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Outcomes for children of poverty

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SUMMARY

Background (Chapter 1)

The Department for Work and Pensions (formerly Department of Social Security) has commissioned the Institute for Social and Economic Research at the University of Essex to undertake two research projects on the dynamics of poverty based on the first nine waves of the British Household Panel Survey (BHPS), 1991-1999. The first project describes the 'routes in and out of poverty', and the second is about the 'outcomes for children of poverty'. This study provides a report on the second of these projects.

By using data from the BHPS, this report fills a gap between other studies of outcomes for children of poverty. Previous research using British longitudinal data was based on samples obtained from the National Child Development Study (NCDS) and other birth cohort studies. The BHPS has a few advantages over them. First, the data are more recent and a better reflection of contemporary family life. The households tracked by the BHPS have been interviewed annually since 1991, and the adolescents and young adults that are the focus of this study were born between 1979 and 1988 and between 1970 and 1983, respectively. Mothers' employment and lone parenthood (to mention two salient changes) are much more common among BHPS families than when the 1958 NCDS cohort was growing up.

Second, although the NCDS and other cohort studies have large sample sizes and include more measures of non-economic background factors and children's early achievements, the BHPS yields more detailed information on parents' income and employment (and non-employment) patterns. For example, it is possible to measure net family income each year in adolescence for the adolescents in our study. It is also possible to measure parents' non-employment (or worklessness) throughout their children's upbringing for the young adults in our study, rather than at particular points in time.

Third, because the BHPS follows whole households, including siblings, it is possible to control the data for any unobserved influences in family background characteristics that are shared by children from the same family.

The adolescent sample (Chapter 2)

We used data from the British Youth Panel, which was added to the BHPS in wave four (1994), to study the relationship between experience of life in a low-income family and a wide range of adolescent outcomes. We have a sample of approximately 1,600 adolescents, who were aged 11 to 15, were born between 1979 and 1988, and, during some of the panel years, lived with at least one parent providing relevant information on the variables of interest to this study.

Poverty here was measured in terms of low net family income. Members of a household were defined to be poor if the household had less than 60 per cent of the current median income (*current poverty*). If members of a household were observed to have a household income below 60 per cent of the current household median income at least three times over the last four years, then they were defined to be in *persistent poverty*. About one-quarter of adolescents were observed to be in poverty in a given year, while one in six were found to live in household that were persistently poor.

We gathered information on a wide set of outcomes that cover several aspects of adolescents' lives, such as school expectations, health attitudes and self-esteem. From the BHPS, we also collected other information on their age, gender, and date of birth as well as their parents' characteristics, including their education and family structure. We used this information in multivariate regression equations to estimate the effect of current poverty and persistent poverty on all the child outcomes available in the adolescent sample.

Results from the adolescent sample (Chapter 3)

There are six findings from the adolescent sample which are worthy of note. First, poverty has disadvantageous consequences for adolescents on a number of outcomes. Compared to those who never experienced life in a low-income family, children who grew up poor have lower self-esteem, are more likely to plan not to marry, believe that health is a matter of luck, play truant and expect to leave school at the age of 16.

Second, most of these results are not sensitive to the use of poverty measure, i.e., they emerged regardless of whether we used current poverty or persistent poverty.

Third, these results are also robust to the presence of child-specific permanent unobservables (e.g., high motivation, innate ability and personality traits) which can potentially confound the genuine effect of parental income on child outcomes.

Fourth, experience of life in a poor family when the child was aged 6-10 increases the likelihood of feeling useless and reduces self-esteem by the time the child becomes 11 years old. Its effects on the probability of feeling a failure and the probability of expecting to leave school at age 16 are large but not statistically significant.

Fifth, experience of life in a poor family when the child was aged 11-14 *decreases* the chances of feeling unhappy (measured when the child was 15), but also *increases* the chances of expecting to leave school by age 16, the mandatory minimum school leaving age.

Sixth, this last result is important because the expectation of leaving school becomes a reality when the child turns 16. Indeed, expecting to leave full-time education has a direct negative effect on the decision to stay on at school after age 16. But it also has a large negative impact on the probability of receiving high-grade GCSEs, which is the single most important predictor for continuing the academic career after age 16. Poverty itself does not have a significant direct effect on the probability of staying on at school, but does significantly reduce the probability of passing GCSEs with high grades.

The adult sample (Chapter 4)

To investigate outcomes for older children, we used data from the BHPS. We analysed two samples of young adults. The first (labelled as 'main sample') is a sample of approximately 1,800 young adults, who were born between 1970 and 1983 and who could be matched with their parents in the panel study. There is, however, a potential for sample selection bias if the unobservables that affect young adults' outcomes also affect their chances of co-residing with their parents. Therefore we used a second sample (labelled as 'restricted sample'), consisting of individuals from the main sample who were living with at least one parent when aged 16-17. Because 95 per cent of all young people aged 16-17 live at home with their parents, then the restricted sample is likely to be a random sample.

We analysed six outcomes, namely, leaving parental home, highest educational attainment, economic inactivity, early childbearing, smoking and psychological distress. The study again used indicators of low family income as measures of poverty. But it also used an alternative measure of poverty, based on parents' worklessness (or non-employment) during the entire childhood of their child. Parental worklessness occurs when both the father and the mother were not in paid work for at least one month in each of the first sixteen years of life of the child. Notice that, according to this measure, mother and father were not required to be workless in the same month. They had to be both out of the labour force some time over a twelve-month period, starting at the birth of the child and ending at the child's sixteenth birthday.

As in the adolescent sample, one in four young adults lived with parents who were poor in a given year and one in six with parents who were persistently poor. In addition, about 45 per cent of all young adults in the sample lived in a family with workless parents during their entire childhood. Although this may seem a large number, it should be kept in mind that it is a cumulative statistic over the entire childhood of each

child in the sample. In many cases, this is the experience of individuals whose mothers never worked during their childhood, while their fathers dipped in and out of work.

We related child outcomes to experience of life in a low-income family during adolescence and early adulthood or experience of life in a workless family during the entire childhood in multivariate regression equations that controlled for a wide set of child and family characteristics, including parent's education and age at birth and family structure. We performed this estimation for all men and women pooled together, and for young men and women separately. With the pooled sample of men and women, we also performed the analysis using an alternative econometric technique based on sibling differences, that is, models that related differences in outcomes between siblings to differences in the family poverty histories of those siblings.

Results from the young adult sample (Chapter 5)

The measure of poverty based on low family income and the measure of poverty based on parents' worklessness during childhood produced relatively comparable results. This is encouraging because the results obtained with the worklessness measure can be confidently used to address the issue of the timing of poverty. Seven findings are worth mentioning.

First, living in a poor household speeds up the leaving-home process. Having spent time in a poor household during adolescence, however, seems to affect the probability of forming a new household only for men and not for women. Similarly, experience of life with workless parents in earlier developmental stages neither accelerates nor delays this important life transition.

Second, poverty has a sizeable impact on educational achievements. It is again men who appear to be most severely affected. Young men who grew up poor see their chances of achieving A-level or higher qualifications reduced by about 10 per cent. Interestingly, the lack of parental resources turns out to be critical for the education outcome when children were in primary school, i.e. when they were aged 6-10. Lack of resources during the pre-school years is important but to a lesser extent. On the other hand, young women's educational attainment does not appear to be substantially affected by parental resources. For them, other background characteristics, such as parents' education and family structure, are more relevant.

Third, the lower educational attainment associated with time spent in a poor household (either during early adulthood or during childhood) leads to higher chances of economic inactivity later in life. Both men and women who have lived in poor families are more likely to be inactive, regardless of the sample or the poverty measures used in estimation. These effects are generally large and precisely estimated. This outcome seems to be particularly sensitive to experiences of poverty which occurred

when the child was either in pre-school years (ages 0-5) or in adolescence (ages 11-15).

Fourth, for women, growing up poor is also associated with a substantially higher risk of early childbearing. The largest effect on this outcome works through experience of life in a workless household when the girl was aged 11-15. The lack of parental resources during adolescence is quite likely associated with worse family living conditions, housing and other aspects of material well-being that may affect the decision of having a child at an early age.

Fifth, poverty does not have clear consequences on young people's health. In particular, young adults who spent some time in their childhood with workless parents or still live in low-income families are more likely to smoke. This effect is however small and not always well determined. Furthermore, poverty increases the probability of psychological distress (which was identified on the basis of a 12-point measure using subjective indicators), but, again, this impact is not robust to the measure of poverty and is not precisely estimated.

Sixth, parents' education significantly increases the chances of their children's higher educational achievement and decreases the probability of their children's economic inactivity. A higher mother's education also decreases the chances of her daughter giving birth by age 21, but father's education does not have any impact on this outcome

Seventh, experience of life in a non-intact family during childhood increases the likelihood of leaving the parental home for both men and women, regardless of the poverty measure used in estimation. For men, it also decreases the probability of higher educational achievements and increases the probability of economic inactivity. The effects for women are in the same direction, but are not precisely measured. For women, instead, it increases the probability of having a child by age 21. It is strongly associated with a higher probability of smoking for both men and women and it is also correlated to a higher likelihood of experiencing psychological distress, particularly in the case of men.

