Intergenerational and Life-Course Transmission of Social Exclusion in the 1970 British Cohort Study

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Editorial Note

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Abstract

This study used data from the British Cohort Study to examine the relationships between childhood background experiences and a variety of indicators of adult well-being. Similar to an earlier study that analyses the National Child Development Study, we use a rich array of childhood background information and examine the associations for men and women separately. Similar to findings for the earlier cohort, there is evidence of inter-generational transmission of certain outcomes. Cohort members who lived in social housing as children are more likely to live in social housing as adults. Those with fathers who were manually employed are more likely to be manually employed themselves, and those whose families were poor are more likely to have low incomes. Academic test scores and parental housing tenure stand out as two of the strongest and most consistent correlates of adult disadvantage. For males, in particular, evidence of childhood aggression is also a consistent and fairly strong predictor of poor outcomes.

JEL number: I30, J10
Key words: Disadvantage, social exclusion, longitudinal, inter-generational

1. Introduction

This paper uses data from the 1970 British Cohort Study (BCS70), to identify the links between social exclusion at age 30 and earlier, childhood experiences. We are particularly interested in exploring the extent to which disadvantage is transmitted across generations and continues over the life course. In addition, we identify the set of childhood factors that have a strong and generalised effect on poor adult outcomes, and highlight the gendered pathways that emerge. Our study follows closely an earlier study carried out by Hobcraft (1998) using data from the National Child Development Study (NCDS) – a similar longitudinal study that followed a cohort born in 1958. By comparing our results to those reported in the previous (but only similar) study, we can tentatively ask whether the same sets of childhood antecedents are strongly and persistently associated with adult outcomes, at roughly the same age, at two different points in time.

Although Hobcraft's (1998) study set apart three focal variables – family experience, childhood poverty and contact with the police – as being the prime focus of his analysis, in this paper we abandon that primary aim. Here, we are more interested in identifying the strongest and most persistent associations and comparing the patterns we find with those of the earlier study. Because the sets of variables and the measurement of them differ to some extent between the two studies, any contrasts and similarities we find must be understood as tentative.

We begin in the next section with a brief description of the data and an overview of some of its limitations. We then go on to present the outcome and control variables that we use in this analysis, highlighting the ways in which our outcomes and control variables differ from those used in Hobcraft's (1998) analysis of the 1958 cohort. Next, we present two sets of final models resulting from a backward stepwise elimination algorithm – the first employs a stringent significance threshold while the latter allows more variables to be retained. Using these results we discuss the final models for each outcome (by sex) separately, and then go on to discuss which variables are most frequently retained.

2. The British Cohort Study

The BCS70 is a longitudinal study that has attempted to follow the lives of over 16,000 people who were born during one week in April 1970. The survey was originally designed to study perinatal mortality and the provision of ante- and post-natal services. Over time, it has expanded in focus to include a broad range of socio-economic, demographic, health and attitudinal measures (Despotiduou & Shepherd 1998). The study interviewed the mothers of the cohort shortly after birth, and follow-up interviews were conducted at ages five, 10, 16, 26,

and, in 2000, at age 30. The age 26 interview was administered via a short postal survey, and, consequently, the content, response rates and data quality were poorer than the data collected by face to face interviews. For this reason, we exclude data from the age 26 interview and focus on adult outcomes at age 30 only. The age 5, 10 and 16 waves include, in addition to the original birth cohort, any children who were born outside of the country during the reference week but were, at later ages, identified from school registers.

Interviews were conducted with 17,197 mothers in 1970, 16,955 of whom had given birth to a child that was alive at the time of interview. At age 30, the response rate – defined as the number of achieved interviews divided by the initial sample of cohort members – was 69.9% (Collins, Deepchand, Fitzgerald, Perry, Bynner, Butler, Ferri, Shepard, and Smith, 2001).[1] Just over 40% of the initial sample were interviewed in all of the childhood waves up to age 16 and at age 30. Moreover, even when interviews did take place, there is often a good deal of missing information, so the proportion of the original cohort with complete information is even lower than 40%. Comparisons show that the achieved samples do not differ a great deal from other survey samples of the British population although there is a slight under-representation of the most disadvantaged groups (Shepherd, 1997). The bias resulting from under-representation should be attenuated in this application where we include a broad range of controls and attempt to make full use of the childhood information available, incorporating missing information in our construction of childhood summary variables. Hence, only those individuals who are missing information on outcome variables at age 30 are deleted from the sample.

3. Outcome Measures

We consider 16 adult outcomes for men and 17 for women. These fall roughly into four broadly defined areas: demographic, economic, physical and mental health, and criminal behaviour. All of the outcomes are measured as indicator variables, and their frequencies, broken down by sex, are presented in Table 1.

We examine three demographic outcomes for men and four demographic outcomes for women. The first three are related to the context of the cohort member's first live birth: young parenthood and two measures of the cohort member's relationship status at the time of birth. Young parenthood is defined as having had a first birth prior to age 22 for men and prior to age 20 for

[1] By the age 30 interview, 1.6% of cohort members were classified as permanent or proxy refusals, 1.2% had emigrated so were not contacted for interview, and 0.6% had died. These individuals (along with a small number who were found to have a birthday outside of the survey reference week) are not included as part of the initial sample in the calculation of the response rate (Collins et al, 2001).

women. In their analysis of women born in 1958, Hobcraft and Kiernan (2001) found early motherhood to be strongly associated with a range of indicators of social exclusion later in life, including living in social housing, receiving non-universal benefits, having no qualifications, and having low household income. In addition, we consider whether the cohort member was unmarried or living outside of a partnership when his or her first child was born. Although Hobraft (1998) only considered extra-marital births in his study of the 1958 cohort, the increasing prevalence and acceptability of parenthood within cohabiting unions motivated us to examine both extra-marital and non-union births. For women only, we also consider whether the cohort member reports ever having spent time as a lone parent. We could not examine this same outcome for men because the percentage experiencing lone parenthood was too small (59 fathers, or just over 1%).

Table 1: Outcome variables used and proportions experiencing each outcome by sex

Outcomes (by/at age 30)	Percent experiencing		Number of cases	
	Males	Females	Males	Females
Young father/teenage mother	7.0	9.9	5392	5742
Extra-marital birth	19.8	25.5	5392	5742
Non-union birth	6.5	10.8	5392	5742
Ever lone parent		16.9		5677
Social housing	12.2	16.8	5320	5698
Any benefits	12.1	20.1	5387	5729
Ever homeless since age 16	6.2	7.6	4715	5435
No qualifications	11.7	12.8	5364	5713
Lowest earnings quartile own earnings for men, own + partner's for women	24.9	25.0	4715	5106
Social Class IV or V	12.8	13.5	4776	4209
Currently unemployed	4.4	2.1	5384	5725
Ever used drugs (not cannabis)	45.0	27.0	5323	5672
Smokes every day	31.9	26.8	5375	5720
Long term illness limits work	8.6	8.4	5375	5713
Malaise	14.2	19.8	5323	5677
General health questionnaire	28.0	37.4	5325	5677
Ever arrested and taken to station	30.0	5.7	5324	5674

Economic instability and deprivation is measured with seven indicators that cover both labour market-related, economic risk and poor economic outcomes. We measure economic risk in the labour market with an indicator

that equals one if, by age 30, the cohort member has attained no academic or vocational qualifications, whether the cohort member has an earned income in the bottom quartile of the distribution, whether the cohort member has a low social class, and whether the cohort member is unemployed at age 30. Indicators for poor economic outcomes and the welfare position of the cohort member include whether the cohort member lives in social housing, is in receipt of means tested benefits, or has ever been homeless. Because some women in partnerships choose to work in the home for periods of time and have no own earnings to report, we consider own earnings for men and family earnings for women – that is the combined earnings of a woman and her co-resident partner (if she has a partner). While we cannot assume that partners pool their income, family earnings does provide a better indicator of potential well-being for women who are likely to have more sporadic labour market participation. We measure low income as being in the bottom quartile of male earnings for men, and being in the bottom quartile of family earnings for women. Women who are outside of partnerships are likely to have lower earned income than those who have working partners. For this reason, the earnings outcome variable for women may reflect, to some extent, family composition as well as low earnings.
Indicators of physical and mental health include both behavioural risk and health outcomes. Health risks include current smoking behaviour along with ever having used an illegal substance other than cannabis. In addition, we examine three health outcomes. The first indicates the presence of a condition that limits a cohort member's ability to work. Two additional health outcomes are indicators of poor mental health measured using both the Malaise Inventory and the 12-item General Health Questionnaire (GHQ-12). The Malaise Inventory, designed by Rutter et al (1970) is a 24-item battery of questions designed to identify those individuals at high risk of depression. The items cover a range of symptoms associated with depression, and, similar to previous work, we classify those individuals answering yes to at least seven of the 24 items as being at high risk of depression (Richman, 1978; Rutter et al 1976). The GHQ-12 is a self-administered questionnaire designed to identify recent experience of poor mental health. Both the Malaise Inventory and the GHQ-12 cover similar types of symptoms including depression, anxiety, and psycho-social dysfunction, but the GHQ-12 covers recent deviations from an individual-defined, usual state. Unlike the Malaise Inventory that asks individuals whether they are or are not experiencing the symptoms, respondents to the GHQ-12 are asked to state whether they are experiencing the symptom "much less than usual", "less than usual", "the same as usual" or "more than usual". We score the GHQ-12 responses using the Lickert method that assigns each response a value from zero to three, with zero indicating better well-being than usual and three indicating less well-being than usual. Relying on the

recommendation of the World Health Organization, we use a score of 12 or higher to indicate short-term mental health problems (WHO,1997).[2]

In the age 30 interview, respondents are asked a series of questions about any contact with the police that they have had since April 1986. In our analysis we include one of the more extreme indicators of contact: whether the respondent reports ever having been arrested and taken to the police station.[3]

4. Control Variables

The BCS70 data are similar in design and content to the earlier National Child Development Study (NCDS), and many of the difficulties discussed in Hobcraft (1998) apply to these data as well. A substantial proportion of cohort members were not interviewed at all ages, and even among those who were interviewed, there is often a good deal of missing information and item non-response. The latter problem is exacerbated by the fact that each childhood wave attempted to collect information from a variety of individuals including health visitors, classroom and head teachers, and Local Authority medical officers. In addition to information collected in surveys, throughout the years (but not necessarily in each wave), data collectors sought to compile information on each cohort member from health and academic records, to have administered a battery of academic tests, and to have medical examinations conducted. The variety of sources contributes substantially to the richness of the data but also increases the probability that there will be gaps in the available information due to non-response even among those children who were successfully traced and interviewed.

Because attrition and non-response appear to be non-random, restricting our sample to those cohort members with complete information could result in serious sample selection issues. Similarly, setting missing values to the respective sample mean for that variable is likely to introduce bias. Following

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[2] It has been recommended that a threshold of 12 be used for screening purposes and that the total GHQ-12 score be used for survey work (http://www.nfer-nelson.co.uk/ghq/scorlik.htm). Because all other outcomes we consider are dichotomous, we use the screening threshold to define those individuals experiencing short-term mental health fluctuations.

[3] Other questions ask whether the respondent has ever been moved on by the police, let off with a warning, stopped and questioned, formally cautioned by a police officer, or found guilty in court. We chose to examine having been arrested and taken to the station because we thought it most indicative of having committed a serious crime and not just a minor traffic violation or misdemeanour. We ran our models on two other indicators of contact with police (having been stopped and questioned and having been found guilty in court), and the pattern of significant associations was similar.

Hobcraft (1998), we explicitly code missing values for each explanatory variable. This maximizes our sample and allows us to assess whether missing information is, in any way, informative.[4] Because most of our explanatory variables summarise information collected at various points in time and because we wanted to exploit as much real information as possible, for each summary variable, only those individuals with no information at all were classified as missing. Those with at least some information were coded into categories that were constructed with some allowance for missing information. This strategy does probably result in some level of measurement error, but it appears to be the best option we have for dealing with the complexities and limitations of the data at hand.

Our explanatory variables correspond closely, in both content and construction, to the explanatory variables used in Hobcraft's (1998) analysis of the 1958 NCDS cohort. We include a variety of measures that summarise the cohort member's childhood experiences. Unlike Hobcraft's (1998) analysis, we do not introduce contact with the police as one of our control variables, however. In the BCS70 data, approximately 80% of the respondents have missing information regarding contact with the police by age 16. We believed this level of missing information was intolerably high, and therefore excluded that variable from our analysis. We also include two different measures that summarise experience of childhood poverty. Unfortunately, there was no information on economic well-being collected at age 5, so to construct both poverty measures, we use information provided at ages 10 and 16 only. Our first measure of childhood poverty uses indicators of poverty including receipt of free school meals at age 10, receipt of income support or unemployment benefits at age 10, and self-assessed financial hardship at age 16. A second poverty measure uses reported family income at ages 10 and 16. At both ages, income is reported in fairly wide bands, making it difficult to equivalise income in order to control for household size. For this reason, we choose a somewhat low, unequivalised level of income and define poor households as those earning, regardless of household size, less than £50 and £100 per week at age 10 and age 16, respectively. Summary statistics for these measures are presented in Table 2.

The poverty summary variables are constructed according to the number of times the variables indicate that the cohort member's family was (or was not) experiencing poverty as identified by the indicator variables. Each contains five categories. To construct the poverty indicator summary, those cohort members with no positive responses to any of the three indicator questions and no more than one missing value comprise the first, not poor category. Those with one

[4] There are 111 individuals who were interviewed at age 30 but could not be merged with any childhood information. This group was not included in the analysis.

negative response and two missing values form a second category. A third category includes those with one poverty indicator. The fourth category includes those with the most evidence of childhood poverty – two or three poverty indicators – and the fifth category contains those with missing values for all three childhood poverty indicators.

Table 2: Basic information on childhood poverty measures (per cent, base = 18,606)

	Childhood poverty indicators			Low income measures	
	Free school meals at age 10	**Income Support or benefits, age 10 unemployment**	**Financial hardship age 16**	**Gross income less than £50/wk, age 10**	**Gross income Less than £100/wk, age 16**
Yes	12	5	8	5	8
No	65	54	55	62	31
Don't Know	0	0	1	--	5
Missing	23	41	38	33	57

In the case of the income indicator, those with two income measures above our age-specific thresholds form the first category. Those with one income measure above the threshold and one missing value form the second, probably not poor, category, while those with one income below its threshold forms the third category. Those with two income variables falling below the threshold are in the fourth, clearly poor, category, while those with missing values for both income variables form the final category.

A variable summarising family structure compiles information collected on the mother's marital status at birth along with the information identifying the child's mother-figure and father-figure at ages 5, 10, and 16. Choices include natural parent, adoptive parent, stepparent, foster parent, grandparent, elder sibling, natural parent's cohabiting partner, other, and no mother/father figure. Additionally, at age 16, survey respondents (usually the mother) were asked to recall who the child's mother-figure and father-figure were at ages 0, 5, 10, and 16. Consequently, when information at previous waves is missing, we can fill in missing items with age 16 data to provide a more complete picture of the child's family history. In addition, at the age 5, 10 and 16 interviews, respondents are asked whether the child had ever been placed in foster care or local authority care. These questions were used to create a "family structure" variable at ages 5, 10, and 16.

At each age, the family structure categories included, in addition to a missing category, living with both natural parents, with at least one adoptive parent, with foster parents or in care, with a divorced or separated parent, with a widowed parent, in other one parent families (those who are observed living

with only one parent but have no information on why their circumstances have changed) and with a remarried parent. Because there are so few instances where children were recorded as living with their natural father and not their natural mother, categories that identify children living with only one natural parent do not distinguish between those living with their natural mother or their natural father. These family structure variables, along with the mother's marital status at birth are presented in Table 3.

Table 3: Basic information on family type at ages 0,5,10,16 (per cent, base = 18606)

	Marital status at birth		**Family type at age 5**	**Family type at age 10**	**Family type at age 16**
Married	85.5	Both Natural	63.7	60.6	38.5
Divorced/Separated	1.6	One or both adoptive	0.8	1.3	0.8
Single	5.1	Care or fostering	0.3	0.4	0.2
Widowed	0.1	Divorced/separated	1.4	5.8	5.2
Missing	7.7	Widow/widower	0.4	1.0	1.4
		One parent other/unknown	3.0	1.1	1.0
		Remarried	1.1	3.6	3.9
		Missing	29.4	26.3	49.1
Total	100		100	100	100

Compared to members of the 1958 cohort, the BCS data has a larger missing category at each of the childhood waves, with the largest difference at age 16 where nearly half of BCS cohort members lack information on their family structure (at age 16, 37% of NCDS cohort members were missing information on this variable). Among those with information on family structure, there are slightly fewer 1970 cohort members living with both natural parents compared to the NCDS data. At age 16, 75.6% of BCS cohort members with information on their family structure are living with both natural parents compared to 81.7% of NCDS cohort members. Finally, as might be expected from the higher rate of divorce, a higher percentage of BCS members were recorded as living in stepfamilies, especially at older ages.

The information on family structure at ages 5, 10 and 16 was combined with mother's marital status at birth to create a variable that summarises the cohort member's family experiences. We first created one category for those children who had no father present at the time of birth and another for those who had ever lived in a care setting prior to age 16. Among the remaining cohort members, we first identify those children for whom we have information on family structure at all ages and, at each age, the cohort member was living

with both natural parents. A second category identifies those children with some missing information at some childhood wave, but all available information, including retrospective information (if it was) collected at age 16, indicates that the cohort member was living with both natural parents. [5] Because the baseline survey did not ask unmarried mothers whether or not they were living with their baby's father at the time of birth, we have to infer that cohort members were living with both natural parents at birth either by evidence of continuity (ie they were living with both natural parents at age five) or by information provided at later interviews about date of separation from the natural father.[6] Consequently, these two categories also include children born to unmarried mothers but who were reported to be living with both natural parents at all other ages (the first category) or at all other ages for which information is available (the second category). A third category identifies those families with evidence of divorce or separation distinguishing those for whom we have evidence of remarriage. An additional category is created for those who were ever observed living with a single parent but do not have evidence of divorce or separation (either there is evidence of widowhood or there is no evidence at all) once again distinguishing among these, those families with evidence of remarriage. Finally, a missing category identifies those cohort members with no information on family structure at birth or at any of the childhood waves.

The remaining control variables include social class of origin, social class of the father figure during childhood, housing tenure, both mother's and father's interest in the cohort member's education (measured at age 10 only), behavioural attributes of the cohort member, and academic test scores. Information on most of these variables is collected at each of the three childhood waves, and the summary variables were constructed similarly (as described in more detail below). These factors are meant to capture a range of diverse childhood antecedents to adult social exclusion, and by constructing variables that summarise experience over time, we can explore whether there are differences between temporary and persistent attributes in their association with adult outcomes. Because the summary variables for the remaining controls

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[5] To be placed in the category "both natural parents, full information", the cohort member must have been interviewed at each age. Even when information collected at age 16 "fills in" the missing information, we place cohort members in the second, partial information, category.

[6] We also deduce continuity in the two parent category. If the cohort member's natural parents separated and subsequently reunited between interviews, this disruptive event would not be recorded. During the age 10 interview, the respondent is asked whether the child ever lived, for a period of six months or more, with only one parent figure. Non-response to this question is high and similar information was not obtained at age 16. Consequently, identifying unstable two parent families would be difficult and numbers identified would be small.

are all constructed in a similar way, we will first present each of the various controls and then present, in a general way, the method we use to construct the summary measures that we enter into our statistical models.

We include two variables that summarize the cohort member's social class. The member's "social class of origin" combines information on the father (figure)'s occupational social class grouping at the time of birth, with information collected at age 5 concerning the occupational social class grouping of the mother (figure)'s father and the father (figure)'s father. A second measure summarizes the father (figure)'s occupational social class at ages 5, 10, and 16. The occupation of each family member is classified as non-manual, skilled manual, semi-skilled and unskilled manual, or missing. Information on the various social class groupings is presented in Table 4.

Table 4: Basic information on occupational class groupings (per cent, base=18,606)

	Paternal grandfather	Maternal grandfather	Father at birth	Father at age 5	Father at age 10	Father at age 16
Non-Manual	15	16	25	23	26	16
Skilled Manual	25	28	40	31	29	14
Semi/Unskilled Manual	14	16	19	12	11	4
Missing	46	40	16	34	35	66
Total	100	100	100	100	101	100

In constructing the occupational class measures, we use only the occupational class of male family members in order to minimize missing information that would arise from lower and more sporadic patterns of female employment especially among the cohort member's grandparents. However, using only information on male relatives means that many single parent families at age 5 (the age at which this information was collected) will lack some information on social class of origin. Similarly, when a cohort member is living in a female-headed, single parent family, there will often (but not always) be missing information on the social class of the father figure.[7] Consequently, having missing information on social class of origin is likely to be positively correlated with having a non-resident or absent father.

