambridge University Press.
- Chase-Lansdale, P. L., Cherlin, A. and Kiernan, K.E. (1995) "The long-term effects of parental divorce on the mental health of young adults: a developmental perspective", *Journal of Child Development*, 66: 1614-34.
- Cherlin, A., Furstenberg Jnr., F.F., Chase-Lansdale, P. L., Kiernan, K. E., Robins, P., Morrison, D.R. and Teitler, J. O. (1991) "Longitudinal Studies of Effects of Divorce on Children in Great Britain and the United States", *Science*, 252 (June): 1386-89
- Cherlin, A., Kiernan, K.E. and Chase-Lansdale, P.L. (1995) "Parental divorce in childhood and demographic outcomes in young adulthood", *Demography*, 32: 299-318
- Duncan, G.J. and Brooks-Gunn, J. (eds.) (1997) *Consequences of Growing Up Poor*. New York: Russell Sage Foundation.
- Farrington, D.P. and West, D.J. (1990) "The Cambridge study in delinquent development: A long-term follow-up of 411 London males", in G. Kaiser and H.-J. Kerner (eds.) *Criminality, Personality, Behaviour, Life History*. New York and Berlin: Springer-Verlag.
- Ferri, E. (ed.) (1993) *Life at 33: The fifth follow-up of the National Child Development Study*. London: National Children's Bureau.
- Fogelman, K. (ed.) (1983) *Growing up in Great Britain: Papers from the National Child Development Study*. London: Macmillan Press.
- Kiernan, K.E. (1986) "Teenage marriage and marital breakdown: a longitudinal study", *Population Studies*, 40.

- Kiernan, K.E. (1992) "The Impact of Family Disruption in Childhood on Transitions Made in Young Adult Life", *Population Studies*, 46(2): 213-34.
- Kiernan, K.E. (1995) *Transition to parenthood: Young mothers, young fathers: associated factors and later life experiences*, Discussion Paper WSP/113, London School of Economics: STICERD.
- Kiernan, K.E. (1996) "Lone-motherhood, employment and outcomes for children", *International Journal of Law, Policy and the Family*, 3(3): 233-49.
- Kiernan, K.E. (1997) *Becoming a Young Parent: A longitudinal study of associated factors*. British Journal of Sociology
- Kiernan, K.E. and Mueller, G. (1998) *Who are the divorced and Who Divorces?* CASEpaper 7, London School of Economics: ESRC Centre for the Analysis of Social Exclusion.
- McLanahan, S. and Sandefur, G. (1994) *Growing up with a Single Parent*. London: Harvard University Press.
- Machin, S. (1998) "Childhood disadvantage and intergenerational transmissions of economic status", in A.B. Atkinson and J. Hills (eds.) *Exclusion, Employment and Opportunity*. CASEpaper 4, London School of Economics: ESRC Centre for Analysis of Social Exclusion.
- Mayer, S.E. (1997) *What Money Can't Buy: Family Incomes and Children's Life Chances*. Cambridge and London: Harvard University Press.
- Richman, N. (1978) "Depression in mothers of young children", *Journal of the Royal Society of Medicine*, 71: 489-93
- Rutter, M., Tizard, J. and Whitmore, K. (1970) *Education, Health and Behaviour*. London: Longman.
- Rutter, M., Tizard, J. and Graham, P. (1976) "Isle of Wight Studies: 1964-1974", *Psychological Medicine*, 16: 689-700.
- Sampson, R.J. and Laub, J.H. (1993) *Crime in the Making: Pathways and Turning Points Through Life*. Cambridge and London: Harvard University Press.

- Shepherd, P. (1985) *The National Child Development Study: An introduction to the background to the study and methods of data collection*, Working Paper No.1, City University: NCDS User Support Group.
- Utting, D., Bright, J. and Henricson, C. (1993) *Crime and the Family: Improving Child-rearing and Preventing Delinquency*, Occasional Paper 16, London: Family Policy Studies Centre.
- Wadsworth, M. (1979) *The Roots of Delinquency*. London: Martin Robertson.
- West, D.J. (1982) *Delinquency: Its Roots, Careers and Prospects*. Heinemann.