The young adult sample allows us to address the critical question of causality: 'Are poverty effects causal?'. One of the most appealing techniques for handling unobserved parental characteristics is to compare individuals in the same family. Models that relate differences in outcomes between siblings to differences in the experience of poverty for those siblings have probably eliminated most of the confounding influence of fixed parental characteristics, both measured and unmeasured (or unmeasurable). We used sibling-difference estimates to test the robustness of our previous findings to the presence of unobserved parents' fixed effects. Because our primary focus was on the timing of the poverty experience, we related differences in outcomes between siblings (or half-

siblings) to differences in experience of life with workless parents by developmental stage. Men and women were pooled in one sample because the small number of sibling comparisons could not allow us to perform statistically meaningful analyses by gender.

Despite a few interesting differences between the sibling-difference estimates and the previous estimates, this exercise upheld many of the findings presented earlier, suggesting that parental worklessness during childhood does have a long-term effect on child outcome in early adulthood. In particular, three findings are worth noting.

First, experience of life in a workless household during pre-school years (ages 0-5) strongly increases the risk of inactivity and early childbearing.

Second, experience of life with workless parents during adolescence (ages 11-15) increases the chance of leaving the parental home earlier than their peer group.

Third, although there is evidence of some relationship between child outcomes and poverty during primary school years (child aged 6-10), there are smaller and less persistent effects of poverty during those years. This last finding raises many intriguing questions, which we cannot address in this report but should be kept in mind in policy design, about the role played by peers, schools and other education institutions during the school years.

Conclusions (Chapter 6)

In our concluding chapter, we highlight a number of issues raised by this research, which have implications either for policy or for further research. Here we draw attention to five considerations, which can be relevant for policy. First, from the adolescent sample and the young adult sample, there is a great deal of *consistency* in responses. The results from the BYP sample and from the main BHPS sample are consistent with each other. This is striking given that we looked at different outcomes for adolescents and for young adults and given that all these individuals come from different cohorts and different family environments.

Second, this consistency in responses, however, cannot be taken as evidence that individuals and families are not sensitive to the timing and the type of the interventions. That is, policy programmes that are aimed at families with adolescents are likely to produce different results from programmes aimed at supporting children in their early school years. For example, the results summarised in Table 6.5 indicate that income support programmes targeting families with adolescents may be successful in improving the adolescents' educational prospects and labour market involvement. But they may not necessarily reduce their risks of early childbearing. For this outcome, earlier interventions seem to be more appropriate.

Third, the fact that parents' income or non-employment patterns, the age of parents when the child was born, education and family structure all have an impact on children's chances of success is another crucial finding of this study. This means that family policies and income-maintenance programmes are not mutually exclusive and are both likely to be relevant. In particular, the fact that parent absence still matters after taking poverty into account does not imply that policy makers should not try to minimise the economic distress of single mothers. Indeed, reducing the economic insecurity of families headed by lone mothers is probably the most effective tool for protecting children from the negative consequences of family disruption. Reducing poverty might also mitigate some other negative effects of living in a family that does not provide a sufficiently stimulating environment for children (e.g., through lower expectations or poorer motivations). If these families were more economically secure, they might be able to buy better and more expensive goods and services needed by their children to accumulate higher human capital.

Fourth, the results from this report and other recent results obtained from analyses of BHPS data suggest that special attention should be given to the timing of interventions over the *entire* childhood. Indeed, poverty during adolescence (ages 11-15) seems to affect some crucial expectations and attitudes toward school and health, household formation and the risks of unemployment and early childbearing. Poverty and having a single parent during school years (ages 6-10) tend to affect educational achievement, although the effect of poverty is substantially reduced when we use estimates based on sibling differences. Poverty and family structure during early childhood (ages 0-5) seem to have strong effects on educational attainment, and, particularly, economic inactivity and early childbearing. Although this complex mix of effects is an over-simplified representation of our findings, it clearly points to the need for an *holistic* policy approach, which tries to find a balance between the most effective *type* of policy, the appropriate *timing* of the intervention and its *political* feasibility.

Fifth, children of poverty are likely to experience not only a loss of resources while growing up, but also (and in part as a consequence of such a loss) lower opportunities for success through intergenerational transmission of disadvantage. The clearest example emerges perhaps with our evidence of intergenerational recurrence of early motherhood. In general, children of poverty are more likely to form lower expectations about their success at school or at work, and they in fact turn out to be less successful in achieving higher levels of education or getting jobs or avoiding getting pregnant. It is hard to believe that the intergenerational transmission of poverty can be entirely rectified by income-maintenance or support programmes, which are probably most effective when aimed at improving short-term problems. Long-term intergenerational issues are perhaps better addressed with long-term interventions, such as education programmes for both the young and the old.

'No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable'

Adam Smith, *The Wealth of Nations* (1776), Book I, Ch. 8

1 MOTIVATION AND OBJECTIVES

1.1 Introduction

The Department of Social Security has commissioned the Institute for Social and Economic Research at the University of Essex to undertake two research projects on the dynamics of poverty based on the British Household Panel Survey (BHPS). The first project describes the 'routes in and out of poverty', and the second project is about the 'outcomes for children of poverty' in Britain. This document provides a report on the second of these projects. It contains substantive analysis of the impact of poverty (primarily defined in terms of low family income, but sometime also defined in terms of parents' worklessness) on a wide range of outcomes for adolescents aged 11 to 15 and for young adults aged 16 to 30. The results from the first project – which analyses the extent and nature of persistent poverty, the main events ('routes') associated with movements into and out of poverty and the entries to and exits from poverty – can be found in Jenkins *et al.* (2001).

1.2 Research description

In 1991 about one in four of all British children lived in families in which total income failed to exceed the threshold of 60 per cent of the current median household income (see Jenkins *et al.*, 2001)[1]. That so many of the youngest citizens of one of the wealthiest nations in the world are living poor is cause for concern. This study explores the consequences and correlates of growing up poor as well as the mechanisms through which poverty affects children. We examined these relationships for two different groups of children, with different measures of child well-being and different measures of poverty.

The first is a group of 11-15 year-olds, who were drawn from the first six waves of the British Youth Panel (BYP) of the British Household Panel Survey (BHPS), collected between 1994 and 1999. We call this group the 'adolescent sample' or 'BYP sample'. For this sample, we examined the impact of family income poverty on a large number of attitudinal outcomes, including self-esteem, opinions about health and family life and expectations about continuing education beyond age 16. We considered both the shorter- and the longer-term influences of poverty

[1] Although there is no single official poverty line in Britain, the 60-per cent-of-median cut-off is widely used. See Section 2.2.

on such outcomes. That is, we asked whether or not experience of life in a poor family is associated with child well-being when outcomes and poverty are measured at the same time, and whether or not the child outcomes are affected by earlier experiences of poverty (as early as age 6 of the child). Furthermore, a small group of birth cohorts was also followed into young adulthood when they turned 16. For them, we also analysed a set of adult outcomes, such as school achievements at age 16, staying on at school after the mandatory minimum age, and early unemployment experiences.

The second group is a sample of young adults from the BHPS, who were born between 1970 and 1983 and who could be matched with their mothers (and fathers) in the first nine waves of the BHPS, 1991-1999. We refer to this group as the "young adult sample" or "BHPS sample". For this group, we examined the effect of two measures of poverty on a wide set of outcomes, including educational attainment, unemployment, psychological distress and early childbearing. As in the case of the BYP, the first measure was based on a low-income definition, specifically, whether or not the net family income is less than 60 per cent of the median household income during the period preceding the measurement of the outcome of interest. The second measure of poverty was based on parental worklessness during the entire childhood (from birth to the sixteenth birthday of the child), which is known to be a very strong indicator of dependence on social security benefits and also appears to be closely associated with poverty, especially among families with children (Iacovou and Berthoud, 2000).

This latter measure allows us to focus on one issue, which the former measure cannot address, that is, the longer-term consequences of poverty. Because we were able to construct the work histories of parents over the childhood of their children, we can analyse the relationship between the young adult's outcomes and his/her experience of life with workless parents at any point in time during childhood. Indeed, the short-term effects of poverty on, say, schooling achievement may be muddled by a constellation of other factors that are, at least partially, under the control of the child (e.g., friends, hobbies, smoking and sexual behaviour). Many social researchers – and psychologists in particular – postulate that the timing of events is critical to an understanding of their events on children and young adults. That is, various events or environmental conditions might influence the cognitive and social skills and competencies children and young adults have acquired as well as the contexts in which they reside. Family income or poverty is just one of a series of 'environmental conditions' of interest (Bronfenbrenner, 1979; Brooks-Gunn, 1995). For both BYP and BHPS samples, therefore, knowing the effects of the timing of poverty experience during childhood has implications not only for theory (vis-à-vis the conceptualisation of the ways in which families operate) but also for public policy (for example, in relation to the timing of income supports to families).