[7] Because the question asks about the social class of the father figure and not the father, himself, children living with a single parent may nonetheless have information. For example, if another man is recorded as the cohort member's father figure at age 5, his occupational social class will be used to construct this measure and the information will not be missing.

Information on housing tenure was collected at ages 5, 10, and 16. While tenure is likely to provide information about the family's socio-economic position, it is also likely to contain information about the neighbourhood and surrounding area. In our analysis, we distinguish between owner-occupation and local authority housing. In addition to a missing category, a small residual category captures other tenure arrangements – mostly private renting. The distribution of housing tenure at each age is presented in Table 5 below.

Table 5: Basic information on parental housing tenure at ages 5, 10, and 16 (per cent, base=18,606)

	Age 5	Age 10	Age 16
Owner-Occupier	40	45	37
Other	8	5	2
Local Authority	23	23	11
Missing	30	27	50
Total	101	100	100

Using the NCDS data, Hobcraft (1998) found that teachers' reports concerning parental interest in schooling were often strongly associated with adult outcomes. While his measure of mothers' and fathers' interest compiled teachers' reports from three different points in time, this information was only collected in the BCS70 when the cohort members were aged 10. Because the variable was such a strong predictor for outcomes in the NCDS, we have decided to include the parental interest measures even though they were only available at one point in time. Following Hobcraft (1998), we have coded each parent as being very interested, somewhat interested, little interested, not interested or missing (this also includes instances where the teacher claims not to know), but in the previous study the measure was constructed with three observations using the hierarchical strategy we outline below. Consequently, this similarly named variable is constructed differently than in the previous study, and interpreting differences across cohorts in the performance of this control may be problematic. Similar to the social class measure, it is important to keep in mind that there is likely to be a correlation between family structure and this variable. There should be a good deal of overlap between those groups who were living with a single mother (father) at age 10 and those who have missing information on father's (mother's) interest in education at age 10. Summary information for this variable is presented in Table 6 below.

To control for the child's temperament and behaviour, we rely on parental responses to a series of questions concerning their children's behaviour. A battery of questions, devised by Rutter and colleagues (1970), was asked at ages 5, 10 and 16. At ages 5 and 16, parents were provided with a series of

descriptions and were asked to report whether each description certainly applied, somewhat applied, or did not apply to their child. Although both the wording and coding of the inventory was somewhat different at age 10, we have chosen to include information from all three waves, and have attempted to define our categories at age 10 in as meaningful and consistent a way as possible.[8] As in Hobcraft (1998), we group 11 items into three categories. We use parental assessments of how often the child fights with other children, is irritable, is destructive, and is disobedient to construct a measure of "aggression". We use parental reports of the extent to which their child is a worrier, a loner, miserable or tearful, and afraid of new situations to construct an "anxiety" measure. Finally, characterisations of the child as being squirmy or fidgety, having twitches or mannerisms, and having difficulties concentrating are used to construct a "restlessness" measure.

Table 6: Basic information on parental interest in the child's education at age 10, as reported by the teachers (per cent, base = 18,606)

	Mother's interest	Father's interest
Very interested	32	22
Somewhat interested	21	13
Little Interest	5	5
Missing/Don't Know	43	60
Total	101	100

Each item was coded on a scale of 0 to 2 with 0 meaning not applies, 1 meaning somewhat applies, and 2 meaning certainly applies. Within each group, the items were summed together to create three overall scores ranging from 0-8 for the aggression and anxiety scores and 0-6 for the restlessness score. We then classified each sum as low, medium, high or missing. For aggression and anxiety, a sum total of 0 or 1 was coded as low, 2 or 3 was coded as medium, and greater than or equal to 4 was coded as high. In the case of restlessness, a sum of zero was coded as low, 1 or 2 was coded as medium,

[8] At age 10, parents were given, for each description, a line with "certainly applies" at one end and "does not apply" on the other. They were then asked to "…make a vertical mark though the line…to indicate the extent to which the statement applies to your child's behaviour". Where the mark fell on the line was then coded into a scale from 1-99 with 99 being the most extreme agreement with the statement and 1 being the most extreme disagreement with the statement. We have divided the 1-99 scale into thirds corresponding to the certainly applies, somewhat applies and does not apply categories.

and greater than 3 was coded as high. The resulting distributions are presented in Table 7.

Table 7: Summary scores at age 5, 10, and 16 on scales representing 'aggression', 'anxiety', and restlessness' (per cent, base = 18,606)

	Aggression			Anxiety			Restlessness		
	Age 5	**Age 10**	**Age 16**	**Age 5**	**Age 10**	**Age 16**	**Age 5**	**Age 10**	**Age 16**
Low	29	47	33	37	38	27	30	44	33
Medium	28	15	10	24	19	13	32	19	11
High	12	9	3	8	14	5	8	8	2
Missing	31	29	55	31	29	55	31	29	54
Total	100	100	101	100	100	100	101	100	100

The last set of control variables are constructed using scores on a variety of academic tests administered at ages 5, 10, and 16. At age 5, we use tests of the child's vocabulary and of the child's ability to copy designs. At age 10, we use a reading test and a mathematics test. Finally, at age 16, the only tests we have available are spelling and vocabulary tests. Unfortunately, there was no mathematics test administered at age 16, so information at that age is limited to assessments of verbal ability only. Members of the 1958 cohort had test scores gauging maths and verbal abilities at each age so our measure is slightly different from the one Hobcraft (1998) uses in his analysis. Each test score was standardized to have a mean of zero and a variance of 1. For each age, we simply added the two standardized test scores. Children falling into the lowest (highest) quartile of combined scores for their age group were coded as having low (high) test scores. Children in the middle two quartiles were coded as having middle-level test scores. Along with the missing category, there are four values of test scores assigned at each age.

Each of the age-specific control variables has been divided into three categories plus a missing category. Except in the case of mothers' and fathers' interest in education, the age-specific information was next combined, following Hobcraft (1998), to form a single, five-category summary variable for each control. The first category included those with the strongest evidence of disadvantage. This means at least two of the three age-specific measures fell into the most disadvantaged category – in the case of academic test scores, this would mean 2 or 3 instances where the cohort member's test scores fell within the lowest quartile. The second category included those cohort members for whom one age-specific control indicated the most extreme disadvantage, while the third category included those for whom no age-specific variable fell into the most disadvantaged category and at most one age-specific measure fell into the most advantaged category. The fourth category contained those with two or

three of the most advantaged categories (owner-occupation in the case of housing tenure, top quartile test scores in the case of academic tests, etc.). The fifth and final category contained those cohort members with missing information for that control variable at all waves in which information was collected and used to construct the variable. The distributions of these summary variables, along with the poverty measures, family experience and parental interest variables, are presented in Table 8 where the information is presented according to whether or not the cohort member was interviewed at age 30, and for those who were interviewed, by sex.

The data in Table 8 shows that those cohort members who were not successfully interviewed at age 30 are more likely than others to be missing information on the various childhood background factors. Considering only those cohort members with some childhood information, those who were not interviewed are slightly more disadvantaged on a number of measures. They are more likely to have evidence of child poverty, as measured with poverty indicators in particular. Non-interviewed cohort members are slightly less likely to have lived with both natural parents, more likely to have been born to a lone mother, and more likely to have been in care. The interviewed and non-interviewed cohort members are most similar on the social class measures. Interviewed cohort members are more likely to have been living in owner-occupied housing at least twice, to have parental figures who were very interested in their education, and to have two or three top quartile test scores. Only a few sex differences are apparent in Table 8. Men who were interviewed at age 30 are more likely to have had at least one high aggression or restlessness score during childhood and are more likely to be missing information on all three behavioural scores. Women who were interviewed are slightly more likely to have had at least one high anxiety score. All other variables for the interviewed sample are distributed similarly by sex.

Table 8: Percentage distributions of summary control variables by sex, for those with some information on adult outcomes and for all with missing adult outcome information

	In outcomes		**Missing outcomes**
	Males	**Females**	**Both sexes**
Free Meals, Benefits at 10, Financial Difficulties at 16			
No indicators	33.5	35.4	12.7
No indicators, 1/2 missing	42.7	39.3	33.1
1 indicator	14.0	15.4	12.0
2/3 indicators	4.9	5.4	4.5
All missing	5.0	4.5	37.7

Low Income			
2 high observations	39.9	41.3	15.2
1 high, 1 missing	36.9	35.8	28.7
1 low	10.4	11.1	8.3
2 low	1.4	1.6	1.1
All missing	11.4	10.2	46.7
Family Type			
Natural throughout	38.5	40.8	14.1
Natural, partial info	40.8	36.2	59.9
Father absent at birth	2.3	2.8	7.5
Ever in care/fostered	3.1	3.5	4.1
Divorce, no remarriage	7.0	7.0	5.9
Other one parent, no remarriage	2.6	3.1	2.3
Divorce, remarriage	4.6	5.2	3.7
Other one parent, remarriage	0.5	1.0	0.6
All missing	0.6	0.5	1.9
Social Class of Origin			
2-3 IV or V	10.8	10.7	7.5
one IV or V	26.5	26.6	26.6
0 IV or V, 0/1 non-manual	37.4	38.5	44.1
2-3 non-manual	17.1	16.4	8.7
all missing	8.1	7.8	13.1
Social Class of Father Figure			
2-3 IV or V	6.9	7.5	4.6
one IV or V	13.7	13.5	11.5
0 IV or V, 0/1 non-manual	43.4	42.9	34.2
2-3 non-manual	28.3	28.0	11.2
all missing	7.8	8.1	38.6
Housing Tenure			
2/3 Council	22.1	22.2	15.6
1 Council	10.5	11.6	12.5
0 Council, 0/1 Owner Occ.	55.7	54.9	34.8
2/3 Owner Occ.	7.9	7.7	3.7
All missing	3.9	3.5	33.5

Father's Interest in Education at Age 10			
Very Interested	28.6	27.6	12.9
Some Interest	16.5	14.4	9.4
Little Interest	2.9	2.6	2.4
No Interest	2.1	1.8	2.3
Missing	49.9	53.7	73.0
Mother's Interest in Education at Age 10			
Very Interested	38.8	40.7	19.2
Some Interest	23.6	23.2	16.1
Little Interest	3.7	3.4	3.6
No Interest	1.9	1.4	2.0
Missing	32.1	31.3	59.2
Aggression Scores			
2/3 High	6.5	3.3	3.7
1 High	15.1	10.4	12.9
0 High, 0/1 Low	34.3	32.5	29.6
2/3 Low	39.5	49.7	19.0
All missing	4.6	4.1	34.8
Restlessness Scores			
2/3 High	3.8	2.5	2.3
1 High	12.7	9.0	9.2
0 High, 0/1 Low	39.5	37.4	34.7
2/3 Low	39.3	47.1	18.9
All missing	4.7	4.0	34.9
Anxiety Scores			
2/3 High	5.4	6.3	3.0
1 High	15.0	17.6	11.7
0 High, 0/1 Low	35.9	33.3	31.6
2/3 Low	39.0	38.8	18.7
All missing	4.7	4.0	35.1
Academic Test Scores			
2/3 Low quartile	9.2	9.8	6.8
1 Low quartile	22.6	22.3	18.8
0 Low, 0/1 High Quartile	47.7	48.7	31.3
2/3 High Quartile	12.5	12.3	4.7
All missing	8.1	6.9	38.4

5. Multivariate Analysis

Following Hobcraft (1998) we estimate a series of logistic regressions treating all of our control variables as categorical with an explicitly defined missing category. We treat the most advantaged category as the reference category. For family experience, the reference category is that group who have complete information and who lived with both natural parents throughout childhood. For the other control variables, the reference categories identify those cohort members with no evidence of poverty (for either measure), two or three non-manual observations for each of the social class measures, two or three owner-occupier observations for housing tenure, strong interest in education at age 10 for mother's and father's interest in schooling, two or three low behavioural measures, and two or three sets of academic scores in the top quartile.

With the exception of the missing category, all the categorical variables other than family experience have been entered into our models as a series of hierarchically defined dummy variables. Taking the most advantaged category as a reference and creating a dummy for the missing value category, we then created a series of dummy variables. The first was set equal to one for all categories other than the reference and the missing category. This variable identifies those cohort members for whom there is any possibility of disadvantage as we define it for that variable. In the case of housing tenure, this first variable would equal one for those members with (a) less than two reports of living in owner occupation and 0 records of local authority accommodation, (b) at least one report of local authority housing, or (c) two or three reports of local authority housing. The next dummy is set equal to one for those members with at least some evidence of disadvantage – once again using housing tenure as an example, those in categories (b) or (c) above. A final dummy variable is set equal to one only for those with the most clear evidence of disadvantage.

The family experience variable is constructed in a similar, but less straightforward, way. The reference category comprises, as mentioned above, those who were living with both natural parents at all three, childhood interviews. Three additional dummies identify those who appear to have lived with both natural parents but have incomplete information, who were born to a lone mother and who had ever been in care. The remaining categories are defined in a hierarchical way, however. We first create a dummy variable that equals one if the cohort member ever experienced a family disruption (due to divorce, widowhood, or other, unspecified reasons). The next variables pick out those among that group who experienced a parental remarriage or step-family, and finally, those who experienced both a divorce or separation and a step-family arrangement. These dummies can be combined to reflect the association with each of the family experience categories presented in Table 8.

As constructed, the control variables introduce 49 dummy variables into each full model specification. Once again following Hobcraft (1998), we fit, for

men and women separately and for each adult outcome, a logistic model that employs backward stepwise elimination. This method first estimates the full model with all 49 parameters and then progressively eliminates the least significant parameter that fails to meet a pre-specified inclusion criterion – in this case a p-value less than or equal to 0.001. The algorithm also allows any previously eliminated variables to be included if they later reach a particular significance level, in our case 0.001001. We choose a strict exclusion criterion because it has been demonstrated that standard errors are frequently underestimated when selection methods are applied and significance levels may consequently be inflated (Altman and Anderson, 1989; Freedman, Pee, and Mithune, 1992). Our strict criterion should comfortably assure that the variables we retain in our models are significant, although other problems with the interpretation of step-wise estimates remain.[9]

We also estimate the models using a more generous exclusion threshold of 0.05 for elimination, and 0.05001 for re-entry. These models use the same exclusion threshold that was used in Hobcraft (1998) and will allow for a better comparison of our results with those obtained from his analysis of the 1958 cohort. Utilizing a p-value of 0.05 means that more variables are likely to be included in the final models, and, in many cases, that estimated odds ratios are different – usually smaller.[10] While the 0.001 models will allow us to identify the most significant correlates, the 0.05 models will give us a more realistic picture of the strength of their association. For ease of exposition, we will refer to those models that use for their exclusion threshold, a p-value of 0.05 or below, as "0.05 models". We will refer to the other set of models as the "0.001 models". The odds ratios for those variables retained as significant in both the 0.001 models and the 0.05 models are presented in Tables 9-14 below. In the next section, we will discuss each outcome separately and then move on to consider how well the explanatory variables performed across outcomes.

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[9] Most importantly, the resultant models are often too small (ie they exclude too many variables), and regression coefficients are often too large (Tibshirini, 1996). But other issues include the fact that the correlation between predictor variables influences the selection of authentic predictor variables, and the number of predictor variables affects the inclusion of noise variables (Roecker, 1991).

[10] Because our dummy variables are defined hierarchically, it is often the case that the models that apply a p-value of 0.05 retain more thresholds in the model. The result is often that the category below the threshold has a lower odds ratio while the category at and above the threshold has a larger odds ratio than obtained in the 0.001 model. When more thresholds are not included in the 0.05 models than in the 0.001, it is generally the case that the odds ratios are smaller, however.

6. An Examination of Outcomes

In this section, we examine the correlates that are retained as significant for each of the individual outcomes, highlighting the strongest associations and the similarities and differences by sex. The final models for both men and women are presented by type of outcome – demographic, labour market related, economic need, physical health and risk taking, mental health, and police contact. Within these tables, for each outcome, we present two sets of statistically significant odds ratios in the final logistic models, corresponding to each of the significance thresholds we employ. These final models potentially included all of the 49 categories of the 12 control variables and were selected using a backwards elimination procedure (where re-entry is possible) using the hierarchical specification of dummy variables discussed above. Although we will discuss the results from both the 0.001 models and the 0.05 models in this section, unless explicitly stated otherwise, any odds ratios that we present will be drawn from the results of 0.001 models in Tables 9-14.

a. Demographic Outcomes

The odds ratios for the variables retained as significantly associated with demographic outcomes (young parenthood, extra-marital first birth, extra-partnership first birth and for women, ever having been a lone mother) are presented in Table 9 for both sexes at both levels of significance.

Table 9: The relationships of the control variables to the demographic outcomes at age 30, presented as odds ratios

	Men						Women							
	Young dad		Extra-martial birth		Non-union birth		Teenage mother		Extra-marital birth		Non-union birth		Lone motherhood	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Poverty Indicator														
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor					1.48	1.32								
Some Poverty				1.20		1.32	1.67	1.40	1.49	1.24	1.57	1.36	1.72	1.46
Clearly Poor				1.20		1.32	1.67	1.40	1.49	1.74	1.57	1.36	1.72	1.46
All Missing														
Income Poverty														
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor						0.77								
Some Poverty						1.12		1.48				1.38		1.31
Clearly Poor						1.12		1.48				1.38		1.31
All Missing														
Family Type														
Both Natural, All Natural, Partial	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lone Mother at Birth				1.78						1.83				1.81
Ever in Care				1.50						1.52				
Dissolution No Remarriage		1.39	1.44	1.46						1.32				1.26
Other Lone, No Remarriage										1.32				1.26

	Men						Women							
	Young dad		Extra-martial birth		Non-union birth		Teenage mother		Extra-marital birth		Non-union birth		Lone motherhood	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Dissolution/Remarriage		1.39	1.44	1.46						1.32				1.26
Other Lone/ Remarriage										1.32				1.26
All Missing														
Social Class of Origin														
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM	2.93	2.97	1.84	1.65			2.32	1.97		1.21				
One IV or V	2.93	2.97	1.84	1.65			2.32	1.97		1.21				
Two or Three IV or V	2.93	2.97	1.84	1.65			2.32	2.58		1.21				
All Missing	3.74	3.87	1.99	1.66			3.45	3.04						
Social Class of Father Figure														
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM	2.10	1.90		1.27		1.58			1.59	1.51		1.41	1.50	1.53
One IV or V	2.10	1.90		1.27		1.58			1.59	1.51		1.41	1.50	1.53
Two or Three IV or V	2.10	1.90		1.27		1.58			1.59	1.51		1.41	1.50	1.53
All Missing	3.75	3.05												
Housing Tenure														
2/3 Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-										1.41				1.49
1 Council	2.31	2.12	1.76	1.56	2.26	1.94	2.04	1.76	1.84	2.28	2.12	1.80	1.82	2.41
2/3 Council	2.31	2.12	1.76	1.56	2.26	1.94	2.04	1.76	1.84	2.28	2.12	1.80	1.82	2.41

	Men						Women							
	Young dad		Extra-martial birth		Non-union birth		Teenage mother		Extra-marital birth		Non-union birth		Lone motherhood	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
All Missing														
Father Figure's Interest in School														
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest												1.46		1.44
Little Interest			1.64	1.54		1.77						1.46		1.44
No Interest		2.10	1.64	1.54		1.77						1.46		1.44
Missing		1.38	1.30	1.23		1.36						1.50		1.24
Mother Figure's Interest in School														
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest								1.37	1.37	1.30				
Little Interest							2.11	2.53	2.52	2.28		1.51	1.99	1.74
No Interest							2.11	2.53	2.52	2.28		1.51	1.99	1.74
Missing								1.43	1.36	1.25				
Aggression Scores														
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low		1.48	1.58	1.38	2.05	1.85						1.28		
1 High	1.79	2.34	1.58	1.82	2.05	1.85		1.41		1.33		1.28		
2/3 High	1.79	2.34	1.58	1.82	2.05	1.85		1.41		1.33		1.28		
All missing			2.18	2.42		2.58								

	Men						Women							
	Young dad		Extra-martial birth		Non-union birth		Teenage mother		Extra-marital birth		Non-union birth		Lone motherhood	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Restlessness Scores														
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low						1.42	1.59	1.48	1.43	1.34	1.51	1.36	1.43	1.38
1 High						1.42	1.59	1.48	1.43	1.34	1.51	1.36	1.43	1.38
2/3 High						1.42	1.59	1.48	1.43	1.34	1.51	1.36	1.43	1.38
All missing							2.94	2.61			2.95	3.37		
Anxiety Scores														
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low		0.67	0.72	0.74	0.62	0.61								
1 High		0.67	0.72	0.74	0.62	0.61		0.80		0.80		0.79		
2/3 High		0.67	0.72	0.52	0.62	0.61		0.80		0.80		0.79		
All missing									3.00	3.27			2.52	3.07
Academic Tests														
2/3 High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Low, 0/1 High			1.53	1.48		1.50		2.44		1.62	2.91	2.36	1.97	1.88
1 Low	1.80	1.76	2.20	2.07	1.70	2.13	1.82	3.49	1.53	2.32	5.88	4.39	2.68	2.54
2/3 Low	1.80	1.76	2.20	2.07	1.70	2.13	1.82	4.68	1.53	2.32	5.88	4.39	2.68	2.54
All Missing								2.24		1.80	3.73	2.82	2.64	2.53

Young Parenthood: All of the significant odds ratios in the 0.001 models are in the expected direction – that is more childhood disadvantage is associated with higher risk of young parenthood. In these models, young parenthood is most strongly associated with social class of origin for both men and women. Compared with the reference group whose social class of origin was most clearly non-manual (defined as two or three observations of a non-manual occupational class among those reported for both biological grandfathers and the father at the time of birth), men and women in all other, non-missing categories have odds of young parenthood that are 2.93 and 2.32 times larger, respectively. The odds for those with missing information on their social class of origin are even larger, exceeding 3.0:1 for both men and women.

Other control variables that are strongly correlated with early childbearing include parental housing tenure and academic test scores for both sexes, the social class of the father (figure) for men, and mother (figure)'s interest in education for women. Being observed living in local authority housing at least once during childhood more than doubles the odds of young fatherhood. Although the odds ratio is higher for men, local authority housing tenure increases the odds of young motherhood as well.[11] Cohort members with at least one bottom quartile set of test scores are more likely to report having become a young parent than their better performing counterparts (odds ratios 1.80:1 and 1.82:1 for men and women respectively). For the large category of men whose father figure was coded as working in a non-manual occupation no more than once during the childhood waves (compared to those men whose father figure was coded as being in a non-manual occupation at least twice), the odds of having a first birth before the age of 22 is 2.10:1 The odds increase to 3.75:1 when there is no information on the social class of the cohort member's father figure at any of ages 5, 10, or 16. Because men with missing information on their father figure's social class are also likely to have absent fathers, the odds are probably picking up some of the negative effects of family structure.

The interest of the same sex parent in the cohort member's education is significantly related to young parenthood. At both levels of significance, the mother (figure)'s interest in education is eliminated from the model for men and the father (figure)'s interest in education is eliminated for women. A woman whose mother figure at age 10 was reported to have little of no interest in her education has odds of young motherhood that are more than twice those of a woman whose mother was reported to be very interested in her education. A man whose father figure showed little interest in his education at age 10 has

[11] In the 0.05 model, the odds ratios are larger than those presented in Hobcraft (1998). Moreover, our higher risk group contains all those with at least one local authority observation while, for the 1958 cohort, the higher risk group contains those with at least two local authority observations. Similar to the 1958 cohort, the odds ratio for women is somewhat smaller than it is for men.

odds of young fatherhood that are more than twice the size of the more advantaged reference group – but the paternal interest parameter is only retained in the 0.05 model.

The poverty indicator measure is significantly associated with early motherhood. Compared to women with less evidence of poverty, women with at least one poverty indicator have odds of young motherhood that are 67 percent larger. Neither poverty measure is retained as significantly related to early parenthood for men.

The associations of young parenthood with the childhood behavioural scores, show a gendered pattern. Men with at least one high aggression score have odds of young fatherhood that are 1.79 times as large, while women with anything other than 2 or 3 low restlessness scores are more likely to have been teenaged mothers (odds 1.59:1). For women with missing information on all three restlessness scores, the odds are higher (2.94:1).

In the 0.05 models, the largest odds ratio for men continues to be that of social class, while for women academic test scores have the largest odds ratio. According to this model, women with two or three sets of bottom quartile test scores have odds of young parenthood that 4.68 times those of women with two or three observations of top quartile academic test scores. The same odds ratio for women born in 1958 was somewhat smaller at 3.67:1. For men, the contrast with the 1958 cohort is in the opposite direction. Men born in 1970 who have at least one observation of test scores in the lowest quartile of the distribution have odds of young parenthood that are 1.76 times those of less disadvantaged men; similar men born in 1958 had odds that 3.37 times those of the reference group, and in Hobcraft's study, academic test scores were the most strongly associated variables with young parenthood for both sexes.

In the 0.05 models more behavioural measures are retained. Childhood anxiety is retained as protective for both men and women. Men with anything other than two low anxiety scores are less likely to have been young fathers (odds ratio 0.67:1), and women with at least one high anxiety score are also less likely to have become young mothers. In addition, having at least one high aggression score is retained as significantly associated with early motherhood (odds ratio 1.41:1), while the relationship between childhood aggression and early fatherhood becomes more graded.

Also retained in the 0.05 models, is the experience of a parental divorce or separation for men. Compared to men with other family experiences, those who experienced a parental divorce or separation have odds of fatherhood before age 22 that are 39 percent larger than the reference group. No family experience variables are retained at either level of significance for women.

Extra-Marital Birth: Extra-marital first births are most strongly linked, for men, to their academic test scores, and for women, to their mother (figure)'s interest in their education at age 10. For men with no more than one set of top

quartile academic test scores and no bottom quartile test scores the odds of having an extra-marital first birth are 1.53:1 relative to the better performing reference group. The odds increase to 2.20:1 for those with at least one observation of bottom quartile test scores. For women, the relationship between academic test scores and extra-marital parenthood is less striking. Compared to women with better academic test scores, women with at least one bottom quartile score are more likely to have had an extra-marital first birth (odds 1.53:1). In addition, women whose mothers were recorded as having little or no interest in their education at age 10 have odds of an extra-marital first birth that are more than double those of women whose mothers were more interested (odds 2.52:1) . Mother's age 10 educational interest in not retained at either significance level of men.

Additional strong correlates include social class of origin for men and housing tenure for women. Social class of origin is significantly associated with having had an extra-marital birth for men, while social class of the father figure is significantly associated with extra-marital childbearing for women. Compared with the reference group whose social class of origin was most clearly non-manual (defined as two or three observations of a non-manual occupational class among those reported for both biological grandfathers and the father at the time of birth), men in all other categories (except missing) are more likely to have had their first child outside of marriage (odds 1.84:1). Men who had no information available to construct this variable were had even greater odds of extra-marital parenthood (odds 1.99:1). Compared to those women whose father (figure) was in a non-manual social class at least twice, the odds of having had a first birth outside marriage are 1.59:1 for all other women with some information. Men and women observed living in local authority housing at least once during childhood are more likely to have become parents outside of marriage than their counterparts who were not. The odds for women (1.84:1) are slightly larger than for men (1.76:1), and the gender gap increases in the 0.05 models. For members of the 1958 cohort, housing tenure was not retained as significantly associated with extra-marital childbearing (Hobcraft, 1998).

Aggression and anxiety scores are both retained as significantly associated with extra-marital fatherhood – aggression is positively associated with extra-marital fatherhood while anxiety is protective. In contrast, it is restlessness scores that are retained as significantly and positively related to extra-marital motherhood. For both men and women, missing behavioural scores (aggression for men and anxiety for women) are very strongly associated with extra-marital childbearing. Compared to men with two or three low childhood aggression scores, those men with missing aggression scores are more to have had an extra-marital first birth (odds 2.18:1). Women with missing anxiety scores have odds of extra-marital motherhood that are three times those of women with two or three low anxiety scores. In the 0.05 models, the effects

of the behavioural scores become more graded for men but not for women. However, aggression and anxiety (protectively) are retained for women, so all three behavioural attributes are correlated with extra-marital motherhood in the more inclusive, 0.05 model.

The poverty indicator summary is associated with extra-marital motherhood only. Relative to less disadvantaged women, the odds of having had an extra-marital first birth are 1.49:1 for those women with at least one poverty indicator. When the 0.05 significance threshold is applied, the poverty indicator summary is significantly associated with extra-marital births for both sexes, but the association between poverty and extra-marital parenthood is stronger for women.

Like young parenthood, the interest of the same sex parent in schooling is significantly related to having had an extra-marital first birth. The strong relationship between mother's interest in education and having had an extra-marital first birth was already discussed above. In addition, men whose father figure at age 10 was reported as having little or no interest in their education have odds of extra-marital fatherhood that are 1.64 times as large as the odds for men whose fathers were reported to have at least some interest in their education. Finally men whose teachers did not, or could not, assess their father figure's interest in schooling were slightly more likely to report having had an extra-marital first birth (odds 1.30:1). These variables are retained as significant despite the retention of family experience variables (evidence of divorce or separation during childhood) that are likely correlated with missing information on paternal interest in education.

While in the 0.001 models, social class of origin was retained as significant for men and social class of the father figure was retained for women, in the 0.05 models both social class variables are significantly associated with extra-marital parenthood for both sexes. In his analysis of the 1958 cohort, Hobcraft (1998) finds a link between both social class variables and extra-marital fatherhood, and the social class of the father figure is more strongly correlated. But, neither social class measure was related to extra-marital motherhood (only the missing category for social class of father figure was retained and its effect was protective).

The relationship between academic test scores and extra-marital motherhood becomes more graded in the 0.05 model, and the odds ratios for men and women become more similar. Academic test scores were only moderately related to having an extra-marital birth for members of the 1958 cohort – the odds for those with at least one bottom quartile relative to two or three top quartile were 1.52:1 and 1.48:1 for men and women, respectively (Hobcraft, 1998). In terms of extra-marital parenthood, academic performance has become a more important factor despite the fact the extra-marital parenthood has become more normative, particularly in cohabiting unions.

In the 0.05 models, cohort members with no father present at birth or who had ever been in care are more likely to have had an extra-marital first birth, and the odds for men and women are very similar. Findings from the 1958 cohort suggest that, for the earlier cohort, although having no father present at birth was associated with extra-marital parenthood, experience of care was associated with extra-marital motherhood only. Men with any evidence of divorce or separation (also retained in the 0.001 model) and women with any evidence of family disruption during childhood are also more likely to have had an extra-marital first birth by the age of 30.

Non-Union First Birth: Non-union first births are most strongly linked, for men, to their parents' housing tenure, and for women, to their academic test scores. Those men observed living in local authority housing at least once during childhood are more likely to report having fathered their first child outside of a partnership (odds 2.26:1). At 2.12:1, the odds for women with the same parental housing tenure are similarly sized. Compared to those women with two or three top quartile test scores, those with no more than one top quartile set of scores and no bottom quartile scores have odds of non-union motherhood that are 191 percent larger. For those with at least one bottom quartile set of scores, the odds increase to 5.88:1. The odds for men in this test scores category are much smaller – 1.70:1. Finally, women with missing test scores have odds ratios for non-union motherhood that are 273 percent larger than the reference category. Missing test scores are not retained as significant for men.

Men with less than two low childhood aggression scores are more likely to report that their first child was born outside of a union (odds 2.05:1). Aggression is not retained as significant in the 0.001 models for women, but in the 0.05 model, those women with less than two childhood aggression scores are more likely to have experienced this outcome (odds 1.28:1). Other significant behavioural measures include anxiety (protective) for men, and restlessness for women. Missing behavioural scores (restlessness) are also significantly associated with having a non-union first birth for women (odds 2.95:1). In the more inclusive, 0.05 models, restlessness and missing aggression scores are also retained for men, and aggression and anxiety scores (protective) are retained for women.

Childhood poverty measured using indicator variables is retained as significant for both men and women. All but the most advantaged men have odds of non-union fatherhood that are 48 percent larger. Women with some evidence of poverty are also more likely to report a non-union first birth (odds 1.57:1). In the 0.05 models, the income-based poverty variables are also retained as significant.

Although maternal interest in education at age 10 was a strong predictor of extra-marital motherhood, no parental interest variables are retained in the

0.001 models for either men or women. In the 0.05 models, paternal interest is retained for both men and women, and maternal interest is retained for women. Men whose age 10 father (figure) had little or no interest in their education at age 10 are more likely to report their first child was born outside of a partnership (odds 1.77:1). Women whose father figure was anything but very interested in their education are also more likely to report a non-union first birth (odds 1.46:1). Missing information on paternal interest in education is also retained as significant for both men and women. Finally, women whose age 10 mother figure had little or no interest in their education are more likely to report that their first birth took place outside of a partnership, and the odds ratio (1.51:1) is larger but similar in size to the one that links paternal interest to this outcome.

Although social class variables were retained as significantly associated with having a first birth outside of marriage, these variables are not significantly related to having a first birth outside of a partnership in the 0.001 models. In the 0.05 models only the social class of the father figure is retained for both men and women.

At both levels of significance, no family experience variables are related to having a first birth outside of a union for either sex. Childhood family structure is only related to parenthood outside of marriage, but not outside of a marriage or cohabiting union – presumably the more disadvantaged context.

Lone Motherhood: Among the retained factors, academic test scores are most strongly correlated with lone motherhood. Relative to women with two or three top quartile test scores, those with, at most, one observation of top quartile test scores have odds of lone motherhood that are nearly doubled (odds 1.97:1). Among those with at least one bottom quartile test score, the odds rise to 2:68:1, and for those with no test scores, the odds are similar at 2.64:1. Lone motherhood is also strongly associated with the mother (figure)'s interest in schooling and housing tenure. Compared to women with more interested mothers, the odds of having ever been a lone mother are 1.99:1 for women whose mothers were reported to have little or no interest in their education. Being observed living in local authority housing at least once during childhood is also associated with ever having been a lone mother (odds 1.82:1). When the 0.05 models are estimated, the effects strengthen and become more graded.

Women with at least one poverty indicator have odds of lone motherhood that 1.72 times those of women with less evidence of disadvantage. The childhood poverty measure constructed using income measures is only significantly related to having been a lone mother in the 0.05 model, but the odds ratio is not as large as the one that obtains for the indicator measure. In this specification, cohort members with at least one age 10 or age 16, household income observation below the age-specific, low income threshold are more likely to have become lone mothers than those with less evidence of income

poverty (odds 1.31:1). Those with at least one poverty indicator have odds of lone motherhood that are 46 percent larger than those for women with less evidence of child poverty.

Women with anything other than two low restlessness scores are more likely to report having been a lone mother by the age of 30 (odds 1.43:1). Those with missing information on anxiety scores are also more likely to report having been a lone mother (odds 2.52:1). No other behavioural measures are retained in the 0.05 models.

Women whose father (figure) was observed working in a non-manual occupation less than twice during childhood (ages 5, 10 and 16) are more likely to have become a lone mother (odds ratio 1.50:1). Social class of origin in not retained at either significance level, however, nor is father's interest in education at age 10. In the 0.05 model, the relationship between father's social class and lone motherhood is little changed despite the retention of several family experience variables.

In the more inclusive 0.05 model only, those women whose father was absent at birth are more likely to report ever having been a lone mother (odds 1.81:1). In addition, women with any evidence of family disruption have odds of lone motherhood that are 1.36 times larger than those of other women.

Summary of Demographic Outcomes: All of the demographic outcomes we consider are consistently linked to academic test scores and housing tenure. In addition the same sex parent's reported interest in education at age 10 is also frequently associated with the demographic outcomes, especially for women. Having had a mother figure at age 10 with little or no interest in the cohort member's education is significantly associated with three of the four demographic outcomes in the 0.001 models and all four demographic outcomes in the 0.05 models. For men, their mother (figure)'s interest in education is not associated with any of the three demographic outcomes we consider. On the other hand, paternal interest in education at age 10 is significantly associated with extra-marital fatherhood, and in the 0.05 models with all three male outcomes.

Social class of origin is linked to young parenthood for both men and women and to extra-marital fatherhood. Missing social class of origin is also linked to these outcomes, and the odds ratios are large. In addition, social class of the father (figure) is retained as significantly related to young fatherhood, extra-marital motherhood, and lone motherhood. In the more inclusive, 0.05 models, the social class of the father figure is retained as significantly related to all three demographic outcomes for men and three of the four outcomes for women.

For men, childhood aggression is linked to all three demographic outcomes and anxiety is protective against two of the three outcomes (in the 0.05 models it is negatively associated with all three). In contrast, for women

restlessness and missing scores are related to all four demographic outcomes. The odds ratios for missing behavioural scores are, in all cases, larger than those that obtain for the other non-missing categories.

Childhood poverty measured using indicator variables is related to all four demographic outcomes we consider for women – those with at least one indicator are more likely to experience all four outcomes. For men, the childhood poverty indicator variable is only retained as significantly related to having a non-union first birth, although in the 0.05 models it is related to having an extra-marital first birth as well. Low household income is not retained as significantly related to any of the demographic outcomes in the 0.001 models. In the 0.05 models, having at least one low income observation increases the odds of three of the four outcomes for women (the exception is extra-marital childbearing), however.

Although family experience variables are not often retained in the 0.001 models (the only exception is experience of parental divorce or separation and extra-marital fatherhood), they are more often related to demographic outcomes in the 0.05 models. For women, being born to a lone mother and having experienced a family disruption is positively associated with having had an extra-marital first birth and having been a lone mother but not with having had an early birth or a non-union first birth. Having ever been in care is associated with extra-marital childbearing, only. For men, experience of dissolution is related to young fatherhood and extra-marital fatherhood. In addition, father absence at birth and having ever been in care is related to extra-marital childbearing. No family experience variables are retained as significantly related to having a first child outside of a union for either sex.

b. Low Education, Employment, and Earnings

The odds ratios for the variables retained as significantly associated with employment- and labour market-related economic outcomes – no qualifications, low earned (men) or family (women) income, low social class, and unemployment at age 30 – are presented in Table 10 for both sexes at both levels of significance.

Table 10: The relationships of the control variables to the labour market related, economic outcomes at age 30, presented as odds ratios

	Men								Women							
	No Qualifications		Low Earned Income		Low Social Class		Unemployed at Interview		No qualifications		Low Earned Family Income		Low Social Class		Unemployed at Interview	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**
Poverty Indicator																
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor																
Some Poverty			1.48	1.46						1.26	1.41	1.40				
Clearly Poor			1.48	1.46			2.97	2.64		1.26	1.41	1.40		1.69		
All Missing												1.62				
Income Poverty																
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor	1.40	1.54										1.22				
Some Poverty	1.40	1.54	1.48	1.45						1.33	1.63	1.73				1.82
Clearly Poor	1.40	1.54	1.48	1.45						1.33	1.63	1.73				1.82
All Missing		1.46							1.68	1.51	1.55	1.42				
Family Type																
Both Natural, All	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Natural, Partial										1.22				0.79		
Lone Mother at Birth												1.56				
Ever in Care																
Dissolution No Remarriage										0.65				0.58		

	Men								Women							
	No Qualifications		Low Earned Income		Low Social Class		Unemployed at Interview		No qualifications		Low Earned Family Income		Low Social Class		Unemployed at Interview	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**
Other Lone, No Remarriage										0.65				0.58		
Dissolution/Remarriage								0.43		1.14				1.13		
Other Lone/ Remarriage								0.43		1.14				0.58		
All Missing																
Social Class of Origin																
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM																
One IV or V				1.30						1.31						
Two or Three IV or V		1.34		0.94	1.85	1.83				1.31						
All Missing																
Social Class of Father Figure																
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM	1.68	1.52							1.67	1.88	1.35	1.37	1.51	1.57		
One IV or V	1.68	1.52			1.41	1.38			1.67	1.88	1.35	1.37	1.51	1.96		
Two or Three IV or V	1.68	1.52			1.41	1.38			1.67	1.88	1.35	1.37	1.51	1.96		
All Missing	2.18	1.79								1.60				1.72		
Housing Tenure																
2/3 Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-Occupier				0.77		0.73										
1 Council	1.86	1.84	1.68	1.29		0.73	1.91	1.74	2.14	1.79	1.48	1.45	2.02	1.75	2.23	1.84

	Men								Women							
	No Qualifications		Low Earned Income		Low Social Class		Unemployed at Interview		No qualifications		Low Earned Family Income		Low Social Class		Unemployed at Interview	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**
2/3 Council	1.86	1.84	1.68	1.29	1.73	1.24	1.91	1.74	2.14	1.79	1.48	1.45	2.02	1.75	2.23	1.84
All Missing																
Father Figure's Interest in School																
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest						1.53										
Little Interest					1.77	1.53		2.12	1.94	2.16	1.73					
No Interest					1.77	1.53		2.12	1.94	2.16	1.73					
Missing						1.31		1.76		1.28				1.25		
Mother Figure's Interest in School																
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest		1.31														
Little Interest	1.72	2.15				1.47						1.78			2.65	2.17
No Interest	1.72	2.15				1.47						1.78			2.65	2.17
Missing		1.34														
Aggression Scores																
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low						1.24			1.44	1.27						
1 High				1.19		1.24		1.52	1.44	1.63	1.41	1.33				
2/3 High				1.19		1.24		1.52	1.44	1.63	1.41	1.33				
All Missing																

	Men								Women							
	No Qualifications		Low Earned Income		Low Social Class		Unemployed at Interview		No qualifications		Low Earned Family Income		Low Social Class		Unemployed at Interview	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.00**	**0.05**	**0.001**	**0.050**
Restlessness Scores																
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low				1.22										1.30		1.66
1 High	1.44	1.53		1.22										1.30		0.63
2/3 High	1.44	1.53		1.22	1.91	1.86						1.62		1.30		0.63
All Missing																
Anxiety Scores																
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low																
1 High		0.70														1.62
2/3 High		0.70														1.62
All Missing																3.85
Academic Tests																
2/3 High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Low, 0/1 High	4.05	3.66	1.75	1.65	3.04	2.74			2.60	2.24	1.83	1.79	2.65	2.42		
1 Low	9.96	8.89	3.45	3.12	6.14	4.74	1.77	1.68	5.69	4.61	3.39	3.26	6.20	4.57		1.55
2/3 Low	9.96	8.89	3.45	3.12	6.14	6.87	1.77	1.68	8.54	6.78	3.39	3.26	6.20	6.81		1.55
All Missing	7.24	6.01	3.65	3.42	4.53	3.74		1.82	5.93	4.57	3.41	3.05	6.16	4.89		

No Qualifications: Similar to Hobcraft's (1998) findings using the 1958 cohort, having no educational qualifications is most strongly linked to earlier academic performance for both men and women. Compared to those who had two or three upper quartile test scores during childhood, those with no scores in the lowest quartile and no more than one set of scores in the highest quartile were far more likely to have no qualifications at age 30 (odds 4.05:1).[12] Men with at least one bottom quartile set of academic test scores have odds that are nearly 10 times the size (odds 9.96:1) of men who had two top quartile scores. Although the effect is less strong, is it still very dramatic for women. Compared to better performing women, those with one bottom quartile set of test scores during childhood have odds of no qualifications that are 469 percent larger, and those with more than one bottom quartile observation have odds of no qualifications that are 754 percent larger (odds 8.54:1). The intermediate group with no more than one high set of scores, has relatively lower odds of 2.60:1. Men and women with missing information on all academic test scores are also more likely (odds 7.24:1 and 5.93:1 respectively) to be without any qualifications than their counterparts with two or three top quartile observations. Across all categories, the odds ratios for men's scores exceed those for women's scores in the same category, but the gender gap is most narrow for the poorest performing group with two or three bottom quartile test scores. Finally, in the 0.05 models, the odds ratios decline somewhat and are much smaller, for both men's and women's scores, than those reported by Hobcraft (1998) for the 1958 cohort.