An important consideration of this study is whether or not the links between poverty and child outcomes are due to income per se or to other family circumstances that often accompany poverty. For example, poor families are also more likely to have one (or both) parent(s) with low educational attainment, a single or a divorced parent, or a young parent (McLanahan and Sandefur, 1994; Haveman and Wolfe, 1995; Duncan and Brooks-Gunn, 1997; Mayer, 1997; Jarvis and Jenkins, 1999). The potential association between poverty and less favourable outcomes for children may be, in large part, accounted for by these family conditions. In our analysis, therefore, we ask whether or not the effect of poverty on child outcomes is mediated through parents' education, parents' age or household structure. This is again important for public policy. In fact if, after controlling for such family circumstances, family income (or worklessness) is left with little statistical power in explaining the variations in child well-being, then policies directly aimed at improving those circumstances might alleviate poverty. If, for instance, mother's education is an important predictor of children's well-being and if poverty indicators play only a minor role, then enhancing parents' education – rather than raising the minimum wage, increasing the Working Families' Tax Credit, or providing a more generous unemployment insurance – is likely to be a primary policy objective.

This study is primarily concerned with the *direct* links between poverty and child outcomes. But there are obviously several possible ways in which poverty and child outcomes are linked *indirectly*.[2] For example, a reduction in family income may increase parents' stress. This in turn may lead to a deterioration of family relationships, with a reduction of the time that parents spend with their children on educational activities (reading together, home works, going to the theatre, travels, etc.). Children in these circumstances may then do worse at school. But in the absence of time-use data, which would allow us to unpack the black box of intra-family time allocation, we cannot identify one of the key family processes at work in the previous example, the time given to children for educational activities. Making assumptions on how parents who have experienced a reduction in family income allocate their time is extremely difficult and arbitrary. Indeed, parents' response to family income reductions is likely to be mixed. If the family income reduction is associated, for instance, to the transition of one parent from full-time to part-time employment, some parents may use the extra time available to look for a better-paid job, others may want to use it to look after their children. Another way in which the effects of poverty are indirect is that they work through a series of outcomes. For example, a fall in family income may increase the strains between parents and children. This in turn may decrease children's attachment to their parental home and increase their desire to form another household. But early independence

[2] For a discussion of these issues, see Plewis *et al.* (2001).

could come at the cost of lower educational attainment and higher risk of unemployment. In this case, therefore, leaving the parental home and education are intermediate outcomes and the unemployment experience is the final outcome. In our analysis, however, we will not consider these intricate relationships, nor will we be able to unravel the complex links between intra-family processes and poverty and estimate their separate effects on child outcomes.[3]

A persistent concern with these kinds of analyses is that the estimated effect of income (or parents' non-employment) might be spurious, because of the mutual association that parents' income or worklessness share with some unmeasured 'true' causal factor. Suppose, for example, that the mental health of parents (see Section 1.3.2) was the key ingredient in children's success and that we failed to include measures of parents' mental health in our models. Since good mental health in parents is likely to both make parents more successful in the labour market and lead to fewer problems with their children, the absence of adjustments in our analysis for differences in parents' mental health may lead us to overstate the role played by income or worklessness in causing children's success. This is the reason we used different techniques to improve our estimation of the 'true' effects of poverty. In estimating the BYP sample we exploited the longitudinal nature of the data to compute correct standard errors for making inferences. Although these models provide more reliable estimates than conventional models, they cannot account for either individual or parental unobserved characteristics. But to the extent that there is some form of intergenerational transmission of such unobserved components, they may still yield biased estimates.

Another and better technique for handling unobserved *parental* characteristics is to compare individuals in the same family. Models that relate differences in outcomes between, say, siblings to differences in poverty histories of those siblings are arguably free from the confounding influence of persistent parental characteristics, both measured and unmeasured (see Korenman and Miller, 1997; Duncan and Brooks-Gunn, 1997). In the analysis of the young adults' sample, we illustrate this technique by comparing outcomes of siblings or half-siblings, children of the same mother (but not necessarily the same father) who possibly faced different patterns of parental non-employment during their childhood.[4]

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[3] One exception is given in Section 3.4, where we follow the adolescents sampled in the BYP forward into the BHPS. In that case, poverty affects the final outcome (staying on at school after age 16) directly, but it affects it indirectly too, through its impact on the expectation of leaving school at age 16 and their the achievement of high-grade GCSE qualifications.

[4] A detailed exposition of the reasons why poverty effects on child outcomes may be better captured using sibling differences is in Section 5.7.

1.3 Background and previous literature: Why poverty might be important

Does family poverty harm children's achievement? What outcomes are most affected? If it does harm children's prospects, when and why does it matter? Parental income or paid work may influence children's well-being in multiple and diverse ways. Two theories of the relationship between parental resources and children's well-being seem to dominate the social sciences. The economic theory (or 'investment' theory) and the non-economic theory (or 'good-parent' theory) lead to different predictions about how additional parental resources or income will influence children (Mayer, 1997).

1.3.1 Economic theory

The economic theory predicts that income (or parents' worklessness) has a direct effect on child outcomes. Money is important because it buys things that children need, such as food, medical care and books. In several economic models, the relationship between parents' and children's economic success (or lack of it) is the result of biological and other endowments that parents pass on to their children, combined with what parents invest in their children (Becker, 1981; Becker and Tomes, 1979 and 1986; Ermisch and Francesconi, 2001a).[5] Parents invest both time and money in their children's 'human capital', especially by investing in their education, but also by purchasing health care, good neighbours, and other inputs that improve children's chances of future success.[6] How much parents invest in their children is determined by their preferences, their ability to finance investments (which is determined by their income and access to capital), and the availability of alternative sources of investments, such as government programmes. Since the return on investment depends on children's endowments, these also influence how much parents will eventually invest. These economic models predict that children raised in affluent families (defined as families that give bequests)[7] succeed more often than those raised in poor families, both because rich parents pass on superior endowments and because they can invest more in their children. Richer families, however, can readily self-finance investments in children's human capital by drawing down bequests. The relationship between family income and child outcomes in richer families is, therefore, expected to depend only on parental preferences and family endowments, rather than on income directly (Becker, 1989; Ermisch and Francesconi, 2001a). But poorer families cannot finance children's human capital investments by reducing bequests and cannot pledge their children's future earnings as collateral when borrowing to

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[5] 'Endowments' might include both 'genetic' endowments (such as the child's sex, race and 'intrinsic' abilities) and 'cultural' endowments (such as abilities developed through the education and tastes of parents).

[6] In this context, we refer to 'investments in children' as the allocation of time and money that parents devote specifically to their children.

[7] Here 'bequest' includes not only inheritance, that is the transmission of relatively exclusive rights at the parents' death, but also transfers *inter vivos*, which involve monetary (and other) transfers from living parents to children for, say, education, marriage and house-purchase.

invest in their children (Mulligan, 1997). As a result, family income is expected to matter directly in shaping poorer children's well-being. In theory, income transfers (or other policies that equalise access to capital) could equalise parents' investments in their children. If investments were equal, then the remaining differences in the life chances of children would only be due to endowments and 'luck'. But government transfers to parents might not be fully effective to increase investments in poor children (Becker and Tomes, 1986; Becker, 1989). This is the case when parents spend (at least some of) their transfer income on themselves or on other goods and services that do not increase their children's human capital.[8] Parents may also be not completely altruistic in their expenditure decisions. Therefore, even if poor parents spent more on children than rich parents, then transferring money from rich to poor families would only result in a greater aggregate amount spent on children. But it would not necessarily mean better child outcomes.

In summary, family income matters in determining child outcomes for poor families (that is, families that are financially constrained or are unable to provide their children with monetary transfers), because they have smaller financial resources to devote to their children. However, it does not matter for richer families. Income transfer programmes are likely to expand poor parents' opportunities for child investments. But to the extent that the amount of parents' expenditures on children is sub-optimal and cannot be monitored, such programmes may not be effective in equalising parental investments.

1.3.2 Non-economic theory

The non-economic theory predicts that family income and resources have no direct impact on children's outcomes, but instead reflect the explanatory power of other unmeasured characteristics that vary between families and that are the real 'causes' of children's success. Characteristics that are potentially important include parents' personalities, family conflict and parenting styles (Duncan and Brooks-Gunn, 1997). Consequently, low income reduces children's chances for socio-economic success and high levels of individual well-being, not because poor families have less money to invest in their children, but because low income decreases the quality of non-monetary investments, such as parents' interactions with their children. The economic circumstances of parents can also be viewed as a reflection of underlying family values and processes. For example, the labour income of the father or mother may convey information to the child about the role model provided by that parent. Similarly, the receipt of Income Support may reflect the extent to which a household has (more or less rationally) adopted the norms and values that are

[8] Even though a greater portion of family income is devoted to children in poor than wealthy families, Lazear and Michael (1988) find that US households spend less than two-fifths of their income on children. The rest is spent on adults. This is partly because of short-term egalitarianism (i.e., young children eat less and their clothes and entertainment cost less).

sometimes believed to be associated with a 'culture of poverty' or 'welfare culture' (Wilson, 1987). The role-model version of the good-parent theory emphasises parents' interactions with their children. Because of their position at the bottom of the income distribution, low-income parents develop values, norms and behaviours that are "dysfunctional" for socio-economic success. This could be because of a number of reasons. For example, poor parents may be unusually stressed, or their values may not provide their children with enough incentives to invest in their own education. This reasoning has led to the notion that children's success depends on several 'risk factors' they face. Risk factors include such things as a poor home environment, poor health and deprivation. Some researchers treat poverty as a 'marker' for risk factors, that is, as a correlate but not necessarily a cause of risks such as stress, poor health, weak social support and parental depression (Parker *et al.*, 1988). Others treat poverty as a cause of such risks (Houston *et al.*, 1994). Again, the distinction is important. For example, if poverty causes depression, then transferring income to poor parents can alleviate their depression and remove (at least in part) one pre-condition for the unsatisfactory outcomes of their children. But if parents, who are depressed, are poor because depression makes it hard to earn a living, transferring money to them will not reduce their depression. In this case we would have to treat parental depression directly. This version of the good-parent theory and the culture-of-poverty hypothesis imply that neither increasing parents' incomes nor providing parents with the means to invest in their children's emotional and human capital is likely to improve children's life chances in the short run. Instead, parents' values, attitudes, and behaviours must be changed, a process that requires a permanent change in the opportunity structure within which a society operates.