In contrast to the pattern that emerged for demographic outcomes where the educational interest of the same sex parent was most often significantly associated with adult outcomes, it is the educational interest of the opposite sex parent that is related to poor educational achievement. At both levels of significance, low paternal interest in education is linked to having no qualifications for women, while maternal interest in education is linked to low qualifications for men. Net of academic test scores, women whose father figure had little or no interest in their education at age 10 are more likely to have no academic or vocational qualifications than women whose father figure was very interested or somewhat in their education (odds 1.94:1). Men whose mother figure at age 10 had little or no interest in their education have odds of no qualifications that are 72 percent larger than those of men with more interested mothers. For both these antecedents, the odds ratios increase and exceed 2.0 in the 0.05 models.

For members of the 1958 cohort, father's educational interest was retained with large odds ratios for both sexes (although mothers interest was retained for females as well). Moreover, the odds ratios were large relative to

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[12] These large correlations must be interpreted with some caution because the use of age 16 test scores are likely to introduce some simultaneity bias.

what obtain for this variable for the 1970 cohort. These contrasts may be due to the fact that the role played by parental interest in education has changed in recent years, to the high level of correlation between the two measures, or because we use only one question and one time point to measure parental interest. The NCDS data contained information on parental interest a three time points, so Hobcraft's (1998) measure was a childhood summary variable while ours provides only a snapshot at age 10.

A lack of qualifications is also linked to parental housing tenure for both sexes. Compared to cohort members who were never recorded as living in local authority housing, those who were observed living in local authority housing at least once are more likely to have no academic or vocational qualifications at age 30 (odds 1.86:1 for men and 2.14:1 for women).

The social class of the father (figure) throughout childhood is associated with a lack of qualifications for both men and women. Compared to women whose father (figure) was coded in a non-manual social class at least twice during childhood, the odds of no qualifications are 1.67:1 for all others who have some information. The odds ratio for the same group of men is similarly sized at 1.68:1.

Men whose household incomes were not coded as being above the relevant threshold at both 10 and 16 (but not both missing) are also more likely to have no qualifications (odds 1.40:1). While neither of the poverty summary variables is retained as significant for women, the odds for that group whose income information at both age 10 and age 16 is missing are 1.68:1.

Finally, aggression in girls and restlessness in boys are each associated with a lack of educational qualifications at age 30. Girls with anything other than two or three low aggression scores are more likely to obtain no qualifications (odds 1.44:1) and boys with at least one high restlessness observation have a similar increase in the odds (1.44:1).

In the 0.05 models, few other childhood factors are significantly associated with a lack of qualifications for men. In contrast, both poverty measures are retained as significant for women as are some family experience variables, and social class of origin (also retained for men). For women, family disruption that is not followed by a remarriage is protective, while experience of a step-family slightly increases the odds of no qualifications.

Low Earnings: Economic disadvantage, as measured by bottom quartile earnings for men and bottom quartile family earnings for women, is linked most strongly with academic test scores for both sexes and at both exclusion thresholds. Compared to men with better test scores, men whose academic test scores fell into the top quartile of the distribution, at most, once and never fell into the lowest quartile are more likely to have low earnings at age 30 (odds 1.75:1). For those with at least one bottom quartile observation, the odds increase to 3.45:1. Finally, men with missing academic test scores at ages 5, 10,

and 16, are the most likely to have low earnings at age 30 (odds 3.65:1). For women, the pattern is similar. Women whose test scores were in the top quartile of the distribution no more than once and never in the bottom quartile have odds of low family earnings at age 30 that are 83 percent larger than those in the two or three top quartile reference group. Among those with at least one instance of bottom quartile test scores, the odds rise to 3:39:1. Those with missing information on test scores at all three childhood waves are also more likely to have low family income at age 30 (odds 3.41:1). In the 0.05 models, the odds ratios are far more similarly sized for male and female members of the 1970 cohort than they were for members of 1958 cohort where the odds ratios for men were larger (Hobcraft, 1998). The similarly sized odds ratios in this application may be due to the fact that the measure employed for women in the 1958 cohort was a family income rather than a family earnings measure, however.

In addition to academic test scores, parental housing tenure is associated with low age 30 earnings for both sexes. Both men and women who were observed living in local authority housing at least once during childhood are more likely to have low earned income at age 30 than those who were never observed doing so (odds 1.68:1 for men and 1.48:1 for women).

Adult earnings stands out as one of the only outcomes linked to both childhood poverty measures for both sexes in the 0.001 models. Men and women with at least one poverty indicator during childhood are more likely to have low earnings at age 30 than their counterparts with less evidence of child poverty (odds 1.48:1 for men and 1.41:1 for women). Similarly those with at least one low household income observation during childhood are more likely to have low earnings (odds 1.48:1 for men and 1.63:1 for women). Finally women with missing information on the poverty measures (both the indicator and the income measures) are more likely to report low family earnings at age 30 than women with the least evidence of poverty.

The father (figure)'s social class and paternal interest in education are associated with low family earnings for women. Having a father figure who was not working in a non-manual occupation at least twice (but not all missing) during childhood is associated with low earned income for women (odds 1.35:1). Having a father figure who, at age 10, was reported as having little or no interest in her education is also significantly related with low family earnings. With an odds ratio of 1.73:1 (relative to women whose father figure was very interested), this is one of the largest odds ratios that obtain – second only to academic test scores.

Aggression in girls is the only behavioural attribute retained as significantly linked to adult earnings. Compared to those with less evidence of aggression, those with at least one high aggression score have odds of low family income that are 44 percent larger.

In the more inclusive 0.05 models, only a few additional variables are retained. Restlessness and aggression in boys appear as significant determinants of low earnings. Additionally social class of origin is retained for men (although men with two or three manual observations at birth are now slightly *less* likely to report low age 30 earnings than men with two or three non-manual observations). Finally the parental interest variable for women changes so that maternal interest is retained and paternal interest is dropped. This is likely to be due to the fact that the two parental interest variables are highly correlated.

Low Social Class: Like the previous labour market outcomes considered, age 30 social class is most strongly associated with childhood academic test scores. Girls and boys with at least one bottom quartile set of test scores are more likely to be in a manual occupational class than their better performing counterparts (odds 6.14:1 and 6.20 for men and women, respectively). With odds of 6.16:1, women with missing information on test scores at all three waves are similar to the poorer performing group. For men with missing information on their test scores, the odds, relative to those with two or three top quartile scores, are 4.53:1.

Parental housing tenure is also linked to a low occupational class. Men observed living in social housing at least twice during childhood and women observed living in social housing at least once, are more likely to fall into a lower social class at age 30. For men who were observed living in social housing at least twice, the odds are 1.73:1, and for women the odds ratio is even larger.

In addition to academic test scores and housing tenure, childhood restlessness is also retained for men. Compared to those with less evidence of restlessness, boys with two or three high restlessness scores are more likely to have a low occupational class at age 30 (odds 1.91:1). No behavioural measures are retained in the 0.001 models for women.

Both social class measures are related to own social class for men, but for women, only the social class of the father figure is linked to own social class. Women whose father figure was coded as working in a non-manual occupation less than twice during childhood are more likely to work in a lower social class occupation themselves (odds 1.51:1). Men whose father figure was coded as working in a manual occupation at least once have odds of working in a manual occupation that are 41 percent larger than the reference group. In addition, men with the most evidence of manually employed male relatives at birth have odds of working in a manual occupation themselves that are 1.85 times the odds of the reference group.

Social class at age 30 is associated with parental interest in education at age 10 for men but not for women. Men whose father figure showed little or no interest in their education are more likely than men with more interested fathers

to work in a lower social class occupation at age 30 (odds 1.77:1). In the 0.05 models maternal interest is also retained for men, but the odd ratio is smaller.

None of the childhood poverty or family structure variables are retained in the 0.001 models for men or women. In the 0.05 models, women with the most evidence of childhood poverty based on the indicator measure are more likely to be employed in a manual occupation (odds 1.69:1). Additionally, some family experience variables are retained for women. As with lack of qualifications, experience of family disruption, but not of remarriage, is negatively associated with having a manual occupation, while evidence of having lived in a step-family increases the odds of working in a manual occupation. Finally restlessness in girls and aggression in boys is linked to age 30 social class in the 0.05 models.

Unemployed at Age 30: Based on the size of the odds ratios, childhood poverty is most strongly associated with unemployment at age 30 for men. For women, low maternal interest in education is the most strongly correlated determinant. Relative to men with less evidence of poverty, the odds of being unemployed at age 30 are 2.97:1 for men with at least two out of three childhood poverty indicators. Conversely, neither poverty measure is retained for women. Women with an age ten mother figure who showed little or no interest in their education have odds of age 30 unemployment that are 2.65 times those of their counterparts with more interested mothers. Maternal interest is not retained for men at either level of significance.

Being observed in local authority housing at least once during childhood is associated with unemployment for both sexes. Relative to those cohort members whose parents were never recorded as living in local authority housing, men with at least one local authority observation have odds of unemployment that are 1.91:1, while for women in the same category, the odds ratio is 2.23:1.

The only other controls that are significantly associated with unemployment at age 30 are academic test scores for men. Relative to those who performed better, men whose test scores were in the bottom quartile at least once face a greater risk of unemployment at age 30, with an odds ratio of 1.77:1. When the models are estimated using a 0.05 threshold, academic test scores are retained for women, as well. Those with at least one bottom quartile set of scores are more likely to be unemployed.

The 0.05 model also retains one family experience variable, maternal interest in education, and aggression scores for men. Men who lived in a step-family at some time during childhood are less likely to be unemployed at age 30 than similar men with other family experiences. Men whose age 10 father figure showed little or no interest in their education are more likely to be unemployed at age 30 than their counterparts with more interested fathers. Finally, those

with at least one high aggression score are more likely to be unemployed at age 30.

In addition to academic test scores, the 0.05 model retains measures of income poverty, restlessness and anxiety for women. Those with at least one low income observation have odds of unemployment that are 82 percent larger than those with less evidence of children poverty. Women with at least one high restlessness score are less likely to be unemployed at age 30 than women with two or three low restlessness scores (odds 0.63:1), but those in the intermediate group with no high scores but no more than 1 low score are more likely to be unemployed (odds 1.66:1). Women with at least one high anxiety score during childhood have odds of unemployment that are 62 percent larger than those with less evidence of child anxiety. But it is the absence of behavioural scores (here, anxiety) that is most discerning. Compared to women with the least evidence of child anxiety, women with missing scores have odds of unemployment that are 3.85 times greater.

Summary of Work Related Outcomes: The clearest correlates of poor, labour market-related, economic outcomes include academic test scores and parental housing tenure. Low academic test scores in childhood are correlated with a lack of academic or vocational qualifications at age 30, social class at age 30, and, to a lesser extent, earnings (own for men, own plus partner's for women) in the bottom quartile of the distribution. Test scores are significantly correlated with male but not female unemployment at age 30, except in the 0.05 models. Missing test scores are also linked to all of the outcomes except unemployment.

Tenure is correlated with all four employment related outcomes for both men and women. Except for low earned income, the odds ratios for women are generally larger for this variable. For women, being observed in social housing at least once during childhood more than doubles the odds of having no qualifications, working in a manual occupation, and being unemployed at age 30.

Experience of child poverty is most strongly associated with unemployment for men, and it is the poverty indicator measure that is retained. When it comes to a lack of qualifications, it is income poverty that is retained, and, in the 0.05 models, for women as well as men. Finally, both child poverty measures are associated with low income at age 30.

Family experience is not related to any of the work related outcomes we consider in this section. Although family background does not appear to be a strong correlate of poor labour market preparation and outcomes, parental interest in education does seem to play a role in women's outcomes (all but low social class), and in the 0.05 models, for men's outcomes as well (all but low earnings). Although for the demographic outcomes, it was the interest of the same sex parent that was usually retained, no such pattern emerges for employment outcomes.

The social class of origin variable is only retained as significantly associated with low social class for men. In contrast, the social class of the father figure is linked to two of the four outcomes for men and three of the four outcomes for women. Moreover, missing information on the social class of the father figure increases the likelihood that a man will have no qualifications. For women, missing information is associated with a lack of qualifications and with having a low social class, but in the 0.05 models only.

Aggressive girls are more likely to have no qualifications and low family earnings at age 30, while restless boys are more likely to have no qualifications and a low social class. This is the reverse of the pattern that we identified for demographic outcomes where aggression was most often retained for men and restlessness for women. More behavioural scores are retained in the 0.05 models, and aggression is retained for three out of the four male outcomes (all but lack of qualifications) and restlessness for three out of the four female outcomes (all but lack of qualifications). In addition, anxiety is negatively related to a lack of qualifications for men, and positively related to unemployment for women.

c. Other Economic Exclusion Indicators – Welfare Position

The odds ratios for the variables retained as significantly associated with our second set of economic exclusion indicators are presented in Table 11. These outcomes are more related to the cohort member's welfare position and level of need than to their success, or lack of success, in the labour market although, of course, the two are related. They include living in social housing and receiving non-universal benefits at age 30 as well as having ever been homeless.

Social Housing: There are several childhood factors that are significantly associated with living in a local authority or housing association property at age 30. Similar to results reported for the 1958 cohort, academic test scores and housing tenure both stand out as those most strongly correlated for both sexes (Hobcraft, 1998). Men with at least one bottom quartile set of test scores are more likely to be living in social housing at age 30 than the higher performing reference group (odds 2.00:1). Among those with missing information on academic test scores at all three ages, the odds of living in social housing are 1.83:1. For women, the effects are more dramatic. Those with no bottom quartile scores and no more than one top quartile have odds of living in social housing that are 2.27 times the odds of the better performing, reference group. For those with at least one bottom quartile set of test scores, the odds increase to 3.90:1, and those with missing information are more similar to the intermediate groups (odds 2.67:1). In the 0.05 models, the odds ratios are larger and more graded for both sexes, although the odds ratios continue to be larger for women. This differs from Hobcraft (1998) where the odds ratios were larger for men.

Table 11: The relationships of the control variables to the economic outcomes at age 30, presented as odds ratios

	Men						Women					
	Social Housing		Receipt of Benefits		Ever Homeless		Social Housing		Receipt of Benefits		Ever Homeless	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Poverty Indicator												
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor												
Some Poverty			1.81	1.50	1.85	1.53	1.50	1.44	1.58	1.49		
Clearly Poor		1.57	1.81	2.16	1.85	1.53	1.50	1.44	1.58	1.49		
All Missing								2.01				
Income Poverty												
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor				1.35				1.24				
Some Poverty	2.02	1.70		1.35				1.24		1.45		
Clearly Poor	2.02	1.70		1.35				1.24		1.45		
All Missing				1.49		1.53				1.41		
Family Type												
Both Natural, All	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Natural, Partial				0.78								1.46
Lone Mother at Birth					2.73	3.05						2.16
Ever in Care						1.92					2.52	3.26
Dissolution No Remarriage						1.82					1.61	2.09
Other Lone, No Remarriage											1.61	2.09

	Men						Women					
	Social Housing		Receipt of Benefits		Ever Homeless		Social Housing		Receipt of Benefits		Ever Homeless	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Dissolution/Remarriage		0.69				1.82				1.17	1.61	2.09
Other Lone/Remarriage		2.76								2.43	1.61	2.09
All Missing												
Social Class of Origin												
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM		1.61	1.91	1.84								
One IV or V		1.61	1.91	1.84								
Two or Three IV or V		1.61	1.91	1.84			1.46	1.42				
All Missing		2.11	2.83	2.35								
Social Class of Father Figure												
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM							1.79	1.72	1.73	1.55		1.35
One IV or V						1.50	1.79	1.72	1.73	1.55		1.35
Two or Three IV or V						1.50	1.79	1.72	1.73	1.55		1.35
All Missing							2.04	1.92	2.41	1.52		
Housing Tenure												
2/3 Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-Occupier			0.57	0.64						1.66		
1 Council	4.56	3.90	1.04	1.09			3.26	3.22	1.84	2.89	1.46	1.37
2/3 Council	4.56	3.90	1.04	1.09			3.26	3.22	1.84	2.89	1.46	1.37
All Missing												

	Men						Women					
	Social Housing		Receipt of Benefits		Ever Homeless		Social Housing		Receipt of Benefits		Ever Homeless	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Father Figure's Interest in School												
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest			1.66	1.62							1.95	1.83
Little Interest	2.09	2.30	1.66	1.62			1.79	1.47	1.89	1.86	1.95	1.83
No Interest	2.09	2.30	1.66	1.62			1.79	1.47	1.89	1.86	1.95	1.83
Missing		1.25	1.59	1.47							1.72	1.59
Mother Figure's Interest in School												
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest							1.62	1.58	1.41	1.35		
Little Interest							1.62	1.58	1.41	1.35		
No Interest							1.62	2.89	1.41	1.35		
Missing							1.52	1.41	1.56	1.38		
Aggression Scores												
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low			1.73	1.50				1.20	1.43	1.32	1.57	1.39
1 High		1.28	1.73	2.04	2.21	2.02		1.20	1.43	1.32	2.61	2.42
2/3 High		1.28	1.73	2.04	2.21	2.02		1.20	1.43	1.32	2.61	2.42
All missing	3.24	2.75										
Restlessness Scores												
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low	1.66	1.46					1.63	1.33		1.21		

	Men						Women					
	Social Housing		Receipt of Benefits		Ever Homeless		Social Housing		Receipt of Benefits		Ever Homeless	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
1 High	1.66	1.46					1.63	1.85		1.21		
2/3 High	1.66	1.46					1.63	1.85		1.21		
All missing							3.27	2.74				
Anxiety Scores												
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low												
1 High												
2/3 High												
All missing										2.31	3.11	3.09
Academic Tests												
2/3 High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Low, 0/1 High		1.95					2.27	2.22		1.49		
1 Low	2.00	3.33	1.71	1.74		1.33	3.90	3.46	1.69	2.53		
2/3 Low	2.00	3.33	1.71	1.74		1.33	3.90	4.50	1.69	2.53		
All Missing	1.83	2.61		1.58		1.67	2.67	2.42		1.94		

The findings further suggest an intergenerational transmission of the propensity to live in social housing. Those children who were recorded as living in local authority housing at least once during their childhood are more likely to be living in social housing at age 30 (odds ratios 4.56:1 for men and 3.26:1 for women). Large odds ratios persist even in the more inclusive 0.05 models where more childhood background factors are retained in the models, and the associations are even stronger than those reported in Hobcraft (1998) for the 1958 cohort.

The father (figure)'s interest in education is also strongly associated with social housing at age 30. A man whose father figure at age 10 was reported to have little or no interest in his education is more likely to be living in social housing than his counterpart whose father (figure) was very or somewhat interested (odds 2.09:1) . For women the odds ratio is smaller (odds 1.79:1). For women, mother's interest in education moderately reinforces father's interest. Women whose mother figure at age 10 was anything but very interested in their education have odds of living in social housing that are 62 percent larger.

Childhood poverty is also related to social housing in adulthood. Relative to their counterparts with less evidence of poverty, women with at least one poverty indicator have an odds ratio of 1.50:1. For men, the odds ratio associated with at least one low household income observation during childhood is 2.02:1. When the models are estimated with a 0.05 exclusion threshold, both poverty measures are retained in both models.

Women with two or three manual observations for their social class of origin summary variable are more likely to live in social housing than other cohort members (odds ratio 1.46:1). In addition, women who are missing information on the social class of their father figure at ages 5, 10, and 16 are more likely to live in social housing at age 30 than are women whose fathers were coded as working in a non-manual occupation at least twice (odds 2.04:1). The odds for all other women not in the reference category are 1.79:1. It is likely that the high odds for women with missing information are, to some extent, picking up the effects of family structure, especially because the family experience variables are not retained in the final model.

Finally, women who have some information regarding childhood restlessness scores and fall into anything but the reference group (two or three low restlessness scores) have odds of living in social housing that are 63 percent larger. Men in this same category have odds that are 66 percent larger than those of the reference group. Those with missing information face even greater odds. For women with missing restlessness scores, the odds of living in social housing are 3.27:1, and for men with missing aggression scores, the odds are 3.24:1. As with many of the other outcomes we consider, missing information on behavioural scores is a strong predictor.

When the models are re-estimated using a weaker exclusion criterion, childhood aggression is retained as significantly related to social housing for

both men and women. Furthermore, the social class of origin is retained as significantly associated with this outcome for men. Men with anything other than two non-manual observations are more likely to live in social housing at age 30 than the less disadvantaged reference group (odds 1.61:1 for those with some information and 2.11:1 for those with missing information).

Receipt of Non-Universal Benefits: The relationships between our controls and receipt of non-universal benefits differ substantially according to the sex of the cohort member. Based on the size of the odds ratios, social class of origin is the most strongly correlated with receipt of benefits for men, but it is not retained in either the 0.001 or the 0.05 models for women. Men who had fewer than two male family members working in a non-manual occupation in 1970 have odds of benefit receipt that are 91 percent larger than those of men who had at least two family members working in a non-manual occupation at that time. For men with no information on the occupational class of both grandfathers and their father around the time of birth, a measure that is likely to be correlated with family disruption, the odds of benefit receipt are even larger at 2.83:1. In contrast, it is the social class of their father figure that is related to receipt of benefits for women, and the odds ratios are somewhat smaller. Women whose father was coded as working in a non-manual occupation less than twice during childhood have odds of benefit receipt that are 1.73 times the odds of the reference group. Women who lack any information on the social class of their father figure at ages 5, 10, and 16 – a measure likely to be strongly correlated with having an absent father – have an odds ratio of benefit receipt (relative to women whose father figure(s) were coded as working in non-manual occupations at least twice) of 2.41:1.

The age 10 father (figure)'s interest in education is most strongly correlated with receipt of benefits for women. Compared to those with more interested father figures, women whose fathers at age 10 were reported to have little or no interest in their education are more likely to be receiving non-universal benefits at age 30 (odds 1.89:1). This relationship is reinforced by the mother (figure)'s interest in education. Women whose mothers were anything less than very interested in their education are also more likely to be in receipt of non-universal benefits (odds 1.41:1 for those with some information and 1.56:1 for those with missing information). Men whose father (figure) at age 10 was anything but very interested in their education, have odds of receiving benefits that are 1.66:1 for those with some information and 1.59:1 for those with missing information. Mother's interest in education is not retained at either significance level for men.

Housing tenure during childhood is significantly associated with the benefit receipt of both men and women. Women who were observed living in local authority housing at least once during the childhood waves are more likely to receive non-universal benefits at age 30 than their counterparts who were

never observed living in local authority housing (odds 1.84:1). On the other hand, men observed in council housing at least once during childhood have only slightly greater odds of benefit receipt than men who were observed in owner-occupied housing at least twice (odds 1.04:1). Moreover, the intermediate group of men (those never observed in local authority housing, but observed in owner-occupied housing no more than once) are actually less likely to be in receipt of universal benefits than those living in owner-occupied housing at least twice (odds 0.57:1).

Academic test scores in childhood are significantly related to the receipt of non-universal benefits for both men and women. Men with at least one set of bottom quartile test scores are more likely than those who performed better (or had missing information) to receive benefits at age 30 (odds 1.71:1). For women in the same category, the odds ratio of 1.69:1 is similarly sized. When the models are estimated using a 0.05 significance level, the odds ratios for women increase while for men they remain about the same size. This result differs from Hobcraft's (1998) findings using the 1958 cohort where the odds ratios for men and women with two or three bottom quartile test scores were similarly sized (although the effects were more graded for women than for men in that study and this one as well).

Childhood poverty also appears to be significantly related to benefit receipt, but, once again, some sex differences emerge. Men who have experienced at least one poverty indicator at ages 10 or 16 have odds of benefit receipt of 1.81:1 (relative to those with no indicators). Women with at least one indicator have lower odds of 1.58:1. The effects become more graded for men in the 0.05 models, and those with the strongest evidence of poverty have odds of benefit receipt that are more than twice those of the reference group. In the 0.05 models, childhood poverty measured with income is retained as significant for both sexes, but the odds are larger for the indicator variable.

Of the three behavioural variables, only aggression is retained as significantly associated with receipt of benefits at age 30. Men with no high aggression scores and no more than one low score (but not all missing), are more likely to be receiving non-universal benefits at age 30 than their counterparts with two low scores (odds 1.73:1). Women in this same category have odds of benefit receipt that are 43 percent larger than the less aggressive reference group. When the models are re-estimated using 0.05 as the exclusion threshold, no further behavioural variables are retained for men (although the relationship with aggression becomes more graded), but restlessness and missing anxiety scores are retained for women.

No family experience variables are retained in the 0.001 models, but, in the 0.05 models, some family experiences are retained as significant. Men with partial information that suggests they lived with both natural parents throughout their childhood are less likely to be in receipt of benefits than the reference group who have complete information and were observed living with both

natural parents at all childhood waves (odds 0.78:1). For women, evidence of having lived in a step-family increases the odds of benefit receipt.

Homelessness: Experience of homelessness is only linked to a handful of variables in the 0.001 models. Like receipt of benefits, there are noticeable gender differences in the relationships that emerge. Based on the size of the odds ratios, having been born to a lone mother is the strongest correlate for men, but the variable does not become significant for women unless a 0.05 exclusion threshold is employed. Men born to a lone mother are more likely to have ever been homeless than those who were not (odds 2.73:1). For women, other family experiences are retained. Those who had ever been in care are more likely to have been homeless by age 30 (odds 2.52:1) and those who have experienced a family disruption are also more likely than those who lived in two parent families throughout to have ever been homeless (odds 1.61:1).

Childhood aggression is retained with the largest odds ratio for women and the second largest odds ratio for men. Women with at least one high aggression score have odds of homelessness that are 161 percent larger than those of women with less evidence of aggression. For men in the same category, the odds of homelessness, relative to those with no high scores, are 2.21:1. Missing behavioural scores (anxiety) are linked to homelessness as well, but for women only. Those with missing anxiety scores have odds of homelessness that are more than three times as large as those for women with any information on childhood anxiety.

The odds of homelessness for men who experienced at least one poverty indicator at age 10 or age 16 (relative to those with less evidence of poverty) are 1.85:1. In the 0.05 models the odds are attenuated somewhat, and those with missing childhood family income measures are also more likely than those with any information to have ever been homeless. Neither poverty measure is retained for women at either significance level.

Women whose age 10 father (figure) was anything other than very interested in their education are more likely to have ever been homeless (odds 1.95:1 for those with some information and 1.72:1 for those with missing information). Neither parental interest variable is linked to male homelessness at either significance level.

While in the 1958 cohort, homelessness was linked to housing tenure for men only, in the 1970 cohort, the relationship is significant for women only. Women observed living in council housing at least once at ages 5, 10, and 16 are more likely than those who were not to have been homeless before the age of 30 (odds 1.46:1). Housing tenure is not significantly related to male homelessness in either the 0.001 or the 0.05 models.

In the 0.05 models, the social class of the father figure is retained as significant for both men and women. Men whose father (figure) was coded as being in a manual occupational class at least once have odds of homelessness

that are 50 percent larger than those whose father (figure) was not. Women whose father (figure) was coded as being in a non-manual occupation less than twice are more likely to have ever been homeless than all other women with information on that variable (odds 1.35:1).

Homelessness is one of the few outcomes we examine that is not linked to poor academic test scores in childhood. Only in the 0.05 models, and only for men are academic test scores retained as significantly related to homelessness. Even then, the odds ratios are not as large as those that obtain for other outcomes. Men with at least one bottom quartile set of test scores are more likely to have ever been homeless than men who performed better but the odds are only 1.33:1. Men with missing academic tests at all three waves are even more likely to have ever been homeless (odds 1.67:1).

Summary of Welfare Position Variables: Adult economic outcomes that relate to the welfare position of the cohort members are consistently linked to academic test scores, housing tenure, childhood poverty, paternal interest in education, and childhood aggression. Nonetheless, the patterns are less consistent and more gendered than what we find for other sets of outcomes. Academic test scores are retained as significantly associated with receipt of benefits and social housing for both sexes, but are not related to having ever been homeless. Housing tenure during childhood is linked with all three outcomes for women, but for men, the odds ratios are small and it is not associated with having ever been homeless.

For this second set of economic outcomes, it is the poverty indicator measure and not the income measure that is most clearly associated with poor outcomes – the only exception being social housing for men. Although income measures are more often retained as significant in the 0.05 models, the odds ratios are usually smaller than those relating to the poverty indicators.

Like the labour market related outcomes, parental interest in education is more often associated with female outcomes, but the age 10 father figure's interest in education has a larger effect on social housing for men than it does for women. Family experience is only retained as significantly associated with homelessness, but family experience variables are retained as significantly associated with receipt of benefits for women and social housing for men in the 0.05 models, as well.

Unlike the other, more employment related, economic outcomes discussed above, aggression is associated with many of these need related measures. Aggressive boys and girls are more likely to have become homeless by age 30 and in receipt of non-universal benefits. In the 0.05 models they are more likely to be living in social housing as well.

d. Physical Health Risks and Outcomes

The odds ratios for those variables retained as significantly associated with health risks (smoking or drug use) or poor health outcomes (having a work limiting condition) are presented in Table 12 for both sexes and for both the 0.001 and the 0.05 models.

Smoking Behaviour: Few variables are strongly and clearly associated with regular smoking behaviour at age 30. Paternal interest in education, academic test scores, aggression, housing tenure, and family experience (although not exactly the same variables) are retained as significantly associated with smoking for both men and women. Furthermore, childhood anxiety is significantly linked to women's smoking while childhood poverty is linked to male smoking.

Cohort members whose father (figure) at age 10 had little or no interest in their education have greater odds of smoking every day than their counterparts whose fathers were very or somewhat interested, with odds of 1.74:1 and 1.92:1 for men and women, respectively. Having no information on the father (figure)'s interest in education is also associated with the propensity to smoke for men, but the odds are smaller at 1.37:1. Maternal interest variables are not retained for either sex at either significance threshold.

Academic test scores, especially for women, are correlated with regular smoking behaviour. Women with two or three top quartile test scores are far less likely to smoke daily than all other women, with odds ratios of 2.02:1 for all other test score summaries and an even higher 2.33:1 if information on academic test scores is missing at all ages. Men with two or three test scores in the top quartile of the distribution are also less likely to be regular smokers at age 30, but the relationship between tests and smoking is weaker. All other test score summary groups have odds of 1.44:1, while those with missing information have even higher odds of 1.91:1

Men with at least one high aggression score during childhood are more likely to be regular smokers at age 30 (odds 1.68:1). Women with less than two low aggression scores but no more than one high aggression observation are also more likely to be regular smokers than the reference group (odds 1.57:1). Among those with two or three high scores, the odds increase to 2.70:1. When the 0.05 exclusion criterion is employed, the associations between aggression and regular smoking becomes more graded for both sexes (although the thresholds for men and women vary). Compared to those with two or three low anxiety scores, other women (with some information) are less likely to smoke at age 30 (odds 0.77:1). In the 0.05 models, anxiety is also retained (protectively) for men, and restlessness scores are retained for both men and women.

Table 12: The relationships of the control variables to the physical health and risk taking outcomes at age 30, presented as odds ratios

	Men						Women					
	Smoking		Ever Use of Drugs		Work Limiting Condition		Smoking		Ever Use of Drugs		Work Limiting Condition	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Poverty Indicator												
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor												
Some Poverty		1.18			1.64	1.46		1.23				1.28
Clearly Poor		1.18			1.64	1.46		1.23				1.28
All Missing											2.13	2.27
Income Poverty												
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor	1.26	1.24										
Some Poverty	1.26	1.24									1.78	1.50
Clearly Poor	1.26	1.24									1.78	1.50
All Missing								1.40				
Family Type												
Both Natural, All	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Natural, Partial												
Lone Mother at Birth										1.74		
Ever in Care		1.50						1.53				
Dissolution No Remarriage				1.27			1.58	1.58	1.44	1.49		
Other Lone, No Remarriage												

	Men						Women					
	Smoking		Ever Use of Drugs		Work Limiting Condition		Smoking		Ever Use of Drugs		Work Limiting Condition	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Dissolution/Remarriage	1.58	1.50	1.72	1.80			1.58	1.58	1.44	1.49		
Other Lone / Remarriage		1.50	1.72	1.42								
All Missing												
Social Class of Origin												
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM												
One IV or V												
Two or Three IV or V								1.26				
All Missing				1.45								
Social Class of Father Figure												
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM												
One IV or V												1.47
Two or Three IV or V												0.78
All Missing												
Housing Tenure												
2/3 Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-Occupier		1.32										
1 Council	1.41	1.73				1.29	1.77	1.65				
2/3 Council	1.41	1.73				1.29	1.77	1.65				

	Men						Women					
	Smoking		Ever Use of Drugs		Work Limiting Condition		Smoking		Ever Use of Drugs		Work Limiting Condition	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
All Missing		1.63										
Father Figure's Interest in School												
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest												
Little Interest	1.74	1.63					1.92	1.86				
No Interest	1.74	1.63					1.92	1.86				
Missing	1.37	1.33										
Mother Figure's Interest in School												
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest												
Little Interest												
No Interest												
Missing						1.35						
Aggression Scores												
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low							1.57	1.33	1.34	1.35		
1 High	1.68	1.46	1.38	1.52			1.57	1.73	1.34	1.35		
2/3 High	1.68	1.96	1.38	1.09			2.70	2.68				
All Missing												
Restlessness Scores												

	Men						Women					
	Smoking		Ever Use of Drugs		Work Limiting Condition		Smoking		Ever Use of Drugs		Work Limiting Condition	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low		1.22	1.27	1.33				1.23				
1 High		1.22	1.27	1.33				1.23				
2/3 High		1.85	1.27	1.33				1.23				1.92
All Missing												
Anxiety Scores												
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low				0.84			0.77	0.76				
1 High		0.79	0.71	0.65			0.77	0.76	0.72	0.72		
2/3 High		0.79	0.71	0.65		1.79	0.77	0.49	0.72	0.72		
All Missing												
Academic Tests												
2/3 High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Low, 0/1 High	1.44	1.39					2.02	1.92				
1 Low	1.44	1.39			1.62	1.53	2.02	1.92		0.81	1.49	1.42
2/3 Low	1.44	1.39	0.62	0.61	1.62	1.53	2.02	1.92	0.57	0.53	1.49	1.42
All Missing	1.91	1.71		0.75			2.33	2.10				

Cohort members who were recorded as living in local authority housing at least once during childhood are more likely to be regular smokers at age 30. For women, the odds of smoking every day (relative to that group with no local authority observations during childhood) are 1.77:1, while for men, the odds are smaller at 1.41:1. Men with missing information on their housing tenure at all three childhood waves are also more likely to be regular smokers (odds 1.63:1).

Men who have evidence of both a family dissolution and remarriage are more likely to be regular smokers than those who had other family experiences (odds 1.58:1). Similarly, women with evidence of divorce or separation regardless of subsequent remarriage have odds of regular smoking that are 58 percent greater than the odds for women who had other family experiences. In the 0.05 models, having ever been in care is linked to smoking for both sexes as well.

While the poverty indicator summary is not retained, men with two family income measures above the age-specific thresholds are less likely to smoke. All other men with some information have odds of 1.26:1. Neither measure of childhood poverty is linked to female smoking in the 0.001 models. In the 0.05 models, both poverty measures are linked to smoking for men, while the indicator summary and the missing category for the income poverty summary are retained for women.

Ever Used Drugs (Besides Cannabis): Few childhood background variables are retained as significantly related to age 30 reports of ever having used illegal drugs (other than cannabis). Family experience variables are the most strongly correlated for both sexes. Men who experienced a family disruption and parental remarriage are more likely to report drug use (odds 1.72:1) while women who experienced a divorce or separation (regardless of whether the custodial parent remarried) were more likely to report drug use than those with other childhood family experiences (odds 1.44:1).

Drug use is the only outcome with which low academic test scores are negatively correlated. In both the 0.001 and the 0.05 models those with two or three test score observations in the bottom quartile are less likely to report that they have ever taken an illegal drug other than cannabis than other cohort members (odds 0.62:1 and 0.57:1 for men and women, respectively). When the models are estimated using the 0.05 exclusion threshold, women who fell in the bottom quartile of the distribution at only one wave were also less likely to report having used drugs, and men with missing test scores at all waves were also less likely to report drug use.

In the 0.001 models, the only other variables that are linked to drug use are the childhood behavioural scores. Men with at least one high aggression score and women with anything less than two low scores are more likely to report having used drugs than those with less evidence of aggression (odds 1.38:1for men and 1.34:1 for women). Conversely men and women with at least

one high anxiety score are less likely to report having ever used drugs (odds 0.71:1 for men and 0.72 for women). Men with less than two low restlessness scores (but not all missing) have odds of reported drug use that are 27 percent larger. Missing behavioural scores are not associated with having ever used drugs for either sex or level of significance.

Work Limiting Condition: Very few childhood factors are significantly associated with the fairly rare reports of having a work limiting condition at age 30. For men, academic test scores and child poverty indicators are the only significant correlates. For women only academic test scores, child poverty (income measures) and missing child poverty indicators are retained.

Academic test scores are significantly associated with having a work limiting condition at age 30, but the odds ratios are smaller than those that obtain for most other adult outcomes. Relative to those with no bottom quartile test scores, cohort members with at least one set of bottom quartile test scores are more likely to have a work limiting condition, the odds being 1.62:1 for men and 1.49:1 for women. In the 0.05 models, the odds ratios are little changed.

Childhood poverty is retained as significantly associated with the development of a work limiting condition regardless of sex, but there are, nonetheless, gender differences in the relationships. Men with at least one poverty indicator at ages 10 and 16 are more likely to have a work limiting condition (odds ratio 1.64:1). For women, having missing information on all three poverty indicators is related to having a work limiting condition (odds ratio 2.13:1). In addition, for women with at least one observation of low household income, the odds of having a work limiting condition at age 30 are 1.78:1, relative to the group with no low observations. In the 0.05 models, women with at least one poverty indicator are also more likely to have a work limiting condition.

A few other variables are retained in the 0.05 models. Relative to those whose father (figure)s were never coded as working in a manual social class, women whose father figure was in social class IV or V once during the childhood waves are more likely to have a work limiting condition (odds 1.47:1), but those whose father figure was coded as working in a manual occupation at least twice during childhood are less likely to have a work limiting condition (odds 0.78:1). Women with at least two high restlessness scores in childhood are more likely to have a work limiting condition (odds 1.92:1). Men with missing information on maternal interest in education are more likely to have a work limiting condition than men with information on that variable. Finally, men, but not women, who were observed living in local authority housing at least once are somewhat more likely to have a work limiting condition.