1.3.3 Empirical evidence

Previous research has yielded little consensus about the association between parents' income or poverty and outcomes for their children during childhood or in young adulthood. Different studies have focused on different outcomes, have measured outcomes at different ages of the child, have applied different definitions of parents' income or poverty at different ages of the child during childhood and have used different controls in their econometric analysis. Currie (1995), Haveman and Wolfe (1995), Mayer (1997), Duncan and Brooks-Gunn (1997) and Mulligan (1997) present summaries of several contributions in this area of research, but only cover the evidence from the United States, where indeed most of the studies have been conducted.

To keep things simple, we contrast the conclusions of the study by Mayer (1997) with those of Duncan and Brooks-Gunn's (1997). Duncan and Brooks-Gunn find that family income has a large effect on children's ability, development and achievements but not on mental and physical health and behavioural problems. In addition, they point out that parental income is a stronger correlate of children's ability and achievement than

are maternal schooling and family structure. Mayer's study offers three main results. First, it finds relatively small effects of parental income on a wide range of child outcomes, including psychological well-being, developmental outcomes, teenage childbearing, education, unemployment and wages. Second, it stresses that, although the effect of parental income on any one outcome is fairly small, higher income has some effect on most outcomes, so its cumulative impact across all outcomes is likely to be substantial. Third, it suggests that one possible reason that parents' income does not have a pervasive effect on children's outcomes may be the effectiveness of government policies, which have done a lot to ensure that poor children get basic necessities most of the time. It is therefore remarkable that, even though these two studies find somewhat different results, their policy conclusions are relatively similar.

1.3.4 British studies

Most of the available research on intergenerational links using British data has focussed on family structure. Kiernan (1992 and 1997), Ní Bhrolcháin, Chappel and Diamond (1994), and Cherlin, Kiernan and Chase-Lansdale (1995) have used samples from the National Child Development Study (NCDS) of British children born in a week of March 1958 to study the relationship between childhood family structure and well-being as adults. Gregg and Machin (1997) have used data from the NCDS to identify some of the main factors associated with childhood disadvantage. They find that economic and social disadvantages faced during childhood display a persistent association with the subsequent economic success or failure in the labour market.[9]

By using data from the BHPS, this report fills a gap between other studies of outcomes for children of poverty. Previous research using British longitudinal data was based on samples obtained from the NCDS and other birth cohort studies. The BHPS has a few advantages over them. First, the data are more recent and a better reflection of contemporary family life. The households tracked by the BHPS have been interviewed annually since 1991, and the adolescents and young adults that are the focus of this study were born between 1979 and 1988 and between 1970 and 1983, respectively. Mothers' employment and lone parenthood (to mention two salient changes) are much more common among BHPS families than when the 1958 NCDS cohort was growing up.

Second, although the NCDS and other cohort studies have large sample sizes and include more measures of non-economic background factors and children's early achievements, the BHPS yields more detailed information on parents' income and employment (and non-employment) patterns. For example, it is possible to measure net family income each

[9] For other related British studies that are concerned with intergenerational links, see Kuh and Wadsworth (1991), who use data from an earlier cohort of British individuals born in 1946, Micklewright (1989), who uses data from the NCDS and Joshi and Verropoulou (2000), who use data from the NCDS and the 1970 cohort study.

year in adolescence for the adolescents in our study. It is also possible to measure parents' non-employment (or worklessness) throughout their children's upbringing for the young adults in our study, rather than at a particular point in time.

Third, because the BHPS follows whole households, including siblings, it is possible to control the data for any unobserved influences in family background characteristics that are shared by children from the same family.

1.4 Objectives and implications for policy

The aim of this report is not to test (different versions of) the economic theories against (different versions of) the good-parent theory. Rather, we borrow the main ideas from both sets of theories to estimate the relationship between childhood experiences and measures of children's well-being using statistically parsimonious and powerful specifications. In framing our research objectives, it is useful to distinguish between the *extent* of the intergenerational links, the *routes* through which such links are effected, and the *mechanisms* by which parental resources are transmitted.

1.4.1 Extent of intergenerational links

An initial goal is simply to establish the *extent* of the links between childhood experiences and adult outcomes. After all, if the poverty correlation is weak, there are few further research and policy issues to be considered. But if it is strong, then the intergenerational transmission of poverty may offer a substantial explanation for the patterns of poverty in subsequent generations.

1.4.2 Routes through which links are affected

The mere existence of intergenerational links offers only few direct clues about the processes involved. A second set of research objectives is therefore concerned with the *routes* through which the observed links are affected. Based on the theories previously discussed, within the family where the child grew up, it is useful to distinguish between: (a) *fixed characteristics of the family*, which may predispose it to poverty (e.g., educational background of the parents and parental age); (b) *time-varying family circumstances*, which may lead directly to poverty (e.g., number of people in the household, family location and family structure); and (c) the *actual amount of money* available to the family.

These distinctions are clearly of potential relevance to policy. Does family income matter, at the margin, given whether the parents live or do not live together? If it does, then tax and social security policies are highly relevant to intergenerational links (as well as to immediate consumption).[10] But if it is family structure that matters, rather than income as such, then income-maintenance programmes are much less relevant than family policies.

Of course, each of the principal routes can be broken down by developmental stage of child over his/her childhood. This is because the influence on children's prospects may depend crucially on the period of their lives when they experienced poverty. There is evidence from the United States that suggests that early childhood (when the child was aged 0-5) is the stage during which family economic circumstances matter most (Duncan *et al.*, 1998). Identifying the timing of poverty bouts upon well-being in adolescence and in early adulthood is key to public policy in relation to income support issues.

1.4.3 Mechanisms of transmission

This empirical strategy is likely to inform us, at least partly, about the *mechanisms* through which disadvantage is transmitted. Given the main measure of poverty used in this study (see Section 3.1.2), one candidate of such mechanisms is the father's and mother's employment status.[11] We ought to be careful with the inclusion of this variable. Previous research has yielded little consensus about the association between parental employment patterns and child outcomes (Haveman and Wolfe, 1995; Harvey, 1999; O'Brien and Jones, 1999; Ermisch and Francesconi, 2001b). Ermisch and Francesconi (2000a), however, argue that the inclusion of parental employment in models of child outcomes is *not* straightforward. Using standard economic theory arguments, it is easy to show that there are two main approaches to estimating child outcomes. The first is based on the concept of a *production function*, whereby child outcomes are seen as 'produced' by the child's and the parents' investments in time and

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[10] The potential inefficiency of direct government transfers to poor families, outlined in the previous section, still applies here. Furthermore, even if the government provides specific goods and services, such as education, to improve children's human capital, parents are always likely to redirect part of what they would have spent on providing these things to other forms of consumption that do not improve their children's human capital (Mayer, 1997). For example, if the government provides free health care for children, there is a possibility that parents will switch some of what they would have spent on health care to other forms of consumption. Thus, although transferring income or non-cash benefits to parents will likely increase investments in low-income children, it will probably increase the amount low-income parents spend on themselves. There is evidence, however, that serious material hardships can hurt children's life chances, when they do not get enough to eat, they do not get needed medical or dental care, or they live in crowded or dilapidated housing. See, among others, Middleton, Walker and Ashworth (1995).

[11] When the other measure of poverty (parental worklessness) is used, this mechanism is directly called upon.

purchased goods and services. The child outcome production function describes a technological relationship between all the relevant inputs and the final outcome. Parental time is relevant as long as it directly affects the production of the outcome. Parental employment is thus inconsequential because it is not a productive input per se, and represents at best the complement of the time that parents devote to the child outcome production. The second approach is based on the concept of a *demand function*, whereby the child (or the parent) has a 'demand' for the outcome of interest (e.g., self-esteem, education, or smoking). The demand for each outcome will only be a function of the relevant prices, parental incomes and wages (but not employment). In some special circumstances, child outcomes can also be estimated using a *conditional demand approach*, by which parental employment is a sufficient statistic for parental incomes and wages and the relevant prices. In this case, however, the estimates of the parental employment variables confound not only incomes and prices but also preference and technology parameters, and therefore their interpretation is complex. In our regression analysis, we shall present estimates of the effect of poverty on child outcomes after controlling for parental employment. This will allow us to assess whether parental employment is a possible mechanism of transmission of disadvantage. But most of our discussion will be focused on specifications that exclude mother's and father's employment status.