Summary of Physical Health Behaviours and Outcomes: There are surprisingly few childhood background factors that are clearly related to physical health risks and outcomes at age 30. Few odds ratios are large, and strong correlates are usually not consistently retained as significantly related to the other physical health outcomes we consider. Only academic test scores are retained as significantly related to all three measures in both the male and female models.

The age 10 father figure's interest in education is linked to regular smoking for both sexes but to no other physical health outcomes. Among the behavioural variables, aggression is related to two out of three outcomes for both sexes – neither is retained as significantly related to having a work limiting condition in the 0.001 models. Additionally, anxiety is related to two outcomes for women and one for men. Childhood restlessness is associated only with male drug use. However, utilising the 0.05 significance threshold, restlessness is associated with two out of three outcomes for both men and women, and childhood anxiety is associated with all male outcomes and two out of three female outcomes.

Childhood poverty is not clearly associated with drug use, although there is some evidence of a link between low income and a subsequent work limiting condition for women and experience of poverty indicators and a subsequent work limiting condition for men. There is also some evidence of a positive link between childhood poverty, as measured using family income, and male smoking.

Family experience, particularly related to some kind of family disruption, is associated with smoking and drug use. In the 0.05 models, those cohort members who have ever been in care are more likely to smoke every day, and for women being born to a lone mother increases the risk of subsequent drug use. Family experience is not significantly related to having a work limiting condition at age 30, at either level of significance.

e. Mental Health Outcomes

The odds ratios for the variables retained as significantly associated with two measures of poor mental health, a score on the malaise inventory of seven or higher, and a score on the General Health Questionnaire of at least 12, are presented in Table 13 for both sexes at both levels of significance.

Table 13: The relationships of the control variables to the mental health outcomes at age 30, presented as odds ratios

	Men				Women			
	Malaise		General Health Questionnaire		Malaise		General Health Questionnaire	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Poverty Indicator								
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor			1.30	1.25				
Some Poverty		1.23	1.30	1.25	1.47	1.44		1.19
Clearly Poor		1.23	1.30	1.25	1.47	1.44		1.19
All Missing								
Income Poverty								
Not Poor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Probably Not Poor		1.25						
Some Poverty		1.25						
Clearly Poor		1.25						
All Missing		1.48				1.29		
Family Type								
Both Natural, All	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Natural, Partial		0.75						
Lone Mother at Birth								
Ever in Care								
Dissolution No Remarriage								
Other Lone, No Remarriage								
Dissolution/Remarriage								
Other Lone/Remarriage								
All Missing				2.33				
Social Class of Origin								
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM		1.31				1.19		
One IV or V		1.31				1.19		
Two or Three IV or V		1.31				1.19		
All Missing								
Social Class of Father Figure								
Two or Three Non-manual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM								
One IV or V								

	Men				Women			
	Malaise		General Health Questionnaire		Malaise		General Health Questionnaire	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
Two or Three IV or V								
All Missing								
Housing Tenure								
2/3 Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-Occupier						1.43		
1 Council	1.50	1.30				1.43		
2/3 Council	1.50	1.30				1.43		
All Missing								
Father Figure's Interest in School								
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest				0.77				
Little Interest				0.77				
No Interest				0.77				
Missing				0.84				
Mother Figure's Interest in School								
Very Interested	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some Interest								
Little Interest								
No Interest				1.75				
Missing				1.20		1.16		
Aggression Scores								
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low	1.42			1.22	1.43	1.30	1.36	1.23
1 High	1.42	1.26		1.22	1.43	1.30	1.36	1.51
2/3 High	1.42	1.26		1.22	1.43	2.04	1.36	1.51
All missing								1.43
Restlessness Scores								
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 High, 0/1 Low		1.26						1.14
1 High		1.26			1.41	1.35		
2/3 High		1.26			1.41	1.35		
All missing								
Anxiety Scores								
2/3 Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

	Men				Women			
	Malaise		General Health Questionnaire		Malaise		General Health Questionnaire	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**	**0.001**	**0.050**
0 High, 0/1 Low	1.47	1.29						
1 High	1.47	1.68	1.50	1.48	1.32	1.32	1.29	1.25
2/3 High	2.62	2.41	1.50	1.48	1.32	1.32	1.29	1.25
All missing								
Academic Tests								
2/3 High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0 Low, 0/1 High	1.67	1.58						
1 Low	1.67	1.58			1.47	1.48		
2/3 Low	1.67	1.58			1.47	1.48		0.80
All Missing	2.00	2.02				1.48		

Malaise: In the final, 0.001 models, childhood anxiety is most strongly correlated with male malaise and poor academic test scores and childhood poverty with female malaise. Men with two or three high anxiety scores have odds of high malaise that are 2.62 times those of men with two or three low scores. The middle group has odds that are 1.47 times those with the least evidence of childhood anxiety. In contrast, women with at least one high anxiety score have odds of high malaise that are only 32 percent larger than women with less evidence of childhood anxiety. In the 1958 cohort, high anxiety scores significantly increased the risk of malaise in adulthood for women but not men (Hobcraft, 1998). In this study, it is restlessness scores that affect women only. Relative to women with two or three low scores, the odds ratio for other women with some information is 1.43:1. Aggression scores are retained as significantly related to malaise for both sexes, however. Men with less than two low aggression scores (but not all missing) are more likely to have a high malaise score than other men, and women in the same categories are also more likely to have a high malaise score. Moreover, the odds ratios are similarly sized at 1.42:1 and 1.43:1 for men and women, respectively. Missing behavioural scores are not associated with malaise for either sex at either level of significance.

Men whose academic test scores placed them in the top quartile at least twice are the least likely to have a high malaise score at age 30. All other groups with some information have odds of 1.67:1; those with missing test scores at all ages have odds of 2.00:1. Women with at least one bottom quartile set of scores have odds of 1.47:1. These relationships are largely unchanged in the 0.05 models (although missing test scores are retained as significantly related to

female malaise). In his analysis of the 1958 cohort, Hobcraft (1998) found a stronger and more graded relationship between poor academic performance and adult malaise than is reported here.

Men who were recorded as living in local authority housing at least once during childhood have odds of high malaise that are 50 percent greater than those of their counterparts who were not. For women housing tenure is only retained as significant in the 0.05 model, where women in any category other than the reference (or missing) category are at greater risk of malaise. For members of the 1958 cohort, tenure was only associated with malaise in women.

Women with at least one poverty indicator at ages 10 and 16 are at greater risk of having a high malaise score (odds 1.47:1). In the more inclusive, 0.05 models, both poverty variables are retained for men. In addition, the missing category for child poverty measured by family income is retained for women.

Family type variables are not retained in either of the 0.001 models. But when the 0.05 significance threshold is utilised, men who appear to have lived with both natural parents throughout childhood but have only partial information are somewhat less likely to have a high malaise score than men with complete information (odds 0.75:1).

In the 0.05 models, social class of origin is also significantly associated with malaise, although the odds ratio is larger for men. Finally, in the more inclusive, 0.05 models, women born in 1970 are more likely to have high malaise scores at age 30 if information on their mother (figure)'s interest in their education at age 10 is missing.

General Health Questionnaire (GHQ): Very few childhood background factors are retained as significantly associated with a high GHQ score in the 0.001 models. Only childhood anxiety scores are retained as significant for both men and women. No other factors except childhood poverty indicators for men and childhood aggression scores for women are retained in the final models. This is perhaps not surprising because the GHQ inventory assesses fluctuations in mental health around a usual state. In contrast, the malaise inventory asks what that usual state is. It seems plausible that the GHQ is more likely to reflect short-term stress while the malaise inventory is more likely to pick up more lasting personality traits. The latter is more likely to be related to childhood experiences.

Women and men with at least one high anxiety score are both somewhat more likely to have high GHQ scores at age 30 (odds ratio 1.50:1 and 1.29:1 for men and women respectively). Women with less than two low aggression scores (but not all missing) are also somewhat more likely to have a high GHQ score at age 30 but at 1.36:1, the odds are lower than those that obtain for childhood anxiety. In the 0.05 models, men with fewer than two low aggression scores are

also significantly more likely to have a high GHQ score, and the relationship between aggression and a high GHQ score for women becomes more graded. Additionally, in the 0.05 models, missing behavioural scores and restlessness scores are also retained, but for women only.

Men with no poverty indicators are less likely to have a high GHQ score. Men in all other but the missing category have odds of a high GHQ score that are 30 percent larger. In the 0.05 models, childhood poverty indicators are retained for women as well. The childhood poverty measure based on income is not retained in any of the models, however.

In the 0.05 models, few other variables are retained. Men with no information on their family structure are more likely to have a high GHQ score than men with some information (odds 2.33:1). A man whose father (figure) at age 10 was anything other than very interested in his education is less likely to have a high GHQ score (odds 0.77:1 for those with information and 0.84:1 for those with missing information). In contrast, men with missing information on maternal educational interest and those whose mothers showed no interest in their education at age 10 are more likely to have a high GHQ score than are men with more interested mothers. For women, no parental interest variables are retained. Finally, women with two or three sets of bottom quartile test scores are less likely than those with better scores to have a high GHQ score at age 30.

Summary of Mental Health Outcomes: Even fewer childhood background factors are significantly associated with poor mental health than were found to be associated with poor physical health (risks), and no clear patterns emerge, at least in the 0.001 models. The only consistent correlates are childhood anxiety and perhaps aggression. Academic test scores and, for men, housing tenure are associated with malaise but not a high GHQ score.

In the 0.05 models, more factors are retained, particularly for high malaise. In most cases, when a variable is retained as significantly associated with both a high malaise and a high GHQ score, the odds ratio linking that variable to malaise tends to be the larger of the two. Social class of origin is retained as significantly associated with malaise in women, but the social class of the father figure continues to be excluded and neither social class measure is associated with having a high GHQ score at age 30.

f. Contact with Police by Age 30

The only measure we use to gauge contact with police is an indicator for having ever been arrested by age 30. In Table 14, we present the variables that are retained as significantly associated with this outcome for both sexes and for both the 0.001 and 0.05 models.

Table 14: The relationships of the control variables to police contact by age 30, presented as odds ratios

	Men		Women	
	Ever Arrested		Ever Arrested	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**
Poverty Indicator				
Not Poor	1.00	1.00	1.00	1.00
Probably Not Poor				1.29
Some Poverty	1.41	1.35		1.29
Clearly Poor	1.41	1.35		1.29
All Missing				
Income Poverty				
Not Poor	1.00	1.00	1.00	1.00
Probably Not Poor				
Some Poverty				
Clearly Poor				
All Missing				
Family Type				
Both Natural, All	1.00	1.00	1.00	1.00
Natural, Partial				
Lone Mother at Birth			2.56	2.72
Ever in Care				1.80
Dissolution No Remarriage		1.23		1.48
Other Lone, No Remarriage		1.23		
Dissolution/Remarriage		1.23		1.48
Other Lone/Remarriage		1.23		
All Missing				3.87
Social Class of Origin				
Two or Three Non-manual	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM				
One IV or V				
Two or Three IV or V				
All Missing				
Social Class of Father Figure				
Two or Three Non-manual	1.00	1.00	1.00	1.00
0 IV/V, 0/1 NM		1.18		
One IV or V		1.18		

	Men		Women	
	Ever Arrested		Ever Arrested	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**
Two or Three IV or V		1.18		
All Missing				
Housing Tenure				
2/3 Owner-Occupier	1.00	1.00	1.00	1.00
0 Council, 0/1 Owner-Occupier				1.82
1 Council	1.50	1.40		1.82
2/3 Council	1.50	1.40		1.82
All Missing				
Father Figure's Interest in School				
Very Interested	1.00	1.00	1.00	1.00
Some Interest				
Little Interest		1.43	5.75	4.76
No Interest		1.43	5.75	4.76
Missing			1.86	1.55
Mother Figure's Interest in School				
Very Interested	1.00	1.00	1.00	1.00
Some Interest				
Little Interest				
No Interest				
Missing				
Aggression Scores				
2/3 Low	1.00	1.00	1.00	1.00
0 High, 0/1 Low	1.60	1.46		
1 High	2.42	2.03	2.12	1.88
2/3 High	2.42	2.70	2.12	1.88
All Missing				
Restlessness Scores				
2/3 Low	1.00	1.00	1.00	1.00
0 High, 0/1 Low		1.26		
1 High		1.26		1.40
2/3 High		1.26		1.40
All Missing				
Anxiety Scores				
2/3 Low	1.00	1.00	1.00	1.00
0 High, 0/1 Low	0.75	0.81		

	Men		Women	
	Ever Arrested		Ever Arrested	
Selection Criterion	**0.001**	**0.050**	**0.001**	**0.050**
1 High	0.75	0.63		
2/3 High	0.75	0.63		0.55
All Missing		1.67		
Academic Tests				
2/3 High	1.00	1.00	1.00	1.00
0 Low, 0/1 High	1.96	1.66		1.83
1 Low	1.96	2.17		1.83
2/3 Low	1.96	1.61		1.83
All Missing	2.38	1.92		2.49

Ever Arrested: Contact with the police by age 30 is most strongly linked to paternal interest in education for women and childhood aggression for men. Other significant associations with police contact include academic test scores, poverty indicators, housing tenure, and anxiety for men. For women, childhood aggression and having been born to a lone mother are the only other characteristics that are retained as significantly associated with being arrested.

The age 10 father figure's interest in education is, by far, the most strongly correlated childhood factor for women. A woman whose father (figure) at age 10 had little or no interest in her education has odds of being arrested that 5.75 times the odds of women whose father (figure) was reported to be very or somewhat interested in her education. Those with missing information on paternal interest at age 10 are also more likely to report ever having been arrested, but at 1.86:1 the odds are much smaller. The strong association between paternal interest and contact with the police emerged when other indicators of police contact (including having been stopped and questioned and having been found guilty in court) were examined. The relationship attenuates somewhat when the exclusion threshold is 0.05, but it still remains the largest odds ratio in the final model. For men, father's interest in education is retained as significant only in the 0.05 models, and the odds ratio is noticeably smaller. The odds ratio for men whose fathers had little or no interest in their education is 1.43:1, while for women it is 4.76:1. Even in the more inclusive 0.05 models, the age 10 mother (figure)'s interest in education is not associated with having been arrested for either men or women.

Male cohort members with no high aggression scores and no more than one low score have odds of arrest that are 60 percent larger than those of their less aggressive counterparts. For men with at least one high aggression score, the odds increase to 2.42:1. Women with at least one high score are also more

likely to have been arrested (odds 2.12:1). Men with the least evidence of childhood anxiety are also more likely to report ever having been arrested. Compared to the reference group with two or three low scores, men in all other categories (but not all missing) have odds of being arrested that are 25 percent lower. In the 0.05 model, women with at least one high restlessness score are more likely to have been arrested (odds 1.40:1) while those with two or three high anxiety scores are less likely (odds 0.55:1). Furthermore, men with missing anxiety scores are more likely to have ever been arrested when a 0.05 threshold is utilised (odds 1.67:1).

Men with two or three top quartile test scores are the least likely to report having ever been arrested. Relative to this group, the odds of arrest for those with missing test scores are 2.38:1. For all others with some information, the odds are 1.96:1. It is only in the 0.05 models that childhood test scores are retained as significantly related to having been arrested for women. Relative to those with two or three top quartile scores, women with missing test scores at all three childhood waves have odds of being arrested that are 149 percent larger. All other women with some test score information have odds of being arrested that are 83 percent larger than those of the reference group.

Men who experienced at least one poverty indicator are more likely to have been arrested (odds 1.41:1). Women in all but the least advantaged category are also more likely to have been arrested, but with smaller odds (1.29:1) and only in the 0.05 model. Low income during childhood is not significantly associated with having been arrested for either sex at either level of significance.

Women who were born to a lone mother are more likely to have been arrested than women with different family histories (odds 2.56:1). For men, no family experience variables are retained in the 0.001 model. In the 0.05 models, evidence of a family disruption (any disruption for men, divorce/separation for women) is positively associated with having been arrested. For women, the odds for those who were born to a lone mother increases to 2.72:1. In addition, women who have missing information on their family structure at all three waves are significantly more likely to report having been arrested (odds 3.87:1) as well those who had ever been in care (odds 1.80:1).

Men who were recorded as living in local authority housing at least once during childhood have odds of being arrested that are 50 percent larger than those of other men with some information. In the 0.05 models, women in anything but the reference (two or three owner-occupier) or missing categories are more likely to have been arrested.

The only other childhood factor to be retained in the 0.05 models as significantly associated with arrest is the social class of the father figure for men. Men whose father figure was not coded as working in a non-manual occupation at least twice during childhood (but not all missing) are more likely to have been arrested by age 30.

7. Explanatory Variables and Outcomes

a. The Childhood Summary Variables

In this section we change our focus from an examination of the outcomes to an examination of the childhood background factors, highlighting the most commonly retained factors and summarising the strengths of the associations. In the interest of parsimony, we explore the relative size of the association between each group of hierarchically defined variables and each of the 16 outcomes for men and 17 outcomes for women, using correlation 'indices'. The indices for the models that used a p-value of 0.001 as their exclusion criterion are presented for each outcome for both men and women in Table 15. A similar table for the models using a p-value of .05 as their exclusion threshold is presented in Table 16.

To construct the indices, we follow the strategy employed in Hobcraft (1998). When the odds ratio exceeds one, we calculate the index by subtracting one and then summing over all categories of the control variable except the missing category. For example, the odds ratios associated with childhood anxiety for the outcome of male malaise in the 0.001 model (shown in Table 13) are 1.47, 1.47, and 2.62 for the three categories that are not all missing. Subtracting one and summing over the three categories, the index of association of male malaise with childhood anxiety is 0.47+0.47+1.62=2.56. When an odds ratio is less than one, we first take the reciprocal of the odds ratio and then subtract one. For example, the odds ratios associated with childhood anxiety for the outcome of young fatherhood in the 0.05 (shown in Table 9) are 0.67, 0.67, and 0.67. The index of association of young fatherhood with childhood anxiety is ((1/0.67)-1)+ ((1/0.67)-1)+ ((1/0.67)-1) =1.47. Although the family experience variables are only partially hierarchical, for consistency, we subtract one (or take the reciprocal and subtract one) from each significant odds ratio and then calculate the sum.

To summarise the strength of the associations by variable, we follow Hobcraft (1998) and label indices of two or greater as "large" and those one or greater as "fairly large". Readers should bear in mind when they compare indices that while most factors have three informative categories over which we sum and are readily comparable, there are potentially seven different odds ratios which could contribute to the indices of association of the outcomes to family experience. An index relating an outcome to family experience could be large either because of strong associations of specific experiences or because of several small associations.

Table 15: Indices of strength of association for each outcome with control variables by sex, 0.001 models

	Poverty Ind.		Poverty Inc		Family Type		SC Origin		SC FathFig		Tenure		Fath Fig Int		Moth Fig Int		Aggresssion		Restlessness		Anxiety		Test Scores	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Young Parent	--	1.34	--	--	--	--	5.79	3.96	3.30	--	2.62	2.08	--	--	--	2.22	1.58	--	--	1.77	--	--	1.60	1.64
Extra-Marital Birth	--	0.98	--	--	0.88	--	2.52	--	--	1.77	1.52	1.68	1.28	--	--	3.41	1.74	--	--	1.29	1.17	--	2.93	1.06
Non-union Birth	1.44	1.14	--	--	--	--	--	--	--	--	2.52	2.24	--	--	--	--	3.15	--	--	1.53	1.84	--	1.40	11.67
Lone Parent	--	1.44	--	--	--	--	--	--	--	1.50	--	1.64	--	--	--	1.98	--	--	--	1.29	--	--	--	4.33
No Qualifications	--	--	1.20	--	--	--	--	--	2.04	2.01	1.72	2.28	--	1.88	1.44	--	--	1.32	0.88	--	--	--	20.97	13.83
Low Earned Income	0.96	0.82	0.96	1.26	--	--	--	--	--	1.05	1.36	0.96	--	1.46	--	--	--	0.82	--	--	--	--	5.65	5.61
Low Social Class	--	--	--	--	--	--	0.85	--	0.82	1.53	0.73	2.04	1.54	--	--	--	--	--	0.91	--	--	--	11.65	12.05
Unemployment	1.97	--	--	--	--	--	--	--	--	--	1.82	2.46	--	--	--	3.30	--	--	--	--	--	--	1.54	--
Social Housing	--	1.00	2.04	--	--	--	--	0.46	--	2.37	7.12	4.52	2.18	1.58	--	1.86	--	--	1.98	1.89	--	--	2.00	7.07
Benefits	1.62	1.16	--	--	--	--	2.73	--	--	2.19	0.83	1.68	1.98	1.78	--	1.23	2.19	1.29	--	--	--	--	1.42	1.38
Homeless	1.70	--	--	--	1.73	3.96	--	--	--	--	--	0.92	--	2.85	--	--	2.42	3.79	--	--	--	--	--	--
Smoke	--	--	0.78	--	0.58	1.16	--	--	--	--	0.82	1.54	1.48	1.84	--	--	1.36	2.84	--	--	--	0.90	1.32	3.06
Ever Used Drugs	--	--	--	--	1.44	0.88	--	--	--	--	--	--	--	--	--	--	0.76	1.02	0.81	--	0.82	0.78	0.61	0.75
Limting Cond.	1.28	--	--	1.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.24	0.98
Malaise	--	0.94	--	--	--	--	--	--	--	--	1.00	--	--	--	--	--	1.26	1.29	--	0.82	2.56	0.64	2.01	0.94
GHQ >12	0.90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.08	--	--	1.00	0.58	--	--
Ever Arrested	0.82	--	--	--	--	1.56	--	--	--	--	1.00	--	--	9.50	--	--	3.44	2.24	--	--	1.00	--	2.88	--

Table 16: Indices of strength of association for each outcome with control variables by sex, 0.05 models

	Poverty Ind.		Poverty Inc		Family Type		SC Origin		SC FathFig		Tenure		Fath Fig Int		Moth Fig Int		Aggresssion		Restlessness		Anxiety		Test Scores	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Young Parent	--	0.80	--	0.96	0.78	--	5.91	3.52	2.70	--	2.24	1.52	1.10	--	--	3.41	3.16	0.82	--	1.44	1.48	0.50	1.52	7.61
Extra-Marital Birth	0.40	0.98	--	--	2.20	2.63	1.95	0.63	0.81	1.53	1.12	2.97	1.08	--	--	2.86	2.02	0.66	--	1.02	1.63	0.50	2.62	3.26
Non-Union Birth	0.96	0.72	0.54	0.76	--	--	--	--	1.74	1.23	1.88	1.60	1.54	1.38	--	1.02	2.55	0.84	1.26	1.08	1.92	0.53	2.76	8.14
Lone Parent	--	0.92	--	0.62	--	1.85	--	--	--	1.59	--	3.31	--	1.32	--	1.48	--	--	--	1.14	--	--	--	3.96
No Qualifications	--	0.52	1.62	0.66	--	1.58	0.34	0.62	1.56	2.64	1.68	1.58	--	2.32	2.61	--	--	1.53	1.06	--	0.86	--	18.44	10.63
Low Earned Income	0.92	0.80	0.90	1.68	--	0.56	0.36	--	--	1.11	0.88	0.90	--	--	--	1.56	0.38	0.66	0.66	0.62	--	--	4.89	5.31
Low Social Class	--	0.69	--	--	--	2.57	0.83	--	0.76	2.49	0.98	1.50	1.59	--	0.94	--	0.72	--	0.86	0.90	--	--	11.35	10.80
Unemployment	1.64	--	--	1.64	2.65	--	--	--	--	--	1.48	1.68	2.24	--	--	2.34	1.04	--	--	1.83	--	1.24	1.36	1.10
Social Housing	0.57	0.88	1.40	0.72	2.21	--	1.83	0.42	--	2.16	5.80	4.44	2.60	0.94	--	3.05	0.56	0.60	1.38	2.03	--	--	5.61	7.18
Benefits	1.66	0.98	1.05	0.90	0.28	1.60	2.52	--	--	1.65	0.74	4.44	1.86	1.72	--	1.05	2.58	0.96	--	0.63	--	--	1.48	3.55
Homeless	1.06	--	--	--	4.61	8.24	--	--	1.00	1.05	--	0.74	--	2.49	--	--	2.04	3.23	--	--	--	--	0.66	--
Smoke	0.36	0.46	0.72	--	1.50	1.69	--	0.26	--	--	1.78	1.30	1.26	1.72	--	--	1.42	2.74	1.29	0.69	0.53	1.67	1.17	2.76
Ever Used Drugs	--	--	--	--	1.49	1.72	--	--	--	--	--	--	--	--	--	--	0.61	1.05	0.99	--	1.27	0.78	0.64	1.12
Limting Cond.	0.92	0.56	--	1.00	--	--	--	--	--	0.75	0.58	--	--	--	--	--	--	--	--	0.92	0.79	--	1.06	0.84
Malaise	0.46	0.88	0.75	--	0.33	--	0.93	0.57	--	--	0.60	1.29	--	--	--	--	0.52	1.64	0.78	0.70	2.38	0.64	1.74	0.96
GHQ >12	0.75	0.38	--	--	--	--	--	--	--	--	--	--	0.90	--	0.75	--	0.66	1.25	--	0.42	0.96	0.50	--	0.25
Ever Arrested	0.70	0.87	--	--	0.92	3.48	--	--	0.54	--	0.80	2.46	0.86	7.52	--	--	3.19	1.76	0.78	0.80	1.41	0.82	2.44	2.49

Table 17: Summary of the correlation indices across outcomes, by sex and signficance level

	Poverty Ind.		Poverty Inc		Family Type		SC Origin		SC FathFig		Tenure		Fath Fig Int		Moth Fig Int		Aggresssion		Restlessness		Anxiety		Test Scores	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Significance Criterion 0.001																								
Number of indices > 2.00	0	0	1	0	0	1	3	1	2	3	3	6	1	2	0	3	4	3	0	0	1	0	7	7
Number of indices > 1.00	5	5	2	2	2	3	3	1	2	7	8	10	5	7	1	6	8	8	1	5	5	0	13	10
Number Significant	8	8	4	2	4	4	4	2	3	7	12	12	5	7	1	6	9	9	4	6	6	4	14	13
Total of indices	10.7	8.8	5.0	2.8	4.6	7.6	11.9	4.4	6.2	12.4	23.1	24.0	8.5	20.9	1.4	14.0	17.9	15.7	4.6	8.6	8.4	2.9	57.2	64.4
Significance Criterion 0.050																								
Number of indices > 2.00	0	0	0	0	4	4	2	1	1	3	2	5	2	3	1	4	6	2	0	1	1	0	7	11
Number of indices > 1.00	3	0	3	3	6	9	4	1	4	9	7	12	8	7	1	8	8	7	4	6	6	2	13	13
Number Significant	12	14	6	9	10	10	8	6	7	10	13	14	10	8	3	8	14	13	9	14	10	9	15	16
Total of indices	10.4	10.4	6.3	8.9	17.0	25.9	14.7	6.0	9.1	16.2	20.6	29.7	16.3	19.4	4.3	16.8	21.5	17.7	9.1	14.2	13.2	7.2	57.7	70.0

Table 17 provides a summary of the frequency and strength of the association across all adult outcomes for all explanatory variables by sex and for both the 0.001 and the 0.05 models. The table shows the number of times the index of correlation for each childhood experience is “large”, “fairly large”, or greater than zero across all outcomes. Moreover, we take the sum of the indices for each childhood experience across the outcomes as an indicator of the relative power of the various childhood explanatory variables. As discussed in Hobcraft (1998), this kind of overview allows us to identify common patterns across outcomes and to explore which childhood experiences are most pervasively associated with adult outcomes. The overview also highlights gender differences in the patterns and strength of associations between childhood experiences and adult social exclusion. By comparing results from our (similar) models to those in Hobcraft (1998), we can also examine the extent to which the various associations have persisted over time.

Regardless of the exclusion threshold utilised educational test scores appear most frequently for both men and women. The sum of the indices is, by far, the greatest for educational test scores for both models and both sexes. In the 0.001 models, academic test scores enter significantly in 27 out of 33 possible outcomes (16 possible outcomes for men and 17 possible outcomes for women). Of these 27 significant entries, 14 have “large” correlation indices and all 23 are “fairly large”. In the more inclusive, 0.05 models, academic test scores are retained in the models for 31 out of 33 adult outcomes.

Consistent with Hobcraft’s (1998) findings for the 1958 cohort, performance on academic test scores in childhood is, by far, most powerfully associated with having no academic or vocational qualifications in adulthood. In Tables 15 and 16, the correlation indices for academic test scores and no qualifications stand out as the largest entries in the tables, although the indices of correlation are somewhat larger for men than for women. While the predominance and power of academic test scores mirrors the findings in Hobcraft (1998), the odds ratios that associate performance on academic test scores with having no qualifications are lower than those presented in that study. Table 15 shows that, in the 0.05 models, the indices of association of lack of qualifications with academic test scores are 18.44 and 10.63 for men and women respectively. For the 1958 cohort, the indices were several times larger at 66.7 and 42.3 for men and women, respectively. Because the decline in well-paid manufacturing work should have strengthened the link between academic performance and earnings, further examination of this decline in the strength of the association is warranted.

In addition to having no adult qualifications, academic test scores are also strongly associated with a low age 30 social class, low earnings, and social housing for both sexes, to lone parenthood, a non-union first birth and regular smoking for women, and to extra-marital fatherhood, malaise and having ever been arrested for men, all in the 0.001 models. Similar to findings using the

1958 cohort, experience of homelessness is one of the few outcomes *not* associated with test scores during childhood for women. Although homelessness is associated with test scores for men in the 0.05 models, the index is not even fairly large at 0.66. While Hobcraft (1998) reported similarly sized associations between academic test scores and young parenthood for men and women, our results from the 0.05 models show a much stronger association for women than for men. Finally, the correlation between test scores and social housing, regular smoking, and having a non-union first birth is stronger for women than for men, while the correlation between test scores and having had an extra-marital first birth, a high malaise score, or having been arrested is stronger for men.

Based on the sum of the correlation indices and the number of times a factor is retained as significant, housing tenure is the next, most consistently strong predictor of adult outcomes. In the 0.001 models there are three "large" indices for men and six "large" indices for women, and the sum total of the indices for housing tenure are second highest, after academic test scores, for both men and women. Regardless of the exclusion threshold applied, childhood housing tenure is most strongly correlated with living in social housing at age 30, although the indices are larger for men than for women.[13] Housing tenure is also strongly correlated with young parenthood, and a non-union first birth for both sexes, and with a lack of qualifications, a low social class, and unemployment at age 30 for women in the 0.001 models. In contrast to findings from the 1958 cohort, we do not find a large association between housing tenure in childhood and adult homelessness for men. Housing tenure is only significantly associated with homelessness for women in the 1970 cohort, but the correlation index is not even fairly large in either the 0.05 or 0.001 models.

Housing tenure is moderately related to an extra-marital first birth for both sexes (although the correlation index for women is "large" in the 0.05 models) for both men and women. In addition, housing tenure is moderately correlated with lone parenthood, receipt of non-universal benefits, and regular smoking for women, and with no qualifications, low earned income, unemployment, high malaise and having ever been arrested for men.

Parental housing tenure is more often strongly and consistently associated with adult outcomes for individuals born into the 1970 cohort than it was for those in the 1958 cohort (Hobcraft, 1958). Although tenure was often related to adult outcomes in the earlier study, odds ratios relating experience of housing tenure in childhood with subsequent adult social exclusion are generally larger and more often significant in this analysis than in the earlier one. The increased strength of the correlation of parental housing tenure with adult outcomes may

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[13] For women, the 0.05 index of association of receipt of benefits with parental housing tenure is the same size and the index of association of social housing with parental housing tenure.

be due to increasing levels of residualisation in council housing where families that could afford to buy left behind those who were more disadvantaged, a trend that began in the 1960s and accelerated in the 1980s (after the second childhood wave of the BCS70) with right-to-buy (Lee and Murray, 1997; Burrows, 1997). Although the impact of right-to-buy would have had an impact on the later childhood years only, by the 1970s, there was already clear evidence that lower income households were increasingly over-represented within council housing as higher income groups moved towards home-ownership (Murie, Niner, and Watson, 1976). This means that the average child living in council housing would be more disadvantaged. In addition, housing tenure should reflect increasing neighbourhood disadvantage as well.

Childhood aggression scores are another powerful correlate of adult social exclusion. Aggression scores are associated with 27 out of 33 outcomes in the 0.05 models (18 out of 33 outcomes in the 0.001 models), but the sum of the indices is larger for men than it is for women. In fact, for men, in the 0.05 models, the sum of the correlation indices for aggression exceeds the sum of the indices for housing tenure. Childhood aggression is strongly correlated with homelessness and having been arrested for both sexes. In addition, there are strong correlations between childhood aggression and having had a non-union first birth and being in receipt of non-universal benefits for men. For women the only additional, strong association is of regular smoking with childhood aggression.

Father's interest in schooling is significantly associated with only 12 out of 33 outcomes, and the indices are more often "large" or "fairly large" for women than for men. In the 0.001 models, the sum of the indices of association is 8.5 for men and 20.9 for women. This large gender gap is, to some extent, due to the very large index of association of having ever been arrested with father's interest in education, which is 9.50 for women. The factor is only retained in the 0.05 models for men, and, even then, the index is only 0.86. Although for women in the 0.05 models, mother's interest in education at age 10 is associated with the same number of adult outcomes as father's interest, the sum of the indices for father's interest exceeds the sum for mother's interest for both sexes and significance thresholds. The sum total of the indices for both parental interest variables are higher for females than for males, and the gender gap is larger for mother's interest than for father's.

The father figure's interest in schooling is strongly correlated with living in social housing at age 30 for men, and, in addition to having ever been arrested, with homelessness for women. In the 0.05 models, father's educational interest is also strongly correlated with a lack of qualifications for women and a low social class for men. Although Hobcraft (1998) found that father's interest in education was most strongly related to having no educational qualifications for both women and men, the variable is only retained as significantly

associated with lack of qualifications for women in the 1970 cohort (although the 0.05 index is “large”).

The mother figure’s interest in education at age 10 is correlated with a lack of qualifications for men but not women, and, similar to members of the 1958 cohort, is strongly correlated with young motherhood and having had an extra-marital first birth for women. Although lone parenthood was not examined as an outcome in Hobcraft’s (1998) analysis of the 1958 cohort, this third demographic outcome is also associated with the mother figure’s interest in education at age 10, and the correlation index is “fairly large”.

Childhood poverty indicators are correlated with many adult outcomes, but the correlation indices are always either “fairly large” or smaller. As a consequence, while, in the 0.05 models, poverty indicators are significantly correlated with 26 out of 33 outcomes, the sum of the indices is only 10.4 for both men and women. In the 0.001 models, the poverty indicators measure is still correlated with 16 outcomes, but the sum of the indices is only 10.7 for men and 8.8 for women. For men and women both, five out of eight indices are “fairly large” in the 0.001 models. In the 0.05 models, poverty indicators are more often retained, but only three indices are “fairly large” for women and none are for men. Measuring child poverty with indicators (free school meals and the family’s receipt of non-universal benefits) appears to be a stronger predictor of adult outcomes than are (rough) income measures. Although the sums of the 0.05 indices for the income measures and indicator measures are more similar in size for women than for men, there is still a noticeable gap in the number of significant correlations at both levels of significance.

While in the 0.001 models, aggression is correlated with similar numbers of male and female outcomes, anxiety is more often associated with male outcomes and restlessness with female outcomes. Depending on the significance threshold, childhood anxiety is significantly correlated with six or ten out of 16 male outcomes. It is significantly correlated with four or nine out of 17 female outcomes in the 0.001 and 0.05 models respectively. In addition, the sums of the indices for anxiety for both significance thresholds is higher for males – much higher when we consider the 0.001 indices. Restlessness is significantly associated with four or nine out of 16 male outcomes and six or fourteen out of 17 female outcomes (once again, in the 0.001 and 0.05 models respectively). The sums of the indices shows a gender gap with females noticeably larger than males at both levels of significance.

Comparing the 0.05 indices for those outcomes that are similar in both the study of the 1958 cohort and this one (young parenthood, extra-marital birth, no qualifications, low income, unemployment [men only], social housing, receipt of benefits, homelessness and malaise), we find that in both studies childhood aggression is consistently related to the female outcomes. Childhood aggression was retained as significant for all female outcomes but homelessness in Hobcraft’s study and is retained as significant for all eight outcomes when a

0.05 significance level is employed here. The index of association of homelessness with childhood aggression is large, however. For men in the 1958 cohort, aggression was retained less often than it is in the 0.05 models estimated here for the 1970 cohort. In Hobcraft's study, childhood aggression was retained as significantly associated with four out of the nine outcomes we are comparing. In this application, childhood aggression is retained as significantly associated with all adult outcomes but a lack of qualifications. Moreover, the indices that obtain in this application are generally larger than those reported for men in Hobcraft (1998).

Anxiety is retained as significantly associated with a similar set of outcomes across both cohorts. There is an association of receipt of benefits with childhood anxiety for men in the 1958 cohort but not for men in the 1970 cohort. There is a stronger association of male malaise with anxiety in this application, but the remaining correlation indices are similarly sized. Childhood anxiety is more often retained as significantly associated with female outcomes in the 1970 cohort than those born in 1958. Among female members of the 1958 cohort, malaise was the only outcome (among the common set of outcomes) with which childhood anxiety was associated. In this application there is an association of young motherhood and extra-marital motherhood with anxiety as well. None of this correlation indices related to this application are large, however.

Childhood restlessness is retained as significantly related to four out of nine outcomes considered in both Hobcraft's study and this one. Among male members of the 1958 cohort, childhood restlessness was retained as significantly associated with no qualifications, low earned income, malaise and receipt of benefits. In this application it is associated with the first three outcomes and social housing. Comparing the correlation indices for these outcomes, it is the index of social housing that is largest for men in the 1970 cohort, but at 1.38 the index is only "fairly large". In addition the correlation index for no qualifications is larger for the earlier cohort than in this application, but once again, the index is only "fairly large". Finally, restlessness is retained as significantly associated with more female outcomes in this application than in the previous study. Hobcraft (1998) reported that childhood restlessness significantly predicted homelessness and social housing for female members of the 1958 cohort. In this application, restlessness is not retained as significantly associated with homelessness, but it is associated with social housing, young motherhood, extra-marital parenthood, low family earnings, receipt of benefits and malaise. As mentioned above, there are differences in the income measure, so the link between restlessness and low family income may be due to differences of measurement. Only social housing has a large correlation index here (much higher than the one reported for female members of the 1958 cohort), however, so although there are more significant links, the relationships are not, in general, strong.

Results from the study of the 1958 cohort showed that childhood aggression was most strongly correlated with female outcomes while anxiety and restlessness were more often associated with male outcomes. In this application, the gender gap has narrowed substantially and aggression is retained as significantly correlated with about the same number of male and female outcomes, and restlessness is now associated with more female outcomes than male.

Social class of origin – the summary of occupational social classes of the paternal and maternal grandfathers along with the father at the time of birth – is, in contrast with findings from the 1958 cohort, more often correlated with the adult outcomes of men than of women. The sums of the indices for men are, regardless of the significance level used, more than 50% greater than the sums that obtain for women. Social class of origin is most strongly correlated with young parenthood for both sexes. For men only, there are additional strong correlations with extra-marital fatherhood and receipt of benefits. There are no other "large" or "fairly large" correlation indices for women. In the 0.05 models, social class of origin was more frequently retained but none of the additional correlation indices are large and only one is "fairly large" (social housing for men).

The occupational social class of the father figure at ages 5, 10, and 16, also in contrast with the findings from the 1958 cohort, is more often associated with outcomes for women than for men. For women, in the 0.05 models, father's social class is strongly correlated with lack of qualifications, low social class (the index is only fairly large in the 0.001 model), and social housing for women. Fairly large indices are obtained for extra-marital motherhood, a non-union first birth, lone parenthood, low family earnings, receipt of benefits (the correlation index related to the 0.001 models is large for this outcome), and homelessness. For women in the 1958 cohort, the social class of the father figure was significantly linked to only young motherhood, malaise, social housing, and no qualifications. The only "fairly large" index of association in that study was of social housing with the father's social class – in this study, the correlation index is even larger.

The social class of the father (figure) is strongly correlated with young parenthood and a lack of qualifications (although not in the 0.05 model) for men. In the 0.05 models, there is a "fairly large" correlation between social class of the father figure and homelessness, a lack of qualifications, and having had a non-union first birth. Although for men, social class of the father figure did not have even a "fairly large" correlation index for homelessness or lack of qualifications, in the previous analysis of the 1958 cohort, the correlation index was "large" for social housing, an outcome for which father's social class is not retained as significant in this study.