Another mechanism through which disadvantage is transmitted is that children from low-income families have poorer quality environments, in terms of opportunities for learning and mother-child interactions (Smith *et al.*, 1997). There is also evidence that low income produces pressures that lead to parental conflict which, in turn, affects parental practices and children's self-esteem and confidence (Conger *et al.*, 1997). Thus, poverty early in childhood may be important for educational attainments because it influences the children's readiness to begin school and this affects their subsequent progress in school. We do not have, however, direct information on parenting. But the information on brothers and sisters in the BHPS makes it possible to relate differences between outcomes for siblings in the young adult sample to differences in their parents' worklessness at the time they were children. This technique will allow us to eliminate all the *fixed* parental characteristics and endowments that are *common* across siblings. However, it is always possible that parents' non-employment patterns are a response to idiosyncratic endowments of their children, such as giving birth to a disabled child. It is also possible that some children will experience a change in their parents' circumstances that never applied to their brothers or sisters – for example, a father developing an alcohol problem that not only damages their education but also affects their mother's working patterns.

1.5 Organisation of the report

The rest of this study has the following structure. Chapter 2 presents the first dataset used in estimation, the BYP, and contains a description of its measures of poverty and child outcomes, family resources and other controls, and the statistical methods that have been used in the empirical analysis. Chapter 3 reports the results obtained using the adolescent sample. We begin by gauging the simple association between family poverty and child outcomes. Then we move to the estimates found with multivariate models and isolate the effect of childhood poverty from that of individual-specific unobservables. We also distinguish between short- and long-term effects of poverty experience on measures of adolescents' well-being and we investigate the joint impact of poverty and adolescent behaviour on later outcomes measured when the adolescents become young adults, such as educational achievement and school progression. Chapter 4 presents the second dataset obtained from the sample of young adults in the BHPS matched to their parents. It contains a description of the measures of poverty and child outcomes as well as of the other variables included in the analysis. Chapter 5 reports the main results from the young adults sample, following – as much as possible – the analytical pattern of Chapter 3. Chapter 6 reports our main conclusions and links them to policy.

The British Youth Panel (BYP) was added to the British Household Panel Survey (BHPS) in wave four (1994) to include children in sample households.[12] The age band is 11 and 15 inclusive but with slight alteration at each end of this range, in line with the BHPS criterion for selection into the adult sample. That is, those 15-year olds turning 16 by 1 December in the current wave are interviewed as adults rather than in the youth survey even if interviewed before then, while 10-year olds turning 11 by this date are included. This results in a core group of children remaining in the BYP for some time (a maximum of five waves), while every wave a cohort of 16 year olds moves to the adult survey (BHPS) and a new cohort of 11 year olds enter the BYP. The full scheme over the six waves (1994-1999) used in our analysis is shown in Figure 2.1.

Figure 2.1 The structure of British Youth Panel – Age groups over waves of data

Panel	**BYP**					**BHPS**		
Age	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Wave 4	A	B	C	D	E			
Wave 5	F	A	B	C	D	*E*		
Wave 6	G	F	A	B	C	*D*	*E*	
Wave 7	H	G	F	A	B	*C*	*D*	*E*
Wave 8	I	H	G	F	A	*B*	*C*	*D*
Wave 9	J	I	H	G	F	*A*	*B*	*C*

Note: Letters represent cohorts. Bold letters indicate new entrants to the BYP. Italic letters denote cohorts moving into the main BHPS panel.

Each letter represents a specific cohort (year of birth) over time. For example, people in cohort A were born in 1983 and were aged 11 in wave 4 (1994), while people in cohort H were born in 1986 and entered the panel in wave 7 (1997) when they were aged 11. The bold letters indicate the new entrants to the BYP over time, and thus they show how the panel is replenished. As of wave 9 (1999), only two cohorts, A and F, have been interviewed five times, with groups B and G having four waves of interviews. The italics on the right-hand side of the figure indicate the cohorts moving into the main BHPS panel at 16.

[12] Further information on the BHPS is presented in Chapter 4. Additional information on the BYP is reported in Appendix A. More information can be found at http://www.iser.essex.ac.uk/bhps/doc which contains detailed information on the BHPS questionnaire and sampling design, and longitudinal issues, such as attrition, weighting and imputation.

The BYP sample contains data on 1,647 children aged 11 to 15, who were born between 1979 and 1988, and who have been observed between one and five times over the 1994-1999 period and who have complete information on the control variables used in our multivariate analysis (see Section 3.1.3).[13] Table 2.1 shows that there is a total of 4,511 person-wave observations over the entire sample period, with 413 children interviewed only once, and 252 children interviewed all five times.[14] Most of our empirical analysis is based on the pooled data of 4,511 person-wave observations. It should be noticed that pooling waves of data adds to the number of observations, but not to the sample of cases observed. We have used 'robust' estimates of significance to take account of the clustering effect, that is, repeated observations on the same individual (see also Section 4.2).

Table 2.1 The BYP sample

Number of children	Number of times children have been observed					
	Once	Twice	3 times	4 times	5 times	*N*
1,647	413	396	298	288	252	4,511

Source: British Youth Panel from the British Household Panel Survey, 1994-1999.

Note: *N* is the number of person-wave observations

2.1 Adolescent outcomes in the BYP sample

The BYP provides information on a large set of behavioural, psychological and attitudinal outcomes for children aged 11 to 15. The items used as outcomes for this sample and the wave(s) in which they appear are shown in Appendix Table A.1.[15] To ease the exposition we grouped them in the following categories:[16]

[13] These numbers refer to the BYP data only. The BHPS section outlined in Figure 1 simply illustrates the on-going process.

[14] Those observed five times can only be the 11-year-olds in 1994 (born in 1983) and followed up to 1998 (when they were aged 15) or the 11-year-olds in 1995 (born in 1984) who turned 15 in the last available wave of data (1999). Naturally, their number is smaller than the number of children in the other cells of Table 2.1 simply because more birth cohorts could contribute to the sub-samples of children observed, say, once or twice.

[15] The fact that information on each item is not available across all six waves means that the estimating samples differ depending on the outcome. For example, the analysis of the expectation outcome 'leaving school when you are 16' is based on 3,688 person-wave observations, while the analysis of the family attitude outcome 'the man should be the head of the household' (asked only in wave 4) uses 769 observations.

[16] Clearly there are overlaps across categories. For instance, the expectation of leaving school at age 16 is relevant both for the school outcomes and for the aspirations outcomes. The definition of these categories is somewhat arbitrary, but makes our exposition easier.

- **School**. There are three school outcomes that are of interest: how often the child plays truant, whether or not he/she has been suspended or expelled from school, and his/her expectation of leaving school at the mandatory minimum age of 16. These outcomes are meant to identify some of the key behaviours and expectations related to school life, which are likely to predict subsequent academic success.
- **Social networks**. We use five different measures of the child's interactions with friends and peer groups: the number of close friends, the frequency of contacts with friends at home, whether or not the friends ever used illegal drugs, the participation in activities in youth club and similar groups, and whether or not he/she belongs to a gang.
- **Work and money**. The BYP elicits information on the child's own available money each week from 15 year olds. In addition, it provides information on various aspects of the job that children aged 14 or more may have done in the week before the interview, such as hours of work, job security, whether or not the job is well paid and whether or not it is intellectually demanding ('involves your brain').
- **Self-esteem and psychological well-being**. The BYP contains a rich set of information about the adolescents' subjective psychological well-being. This ranges from the number of days the child feels to be unhappy to whether or not he/she enjoys taking exercise to keep fit. Furthermore, we constructed a continuous measure of self-esteem combining the following five items:[17] 'I feel I have a number of good qualities', 'I certainly feel useless at times', 'I am a likeable person', 'I am inclined to feel I am a failure', and 'At times I feel I am no good at all'. The statistical details concerning this self-esteem scale and the correlation between its different single components are reported in Table A.2.
- **Smoking and health**. In this category we group various measures of smoking and smoking-related behaviour: the frequency of smoking, the intention of starting/continuing smoking in the future, the perceived danger of smoking, the intention of using illegal drugs, and whether or not he/she has ever talked about drugs with parents or other adults.
- **Attitudes**. There are four attitudinal variables that are of interest, that is, whether or not: health is a matter of luck, living together without marriage is wrong, the man should be the head of the household, and divorce is better for children than an unhappy marriage.
- **Aspirations**. Besides the expectation about school leaving age, we have information on five other important spheres of child aspirations: the expected age of leaving home and the expected age of starting up a family, whether or not he/she expects to get married and at what age, and whether or not he/she wants to become a parent.

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[17] We also examined the relationship between family poverty and each of these issues separately.

2.2 Measures of poverty

The definition of poverty used in the analysis of the adolescent sample is based on income.[18] In many studies using British data, an individual is defined to be poor if his/her income falls below a particular low-income cut-off (or 'poverty line'). The poverty line which we used is 60 per cent of the current median income. There is no single official poverty line in Britain, but the 60-per cent-of-median cut-off is widely used, and is among those in *Opportunity for All* (Department of Social Security, 1999, 2000) and the *Households Below Average Income* series.[19] For each household, total income has been aggregated from the individual income of all household members. Income includes cash from all available sources: labour market earnings from employment and self-employment, investment and savings income, occupational and private pensions, plus all government cash benefits (including retirement pensions), minus direct income taxes, local tax and social security contributions. The total income figures have been adjusted to take account of differences in household size and composition and have been adjusted to August 2000 prices.

We employ two measures of poverty, which have been developed, tested and analysed in the companion report on the dynamics of poverty in Britain (Jenkins *et al.*, 2001). The first is a measure of *current* poverty. The members of a household are defined to be in poverty if the household has less than 60 per cent of the contemporaneous median income. The second is a measure of *persistent* poverty. Following Jenkins *et al*. (2001), this longitudinal poverty measure is based on a count of the number of times an individual was observed to be poor (household income below 60 per cent of the contemporaneous household median income) in the same wave as the outcome was measured and in the previous three waves. Individuals can be in either of four categories: not poor at any of the four annual interviews, poor at one interview, poor at two interviews, and poor at three or four out of the four interviews. We define 'persistent poverty' using this indicator as being poor at three or four interviews.

Both are measures of relative poverty, since they change in real terms as median real income changes. The number of BYP respondents in (current and persistent) poverty at each wave as well as the number of missing cases is given in Table 2.2. We have a total of 3,839 and 3,300 person-wave observations with valid current poverty and persistent poverty

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[18] In this context, therefore, the terms 'poor children', 'children in poor families' and 'children in low-income families' refer to the same group of individuals.

[19] This poverty line is a 'relative' one because it is defined with reference to the contemporary income distribution and the middle (median) income in particular. Moreover its value in real terms changes over time as median income changes. By contrast an 'absolute' poverty line is fixed in real terms, regardless of the distributions being compared. In the BHPS data that we use, the 60-per cent-of-median poverty line increased by just under a fifth between 1991 and 1999, from £149 to £177 per week (2000 prices). See Jenkins *et al.* (2001) for further details.

information, respectively.[20] Therefore, our multivariate analysis will have those respective sample sizes in the case of child outcomes that have been collected over all panel years (e.g., self-esteem and expectations of leaving school at age 16). Of those children with non-missing poverty data, on average 23 per cent are below the spartan threshold we used to define current poverty in any given year between 1994 and 1999, while 19 per cent of children are in persistent poverty in any given year over the same period.[21]

There is a strong and statistically significant correlation between these two measures of poverty for the BYP sample. Of those who are in current poverty at any time between 1994 and 1999, 70 per cent are also in persistent poverty. While of those in persistent poverty, only 14 per cent are not defined to be poor according to the current measure (that is, they were not observed to be poor in the current wave). Similarly, of the children who are not in persistent poverty, 97 per cent are also not in current poverty.

2.3 Other controls

Table A.4 presents the distribution of the BYP children across the other variables used in the statistical analysis. As expected from the eligibility rules for entering and leaving the panel, the proportion of 10 year olds is small (only 3 per cent of the sample). The proportion of 15 year olds is about 16 per cent, while each of the other ages involves approximately 20 per cent of the sample. The sex distribution shows slightly more boys than girls (52 per cent versus 48 per cent).

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[20] The smaller sample size available with the persistent measure of poverty is due to the stronger condition of having all the available family income data not only in the current interview but also in the previous three waves.

[21] The number of missing values for the current poverty indicator ranges from a low of 13 per cent in wave 8 to a high of 17.4 per cent in wave 5. The proportion of missing cases is higher in the case of the persistent poverty indicator, ranging from 24 per cent in wave 9 to 28 per cent in wave 4. Appendix Table A.3 reports the frequencies (and means) of the individual and family characteristics distinguishing the cases with missing poverty indicator from those with valid poverty data. The missing cases do not bias the sample in terms of the age and gender of the children in the BYP. But children in single-parent families are slightly over-represented, while children from two-parent families are slightly under-represented in the final sample. This is because our poverty indicator requires full information on income sources from *all* household members. The amount of information needed in two-parent families is unsurprisingly greater than the amount of information needed in lone-parent families. See Jenkins *et al.* (2001). This is true for both measures of poverty.

Table 2.2 British Youth Panel – number of respondents by poverty measure

	Poverty indicator				Valid %
Wave	No	Yes	Missing	Total	In poverty
Current poverty measure					
4	515	143	115	773	21.7
5	475	144	130	749	23.3
6	481	155	112	748	24.4
7	482	135	103	720	21.9
8	517	151	100	768	22.6
9	482	159	112	753	24.8
Total	2,952	887	672	4,511	23.1
Persistent poverty measure					
4	463	90	220	773	16.3
5	439	106	204	749	19.4
6	429	102	217	748	19.2
7	441	94	185	720	17.6
8	456	110	202	768	19.4
9	455	115	183	753	20.2
Total	2,683	617	1,211	4,511	18.7

As previously discussed, parents' own educational achievements may well reflect their attitudes towards education and the cultural environment in which children are raised. The table shows that more than a quarter of mothers and fathers of the adolescents in the BYP sample have no academic qualifications. Less than one in ten mothers and one in eight fathers hold a university or higher degree.

Many researchers have observed a connection between family size and children's chances of socio-economic success (e.g., Zajonc and Markus, 1975; Stafford, 1987). Family size may be an important determinant of child outcomes because parents' time and money are likely to be spread more thinly as the number of children (and other family members) in the household increases. In view of this, our analysis took account of the number of individuals that the adolescent lives with in each wave of data. Table A.4 shows that almost 40 per cent of children live in four-member families, with mother, father and another sibling. Another 40 per cent live in larger households, with two adults and three or more children. Less than 20 per cent of children live in smaller family units.

The ages of parents were also included in the analysis as possible explanatory variables, because they may be differently correlated with parents' life and work cycles, pay and job status – which would be otherwise unmeasured. We grouped mothers and fathers into three age categories: those aged below 36, those aged 36 to 45 and those aged 46 or more. The average age for mothers in the BYP sample was just under 40. Fathers were approximately three years older.

About two-thirds of the children are in families with both natural parents, and another eight per cent are in two-parent families with one natural and one step-parent (the vast majority of these families have the natural mother and a step father). One in four children are observed to be in single-parent families, 90 per cent of which being natural mother only.

Both poverty incidence and child outcomes may be correlated with family location, which can proxy as diverse characteristics as cultural environment and customs, as well as labour demand characteristics, such as industrial composition. For this reason, in our multivariate analysis we used the region of residence of the family in which the adolescent lives. Just above 40 per cent of the children in the BYP sample live in the South of England (including London), another 18 per cent live in the Midlands, while five per cent live in Wales and seven per cent in Scotland.

The employment patterns of both mother and father are clearly instrumental to our definition of poverty. In some of the empirical specifications we also used a simple measure of parental employment status. Almost 85 per cent of the fathers are in paid work (of those in employment, 96 per cent are in a full-time job), with the other 15 per cent being either unemployed or out of the labour force. Just over 70 per cent of the mothers are in employment and are equally split between part-time and full-time jobs. The vast majority of those who are not in employment are out of the labour force rather than being unemployed.[22]

2.4 Statistical methods and empirical strategy

The empirical strategy is straightforward. We first analysed the bivariate associations between the two poverty indicators and all the child outcomes (44 in total) using simple cross-tabulations. This is a descriptive method which identifies the outcomes that are most correlated with poverty. It may, however, mask differences in such associations due to differences in characteristics other than family poverty. To control for some of these characteristics, therefore, we performed multivariate regression analysis of the outcomes on the poverty indicators and the variables presented in Section 2.3. This analysis employed ordered logit models for the outcomes that have multiple and ordinal categories and binary logit models for the dichotomous outcomes. We also used ordinary least squares regressions for the continuous outcomes.

Our estimates come from *reduced-form* models. They try to assess the role played by poverty (defined in terms of low income) on the separate determination of several child outcomes, after controlling for child- and family-specific characteristics. Thus, family income (poverty indicator), some personal characteristics (e.g., gender and age) and parental variables

[22] Being 'out of the labour force' includes individuals who are retired, in family care, full-time students, long-term sick and disabled, and individuals who are in government training schemes.

(e.g., family structure, parents' age and education) are taken as determinants of the set of child outcomes described earlier. If we used a conditional demand function approach, parental employment would have been a sufficient statistic for family income, and thus family income would have to be left out. In one of our empirical specifications presented in Chapter 4, we also controlled for parental employment, simply to assess whether or not mother's and father's employment status is one of the mechanisms through which advantageous or disadvantageous circumstances are transmitted.

It is possible that the estimated effects of family poverty on child outcomes are spurious, because of the mutual association that family poverty and child outcomes share with some unmeasured true causal factor. For example, the association between having experienced life in a poor family and, say, having lower self-esteem may not be necessarily the result of family poverty during childhood or adolescence. Rather, differences in self-esteem may simply reflect some individual-specific unobserved permanent characteristics. Although we cannot fully account for such characteristics, we estimated random-effects probit models, after having dichotomised the ordinal outcomes, which exploit the longitudinal nature of the BYP data to compute correct standard errors for making inferences.

3 RESULTS FROM THE BYP SAMPLE

3.1 Bivariate associations

We computed bivariate associations between all the outcomes listed in Table A.1 and the current poverty indicator. These associations were computed using the pooled data of individual respondents from all the waves 1994-1999. As pointed out in Section 2.1, the actual sample size for each child outcome varies with the number of waves the outcome information was collected in the BYP and the non-response to that particular outcome. The measure of association for all the discrete (categorical) outcomes was the Pearson's χ^2, which tests whether or not a particular outcome differs between adolescents who are in poverty and adolescents who are not in poverty. Other outcomes, such as the amount of pocket money and the number of friends, are treated as continuous rather than categorical variables. For these outcomes, the difference between adolescents in poverty and adolescents out of poverty is tested using a *t*-statistic for the difference of means.