Measures of family structure emerged as a strong and consistent predictor of adult social exclusion for the 1958 cohort. In the 0.001 models estimated

here, the only large correlation index is associated with female homelessness. However, the 0.05 results are much more similar to those reported in Hobcraft (1998) for the 1958 cohort. When the more inclusive models are estimated, family experiences are more often retained. Moreover, there are large indices for extra-marital motherhood, low social class, homelessness and having ever been arrested for women, and extra-marital fatherhood, current unemployment, social housing and homelessness for men.

b. Missing Information

For each childhood summary variable, we have included a separate indicator that is set equal to one if the cohort member has no information available to construct that variable. When a missing value indicator is retained as significantly associated with any particular outcome, we can conclude that the group with missing information is significantly different from the most advantaged reference group. In this section, we rely on the results presented in Tables 9-14 to highlight those instances in which missing values are retained as significant.

Having no information on the indicators used to construct the poverty indicator category (free school meals at age 10, receipt of non-universal benefits at age 10, and parent-reported financial difficulties at age 16), is not significantly related to any of the male outcomes that we consider. In contrast, having missing information on all the indicators is associated with low family earnings (0.05 model only), social housing (0.05 model only), and having a work limiting condition for women. Missing information on family income at age 10 or age 16 is never retained in the 0.001 models for men. For women, it is associated with a lack of qualifications, and low family earnings. In the 0.05 models, the variable is more often retained. For men, the missing income indicator is significantly associated with having no qualifications, receipt of benefits, homelessness, and malaise. In the more inclusive models, there are three more female outcomes with which missing income information is linked – receipt of benefits, regular smoking, and malaise. In several cases – lack of qualifications (0.001 model), regular smoking, and malaise for women, and male homelessness – only the missing information indicator is retained as significant.

Missing information on family type at birth, age 5, age 10, and age 16 is not retained as significantly associated with any of the adult outcomes in the 0.001 models. In the 0.05 models, missing information is correlated with a high GHQ score for men and with having been arrested for women. In the case of a high GHQ score for men, it is the only family experience variable that is retained. For women, it is the largest odds ratio of all retained family experience variables.

A lack of information on the social class of origin – the occupational class of the cohort member's grandfathers and father at the time of birth – is

strongly associated with young parenthood for both men and women. In both cases, relative to those with two or three non-manual observations, those with missing information on their social class of origin are even more likely than the most disadvantaged category to have become young parents. Missing information on the social class of origin is also significantly associated with having had an extra-marital first birth (odds 1.99:1) and the receipt of benefits (odds 2.83:1), but for men only. Once again, those with missing information are even more likely than those in the most disadvantaged categories to have experienced these outcomes. In the 0.05 models, having no information on social class of origin is associated with social housing (odds 2.11:1) and drug use (odds 1.45:1) for men but with no additional outcomes for women. For members of the 1958 cohort, a missing value for this summary variable was strongly and positively correlated with malaise for men and social housing for women (Hobcraft, 1998).

Missing information on the social class of the father (figure) at ages 5, 10, and 16 is strongly associated with young fatherhood (odds 3.75:1) and a lack of qualifications (odds 2.18:1) for men and social housing (odds 2.04:1) and receipt of benefits (odds 2.41:1) for women. Similar to the pattern that emerged for social class of origin, the odds ratio associated with the missing category is, in all cases, larger than the one associated with the most clearly disadvantaged category (those cohort members with two or three observations where the father figure is coded as working in a non-manual occupation). In the 0.05 models, missing information on the social class of the father figure is also associated with a lack of qualifications and a low occupational class for women, but with no additional male outcomes. The generally large odds ratios that obtain in the 0.001 models may be, in part, due to the fact that missing information on the father figure is correlated with not having a father figure and, therefore, may be picking up some of the effects of family structure – especially when family structure variables are excluded from the final models.

Missing information on parental housing tenure at ages 5, 10 and 16 is not retained as significantly associated with any of the adult outcomes in the 0.001 models. In the 0.05 models, missing information on housing tenure is only associated with regular smoking in men but is not associated with any female outcomes.

Missing information on the father's interest in schooling at age 10 is significantly associated with having had an extra-marital first birth (odds 1.30:1), receipt of benefits (odds 1.59:1) and regular smoking (odds 1.37:1) for men and with homelessness (odds 1.72:1) and having ever been arrested (odds 1.86:1) for women. When a less restrictive, 0.05 significance level is used, missing information on father's interest in schooling is correlated with many more outcomes. These include a a non-union first birth and low social class for both sexes, young fatherhood, unemployment, social housing, and a high GHQ score (protectively) for men, and lone parenthood and a lack of qualifications

for women. The odds ratios are not as large as those that obtained for missing information on social class. Nonetheless, similar to father's social class, not having information on a father (figure's) interest in schooling at age 10 is likely to be correlated with not having a father in the household and, therefore, may be picking up some effects of family experience.

In the more selective 0.001 models, missing information on the mother (figure)'s interest in schooling at age 10 is associated with three female outcomes. Compared to women who had very interested mothers at age 10, those with missing information on their mother's educational interest are more likely to have had an extra-marital first birth (odds 1.36:1), to live in social housing (odds 1.52:1), and to be receiving non-universal benefits (odds 1.56:1). In the 0.05 models, missing information for this variable is also associated with a lack of qualifications, having a work limiting condition, and having a high GHQ score for men. For women, in addition to the three outcomes mentioned above, missing maternal interest in education is also significantly associated with young motherhood and a high malaise score in the 0.05 models.

Those individuals who have missing information on one behavioural score at all three childhood waves are very likely to be missing information on the other measures at all ages, as well. Of the 413 cohort members who are interviewed at age 30 and who are missing information on at least one behavioural characteristic, 355 are also missing information on the other two measures. Consequently, the missing indicators are highly correlated and it is unlikely that more than one would be retained in any model. Missing information on aggression scores at all ages is significantly correlated, in the 0.001 models, with having had an extra-marital first birth (odds 2,18:1) and living in social housing (odds 3.24:1) but for men only. In the 0.05 models, missing information on childhood aggression is also significantly correlated with a non-union first birth for men and a high GHQ score for women.

Those women with missing information on restlessness at all ages are more likely than those women with two or three low scores to have been a teenage mother (odds 2.94:1), to have had a non-union first birth (odds 2.95:1), and to be living in social housing at age 30 (odds 3.27:1). Missing information on restlessness is significantly associated with no adult outcomes for men nor is it retained as significantly related to any other outcomes in the 0.05 models.

Missing information on anxiety at all three childhood waves is not significantly associated with any male outcomes when a significance level of 0.001 is used. For women, it is associated with an extra-marital first birth (odds 3.00:1), lone parenthood (odds 2.52:1), and homelessness (odds 3.11:1) in the 0.001 models. Moreover, in the 0.05 models, the missing anxiety scores indicator is associated with unemployment and receipt of benefits for women and with police contact for men. Although high anxiety scores are sometimes protective against adult disadvantage, missing anxiety scores always increase the odds of a particular outcome.

Taken together, and assuming that missing information on one behavioural score reflects, to a large extent, missing information on all three, we can conclude that missing information on behavioural variables at all childhood waves is associated with all four demographic outcomes for women and only one out of three (two out of three in the 0.05 models) demographic outcomes for men. Lack of information on these measures is not related to any health related outcomes for either sex or to any employment-related outcomes for men. For women, only one of the four employment related outcomes (unemployment) is linked to missing behavioural scores, and then, only in the 0.05 model. Missing behavioural scores are associated with two out of the three economic need measures for women (and all three in the 0.05 models), but only one out of three measures for men. Finally, for both sexes, a lack of information on these measures is not related to mental health at age 30 or having been arrested in the 0.001 models. In the 0.05 models, however, missing information is related to a high GHQ score for men and to having been arrested for women. In general missing information is more often retained for female outcomes than for males, but for both sexes, it is more often correlated with adult outcomes than was found using the 1958 cohort (Hobcraft, 1998).[14]

Missing information on academic test scores at ages 5, 10, and 16 is strongly correlated with a wide range of adult outcomes for both men and women (14 out of 33 outcomes in the 0.001 models and 23 out of 33 outcomes in the 0.05 models). Relative to the group with two or three top quartile test scores, odds ratios are equal to or exceed 2.0 for teenaged motherhood (0.05 model only), having had a non-union first birth (women only), lone parenthood, a lack of qualifications, low earned income, a low occupational class, living in social housing (women at both significance levels, men at 0.05 level only), regular smoking (women only), scoring high on the malaise inventory (for men only), and having ever been arrested (men at the 0.001 significance level, women at the 0.05 level). In some instances, the missing category has the largest odds ratios of any test score category. These include low earned income (for men at both significance levels, for women at a 0.001 level only), regular smoking, having a high malaise inventory score, and having ever been arrested (for men at both significance levels, for women at a 0.05 level only). These patterns may be due, in part, to the fact that children who were believed to be academically unable to take the tests were not administered them, and therefore, have missing values.

[14] In Hobcraft's study, those with one missing behavioural score were always missing the other two, so he did not differentiate which set of scores was missing.

8. Discussion

This study provides an initial and exploratory search for the childhood factors that are most strongly associated with adult social exclusion. Using data from the 1970 British Cohort Study, we aimed to estimate models similar to those presented in Hobcraft's (1998) analysis of the 1958 NCDS cohort. While we do not carry out an exact replication of the previous study, we use roughly the same explanatory variables and the same estimation strategy. Unlike the previous study, we do not include as an explanatory variable a measure of contact with the police during adolescence. In addition, our parental interest variables are constructed differently, and we allow for two different measures of childhood poverty – one based on poverty indicators (similar, but not identical, to the variable used in the NCDS analysis) and one based on household income at ages 10 and 16. We chose to deviate from the previous study and use two measures of childhood poverty in order to assess whether a direct measure of income (with more missing values and, most probably, measurement error) would perform better than a measure based on proxies that are likely to be very highly correlated with poverty.[15] Finally, our age 16, set of test scores does not include results from a mathematics test because no mathematics test was administered at that age. Instead we use one verbal test score and one spelling test score. Finally, our measures of parental interest in education were only available at one childhood wave. In contrast to Hobcraft's measure, our measure of parental interest is therefore static and does not summarise the three childhood waves. The remaining control variables are the same as those used in Hobcraft's study.

Although we cannot argue that our set of control variables is exhaustive, we would maintain that they are comprehensive in the sense that they represent multiple theoretical and disciplinary perspectives. We include proxies for innate ability (academic test scores), parental engagement (the father (figure)'s and mother (figure)'s interest in the cohort member's education at age 10, family experience), sociological characteristics (social class of close family members, social class of the father (figure) during childhood), environmental attributes (housing tenure), economic status (childhood poverty indicators and low income), and individual temperament (aggression, anxiety, and restlessness scores).

Like Hobcraft (1998), we examine a wide range of adult outcomes in order to explore similarities (and differences) in the patterns and strengths of the

[15] Moreover, the income variable was excluded from Hobcraft's (1998) analysis because it was only collected at age 16 and because the information was collected "during the disruptions surrounding the three day week" (p. 88). Our income variables, collected at more than one point in time, do not suffer these same shortcomings.

associations between our set of childhood background factors and different types of adult outcomes. Nonetheless, our set of outcomes is slightly different to the one used in the earlier study. We do not consider multiple partnerships, high qualifications, or top quartile income. In contrast to the family income measure used by Hobcraft (1998), we only consider *earned* family income for female cohort members in this application. The only remaining differences between our study and Hobcraft's relate to the unemployment outcome. Our measure of unemployment is a current measure (as opposed to Hobcraft's study that considered as its outcome, having ever spent a period out of employment), and we use unemployment as an outcome for women as well as men.

In addition to these differences in outcome measures, we consider here some additional outcomes that were not examined previously. These include having had a non-union first birth, having ever been a lone parent (women only); having a low social class; having a work limiting condition; scoring high on the General Health Questionnaire; smoking regularly; having ever used drugs; and having ever been arrested. The remaining age 30 outcomes we included overlap with the earlier analysis, however. These include demographic (early parenthood, and extra-marital parenthood), labour market-related (no qualifications and low earned income for men), economic need-related (social housing, receipt of benefits, and homelessness), and mental health (malaise) outcomes.

Our results show that some variables – academic test scores, housing tenure, and experience of childhood poverty – are strongly and consistently related to a wide range of outcomes. We also find, similar to Hobcraft (1998), some evidence of the intergenerational transmission of disadvantage and of continuity of disadvantage over time. Cohort members who lived in local authority housing as children are more likely to live in social housing as adults, those who lived with a single parent are more likely to have had an extra-marital first birth and to have become lone parents themselves. Those with low household incomes are more likely to grow up to have low (own or family) earned income themselves. Examples of continuity across the life-course include the relationship between academic test scores and low qualifications and, to a lesser extent, behavioural scores and mental health outcomes.

We find that, in general, our poverty indicator variables perform better than our income measures. The poverty indicator variables are more frequently retained as significantly related to adult outcomes. When both measures are retained, which happens most often in the 0.05 models, the poverty indicator usually has a stronger correlation index for men. This is true for a non-union first birth, low earned income, and receipt of benefits. For women, when both measures are retained, the poverty income measure most often has the largest correlation index. Of the eight outcomes linked to both childhood poverty measures in the 0.05 models, the correlation index for the indicators is larger for only lone parenthood, social housing, and receipt of benefits. Readers should

bear in mind that both measures are far from optimal, however. Each is constructed using information collected at ages 10 and 16 only. No information on income or poverty indicators was collected at birth or at age 5, so as summary variables, these measures are rather incomplete. Income measures were coded in wide bands introducing some measurement error and making it difficult to equivalise income for household size. Hence, it is possible that well measured income data (with information on earned and unearned income) would outperform poverty proxies. Nonetheless, it is worth noting, that when faced with imperfect data, the more precisely measured proxy or indicator variables may perform better than more direct measures that are noisy and plagued by non-response. It is also worth noting that in some instances, having missing information about child poverty is more strongly correlated with adult outcomes than having evidence of poverty, as we measure it here. Moreover, the indices of association are not often large. Only the index that relates low household income to social housing for men is large (0.001 model), and there are more "fairly large" indices in the 0.001 models than in the 0.05 models. In the 0.001 models, there are ten "fairly large" indices for the poverty indicator measure and three "fairly large" indices for the low income measure. In the 0.05 models there are more fairly large indices associated with the low income measure than the indicator measure.

Hobcraft (1998) discusses a variety of issues surrounding his construction of the family experience variable. Because our family experience measure is constructed similarly, the same issues apply here. Missing information at, and between, waves makes the development of a complete sequence of family events, based on only four snap shot measures, problematic. For example, cohort members whose custodial parent remarried and subsequently divorced between waves will not be coded as having lived in a step-family. There is often missing information on the causes of lone parenthood so we have been forced to combine children whose parents divorced with those whose parent died. Many of the family experience cells contain small numbers because most of those born in 1970 were living with both parents up to age 16. This makes identifying significant associations, particularly in our stringent 0.001 models, less likely. Finally, in our measure, we have had to deduce two parent, unmarried families at birth using information collected at later waves.

Despite the measurement issues, Hobcraft (1998) reported a moderate number of significant associations between family experience (particularly for women) and adult outcomes, similar to what we find in the 0.05 models in this study. Compared to the findings presented here, when we consider those female outcomes that are similar to ones we examine here, the correlation indices for women in the 1958 cohort were more often "large" or "fairly large" and the sum of those indices was high relative to the other factors. For men, there were about the same number of "fairly large" and "large" indices" and the sums of the indices were higher in this application.

In the 0.05 models, those who had ever spent time in care are more likely to have an extra-marital first birth (odds 1.50:1, and 1:52:1 for men and women respectively), to report having been homeless (odds 1.92:1 and 3.26:1), and to smoke regularly (odds 1.50:1 and 1.53:1). Women who had ever been in care are more likely to have had an extra-marital first birth (odds 1.52:1), to have ever been homeless (odds 3.26:1), and to smoke regularly (1.53:1). The odds ratios are generally smaller than those reported in Hobcraft (1998) (the exception being homelessness for women where the odds were 2.08:1 for the NCDS women), there are fewer significant associations, and boys and girls appear more equally vulnerable to the negative effects of care or fostering (in the previous study girls appeared to be more affected). Despite earlier work that showed children who enter care make poorer progress at school and are at high risk of gaining no qualifications, even if they return to their family (Aldgate et al 1993, Essen et al 1976), we find no significant association between having been in care and lack of qualifications.

The largest odds ratio for having been born to a lone mother is associated with homelessness for men (odds ratio 3.05:1 in the 0.05 model), and having ever been arrested for women (odds ratio 2.72:1 in the 0.05 model). In the 0.05 models, additional significant associations obtain in relation to extra-marital first births, lone parenthood, low earned family income, homelessness (for women), and ever use of drugs (for women). Negative effects of having experienced a family dissolution or a step-family (following a death or divorce) are associated with a similar number of male and female outcomes.

As in Hobcraft (1998) we find a consistent strong link between academic test scores and adult outcomes, regardless of the exclusion threshold we employ. The odds ratios are among the largest that obtain in our final models, and there are very few outcomes that are not significantly associated with test scores. Only homelessness, a high GHQ score, and for women, unemployment and having been arrested, are not linked to test scores in the final 0.001 models.

In addition, there is a pervasive link between our adult outcomes and housing tenure. Even in the 0.001 models, childhood housing tenure is associated with all the demographic outcomes, all the labour-market related outcomes, and all but one of the need related economic outcomes (homelessness for men). It is also retained as significantly associated with regular smoking, and for men, malaise and contact with the police. Only test scores are more frequently associated with outcomes (aggression is correlated with more male outcomes in the 0.05 models), and the odds are often large. Not surprisingly, the largest odds ratio for having lived in social housing arises in connection with housing tenure at age 30.

Parental interest in schooling, albeit measured at only one time point in this analysis, is related to many adult outcomes. The interest of the opposite sex parent seems more related to demographic outcomes, particularly for women. For other types of outcomes, the father figure's interest appears to dominate.

Mother's interest sometimes reinforces the father's interest for women, however (for example social housing and receipt of benefits). The father (figure)'s interest in schooling at age 10 is most strongly related with having ever been arrested for women (odds 5.75:1). But significant, and some large, associations are retained for many other outcomes including social housing, receipt of benefits, and regular smoking for both sexes, extra-marital fatherhood and low social class for men, and no qualifications (it is mother's interest that is related to this outcome for men), low earned family income and homelessness for women.

In the 0.001 models, the social class variables are infrequently associated with adult outcomes. The variables are more frequently retained in the 0.05 models, and it appears that male outcomes are slightly more often linked to social class of origin while female outcomes are more often linked to the social class of the father (figure). The largest correlation indices for social class of origin arise in connection with young parenthood. The social class of the father (figure) is strongly correlated with young fatherhood as well.

In contrast to the findings from Hobcraft's (1998) analysis of the 1958 cohort, aggression scores are frequently, and sometimes strongly, related to our set of adult outcomes. In the 0.001 models, aggression scores are fairly often associated with adult outcomes (18 out of 33 outcomes), but the correlation indices are not often large for female outcomes. Looking at the other behavioural measures, in either set of models, correlation indices are rarely large. Nonetheless, there does seem to be some evidence of a consistent link between childhood anxiety and adult mental health as measured using the malaise inventory and the GHQ-12. At both levels of significance, restlessness is related to more female than male outcomes.

9. Conclusion

Our exploratory analysis of the correlates of adult social exclusion and comparison of results with an earlier study reinforced several findings and deviated from others. It is not clear whether the deviations emerged as a consequence of differences in our models or because of differences in the cohorts we examine. The most consistent results between our study and the previous one relate to the intergenerational patterns and the life course continuities.

The increased importance of housing tenure in childhood is an issue that should be considered in greater depth. That outcomes for the more recent cohort are more often (and more often strongly) linked to childhood housing tenure may be due to increasing residualisation on housing estates that can be traced back to the 1960s and 1970s. If residualisation is the key explanatory factor

here, it is likely that parental housing tenure will be even a stronger predictor for later born cohorts who grew up after the changes effected by right-to-buy.

The failure of childhood factors to explain many health outcomes (and the reduced explanatory power with regard to adult malaise) is an interesting and unexpected finding. In addition, the very strong association of father's interest in education at age 10 (and other family experience variables) with arrest for women, but not so much for men, is a finding that may merit further examination.

Like Hobcraft (1998), in this paper, we have not addressed issues of timing in this analysis. It may not be incidence of an experience as much as the timing that matters. If that is the case, comparisons between our findings and those of the NCDS study should be made cautiously – particularly when our variables are based on fewer age-specific observations than were previously used. There is a tension between maximizing our sample size and information set and creating more precise temporal measures of childhood antecedents. An examination of the timing of childhood event may, unfortunately, result in a far more selective sample. Whether the benefits would outweigh the loss in generalisability remains unclear.

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