The results are presented in Table B.1. The table clearly shows that there is a strong association between current family poverty and several measures of self-esteem, psychological well-being, aspirations and school outcomes. The experience of poverty is also correlated with the number of times that an adolescent has friends spending time at his/her house, his/her belief that smoking is not dangerous and that health is a matter of luck. We have performed the same exercise using persistent poverty. The bivariate associations between the child outcome and the measure of persistent poverty are presented in Table B.2. Interestingly, a larger number of outcomes turned out to be correlated with the indicator of persistent poverty, suggesting that persistent poverty is perhaps more discriminatory than current poverty in terms of the outcomes under analysis.[23]

The results in Tables B.1 and B.2 are informative because they show the outcomes that are more sensitive to family poverty. But they reveal neither the direction of the effect of poverty on each outcome of interest nor the sensitivity of the association to individual- and family-specific observed characteristics. This is the task of the following section.

[23] The most notable exception is 'playing truant' which was strongly significant with the measure of current poverty but loses its statistical significance in the case of the persistent poverty measure.

3.2 Multivariate analysis

3.2.1 Benchmark results

For each of the outcomes that were significant in Table B.1, we separately estimated the effect of current poverty using three specifications. The first specification (specification (a)) contains the personal characteristics of the child (age, year of birth and gender). The second contains the same controls as the first one plus family structure, parents' age, education and region of residence. The third specification contains the same variables as the second specification plus the number of people who live in the household and whether or not the father and mother are in employment. Table 3.1 shows the estimates and absolute *t*-ratios of the effect of current poverty on each child outcome separately. A number with one or two asterisks indicates that the estimate is significant at the five or one per cent level, respectively.[24]

The estimates from specification (a) reveal that poverty has a significant effect in 12 of the 20 outcomes analysed. In particular, poor children are more likely to play truant, to be suspended from school, to believe that health is a matter of luck and that smoking cigarettes is dangerous than non-poor children. Compared to non-poor children, poor children are also more likely to plan to leave school at 16, not to want to be a parent and not want to marry.[25] They also have lower self-esteem than non-poor children (mainly because they are more inclined to feel that they are useless or a failure, or they do not have good qualities).

After the basic set of family variables is entered in specification (b), six outcomes still show a significant correlation with family poverty. Poverty is positively associated with playing truant, expecting to leave school at 16, not wanting to be a parent,[26] believing that health is a matter of luck, and feeling a failure. Poverty is negatively correlated with self-esteem.

Finally, specification (c) reveals that controlling for the number of individuals who live in the household and for the employment status of mother and father eliminates the effect of poverty on virtually all outcomes under analysis, with the exception of playing truant (poverty increases the odds of playing truant from school). The point made in Section 1.4.3 should be kept in mind here. That is, the interpretation of the

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[24] In all regressions we estimated robust standard errors to account for multiple observations on the same individual. The table also reports the type of regression model used to estimate each outcome (ordered logit, binary logit and ordinary least squares regression models).

[25] The result that adolescents in low-income families are more likely to report that they do not want to be a parent is interesting, particularly in the light of the fact that poverty has been found to be strongly associated with early childbearing (see, among others, Hobcraft and Kiernan, 1999). To investigate the gap between adolescents' expectations and their actual behaviour is beyond the scope of this report, but it is an important issue to analyse in further research.

[26] There is no evidence of a significant gender difference in this aspiration-related variable.

estimates is complex, because the coefficients on the parental employment variables confounds both incomes, wages and prices as well as preference and technology parameters. Therefore, we do not know whether the effect of poverty on child outcomes is genuine or the result of the interaction between parental preferences, technology used to 'produce' the child outcomes and external labour markets. With this caveat in mind, the results from specification (c) are important for two reasons. First, for the outcomes analysed in the adolescent sample, it shows that it is parents' employment status (and, to a lesser extent, number of people in the household) which matters, rather than income as such. This is not totally surprising, given our measure of poverty. Second, it reveals that, during the 1990s, employment status is closely associated with poverty especially among families with children (as Iacovou and Berthoud, 2000, have documented). This will be relevant to our analysis of the young adults sample. Table B.3 shows that worklessness is indeed a strong predictor of current poverty for the sample of parents of the adolescents included in the BYP.[27] Almost three-quarters of children whose mother and father are not in employment are poor, while only two per cent of children with mothers and fathers in full-time paid jobs are poor. Interestingly, 30 per cent of the children with a mother working full-time and a non-working father are poor, while if the mother works part-time and again the father is not in employment, the percentage of children in poverty rises to 64 per cent.

The inclusion of parental employment in these regressions is critical to uncover one potential mechanism through which the intergenerational transmission of disadvantage operates. But its inclusion makes the interpretation of the parameter of interest (that is, the parameter of the poverty variable) problematic. In what follows, therefore, we focus on the results from specification (b) only. It is difficult to gauge the magnitude of the poverty effect from the coefficients from the ordered logit and binary logit models shown in Table 3.1. The ways in which the probabilities of each outcome (which is significant according to specification (b) in Table 3.2) vary with our measure of current poverty are shown in Table B.4 and visually displayed in Figure 3.1.[28]

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[27] We have performed the same tabulation using the persistent poverty measure and obtained substantially similar results to those reported in Table B.4. The results are not shown for convenience.

[28] To ease the interpretation of the results, in Figure 3.1 we dichotomised the outcomes with multiple categories. In particular, the outcome 'playing truant' records a 'yes' if the respondent reports to have played truant at least once; the belief that 'health is a matter of luck' records a 'yes' if the respondent agrees or strongly agrees; 'feeling to be a failure' records a 'yes' if the respondents agrees or strongly agrees; and 'feeling unhappy' means that the respondent has felt unhappy for four days or more. Table B.4 shows the estimated probabilities for each category of the multiple-category outcomes and reports in bold the probabilities reported in Figure 3.1.

After controlling for child's personal characteristics (age, year of birth and gender) and the basic set of family variables (mother's and father's age and education, region of residence and family structure), children in low-income families have almost 50 per cent higher chances of ever playing truant from school than children in non-poor families (18.2 per cent probability versus 12.8 per cent probability). The evidence on this behavioural outcome is reinforced by the expectations that children have about their own education. Figure 3.1 shows in fact that, compared to children in non-poor families, children in poor families are 47 per cent more likely to expect to leave school at the mandatory minimum age of 16 (17.3 versus 11.8 per cent probability). Poor children are also 27 per cent more likely than non-poor children to feel that they are a failure (12.1 versus 9.5 per cent probability), 20 per cent more likely to believe that health is a matter of luck (21.3 versus 17.6 per cent probability) and 39 per cent more likely not to want to be a parent (17 versus 12.2 per cent probability). On the other hand, children in low-income families are less likely to have felt unhappy than children in non-poor families (18.9 versus 22.1 per cent probability).[29]

Using the same three specifications, we also performed the analysis using the measure of persistent poverty on all those outcomes that were significant in Table B.2. Table B.5 lists the results from such estimations, while Figure 3.2 reports the poverty effects on the predicted probabilities for each significant outcome from specification (b), after dichotomising the multiple-category outcomes as in the case of the current poverty results.[30]

The results in Table B.5 are similar to those shown in Table 3.1. As we found in the case of current poverty, after controlling for child and parental characteristics (specification (b)), persistent poverty has an effect on the likelihood of believing that health is a matter of luck, on the probability of not wanting to be a parent and expecting to leave school at age 16, and on the probability of feeling to be a failure. A few outcomes that were affected by current poverty appear to be insignificantly related to persistent poverty, although this lack of statistical influence may be largely accounted for by the smaller sample sizes (and larger standard errors) with which we analysed the effect of persistent rather than a smaller magnitude of the effects. These include 'playing truant', the number of days that the child feels unhappy and the self-esteem scale. On the other hand, a few new outcomes seem to be significantly affected by persistent poverty: whether or not the child is happy with his/her appearance and family and the number of hours spent working for pay.

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[29] This result seems counterintuitive. At present, we do not have any adequate explanation which can be tested with our data.

[30] Figure 3.2 does not report the probability of 'feeling happy with own family' because this outcome loses significance after we dichotomise the responses.

Table 3.1 The effect of current poverty on adolescent outcomes: Estimates and absolute t-ratios from regression models – pooled data waves 4-9

		+child (a)		*+child +parent(1)* (b)		*+child +parent(2)* (c)	
	Type‡	Coeff.	|t-ratio|	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Times had friends round to your house?	o	0.070	0.73	-0.004	0.04	0.124	1.03
How often played truant from school	o	0.727**	4.00	0.491*	2.35	0.600*	2.51
Suspended/expelled from school	b	0.535*	2.08	0.175	0.55	-0.060	0.17
How dangerous is smoking few cigarettes?	o	0.371**	3.02	0.242	1.80	0.014	0.09
Generally health is a matter of luck	o	0.415**	4.16	0.251*	2.44	0.146	1.26
How many days have you felt unhappy?	o	-0.176*	2.00	-0.209*	2.21	-0.220	1.89
Past week - nights lost sleep worrying?	o	-0.086	0.83	-0.102	0.88	-0.012	0.09
I feel I have a number good qualities	o	-0.272**	2.91	-0.160	1.53	-0.123	1.05
I certainly feel useless at times	o	0.222**	2.64	0.125	1.40	0.045	0.44
I am a likeable person	o	-0.116	1.12	-0.107	0.98	0.047	0.40
I am inclined to feel I am a failure	o	0.480**	5.45	0.272**	2.92	0.185	1.74
Happy with your school work?	o	-0.121	1.37	0.034	0.35	0.026	0.22
Happy with your appearance?	o	0.072	0.86	0.071	0.76	0.070	0.65
Happy with your family?	o	0.154	1.58	0.125	1.19	0.120	0.96
Describes how you feel about your life?	o	0.023	0.26	0.053	0.53	0.156	1.42
Not want to be a parent	b	0.551**	4.02	0.407**	2.65	0.056	0.32
Not want to marry	b	0.480**	3.37	0.216	1.38	-0.118	0.64
Leave school when you are 16?	b	0.823**	5.91	0.483**	2.98	0.205	1.15
Last week, hours spent working for pay?‡‡	b	-0.117	1.05	-0.201	1.79	-0.067	0.51
Self-esteem scale	r	-0.485**	4.18	-0.279*	2.25	-0.152	1.12

† child controls: gender, age, year of birth

†† parent controls (1): family structure, mother's and father's education, mother's and father's age, region of residence (mode replacement)

(2): as (1) plus number of persons in the household and employment status of father and mother (mode replacement)

‡ Ordered logit [o] binary logit [b] OLS [r]

‡‡ Waves 5-9 only

* $p<.05$ ** $p<.01$

Figure 3.1 Predicted probability for the effect of current poverty on adolescent outcomes – Significant effects from Table 3.2

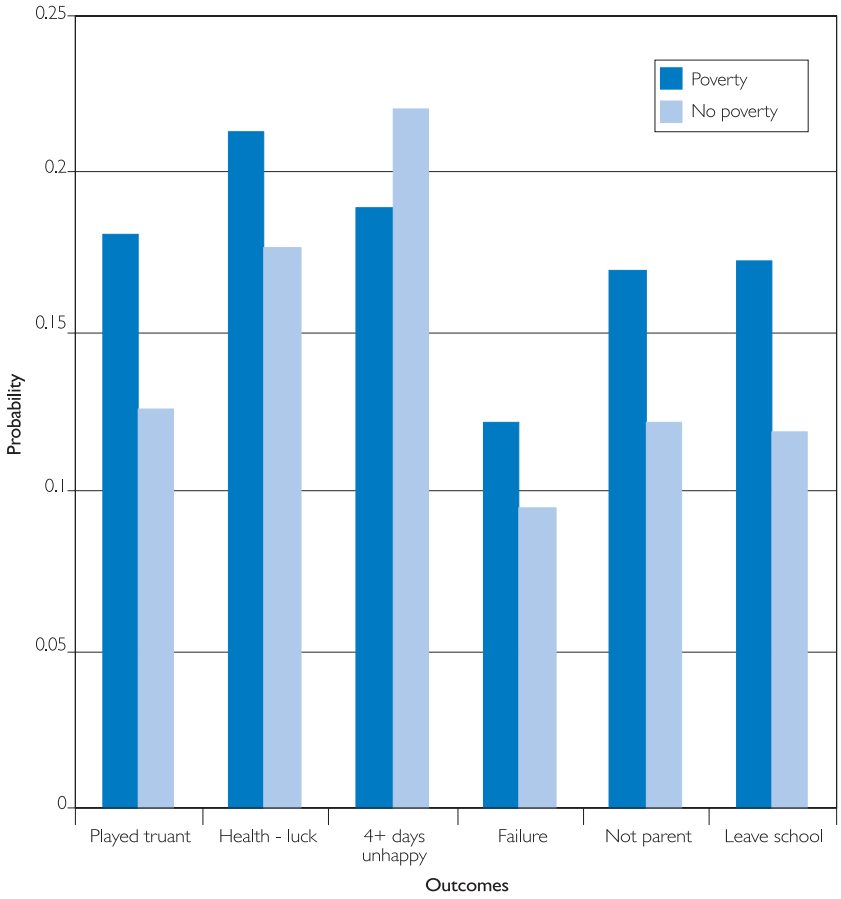
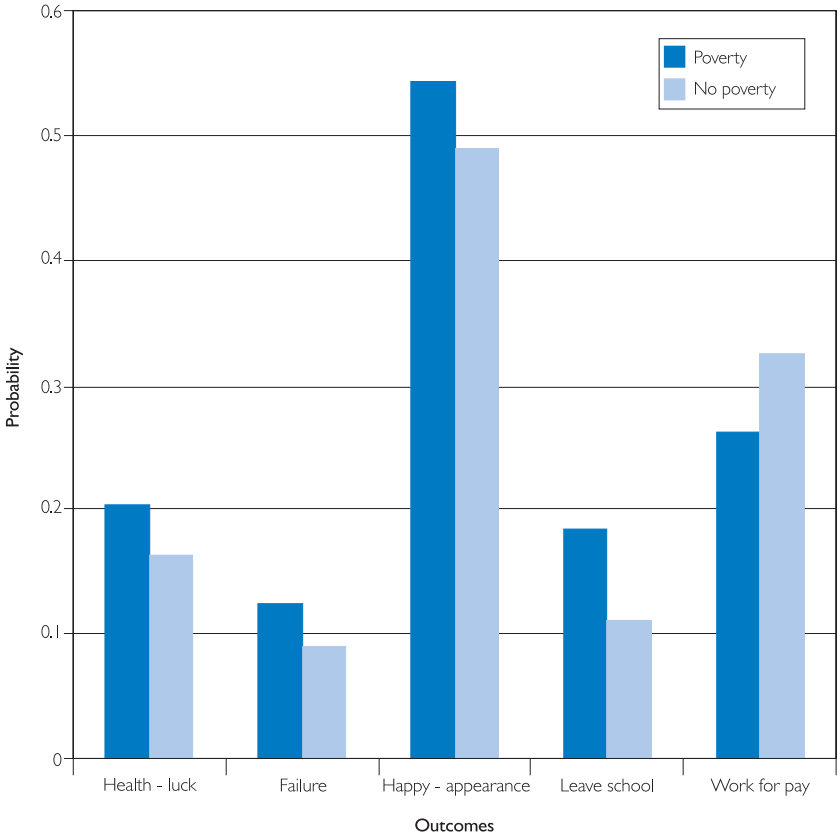


Figure 3.2 Predicted probability for the effect of persistent poverty on adolescent outcomes – Significant effects from Table B.4



3.2.2 Robustness checks

All of the analysis so far has focused on the effects of current and persistent poverty (as measured by low family income) on child outcomes. Child outcomes may, however, reflect some other individual or family characteristics that are correlated to poverty but cannot be observed. This correlation is likely to be stronger for the current poverty measure, because persistent poverty is supposed to identify families that are in poverty over a longer time period (and thus attenuating the potential bias generated by noisy transitory income). To reduce (at least part of) the bias induced by this correlation, we performed the same analysis as that reported in the previous sub-section, but regressing the 'current' poverty indicator measured at time *t*-1 on child outcomes measures at time *t*. We distinguish two types of regressions, one in which all the other control variables are measured at time *t*, and the other in which all the other control variables are also measured at time *t*-1. The estimates obtained from these regressions are reported in Tables B.6 and B.7.

Looking again at the results from specification (b), which controls for child and parental characteristics but notably excludes the parental employment variables, we find that some of the outcome variables now cease to be affected by poverty, namely playing truant, feeling happy, and not wanting to be a parent. Interestingly, the effects of poverty on the belief that health is a matter of luck, feeling a failure and expecting to leave school at age 16 not only remain significant but also become quantitatively greater than the earlier estimates from Table 3.1 suggested. This clearly emerges in the results of both Table B.6 and Table B.7. We may have therefore some confidence that the estimates of the impact of poverty on these latter outcomes come about not simply because of noise or measurement error but they are likely to capture a more stable well-defined relationship between family income and such child outcomes.

3.2.3 Unobserved individual heterogeneity

As noted in Section 2.4, the estimated effects of family poverty on child outcomes may pick up the mutual association that family poverty and child outcomes share with some unmeasured true causal factor. This is the case if, for example, the association between having experienced life in a poor family and, say, expecting to leave school at age 16 reflects specific unobserved permanent characteristics (e.g., higher motivation to start working earlier or lower academic ability).

Although we cannot fully account for these types of heterogeneity with standard regression methods, we can exploit the longitudinal nature of the data and estimate random-effects probit regressions, which allow us to compute correct standard errors for making inferences. However, it should be emphasised that, to the extent that there is some form of intergenerational transmission of unobserved components, these models may still yield biased estimates. We performed these regressions for all the outcomes that were significant according to specification (a) in Tables 3.1 (current poverty) and B.5 (persistent poverty), after having

dichotomised the ordinal outcomes.[31] We chose the outcomes that were significant under specification (a), rather than specification (b), so that we can appreciate the effect of unobserved heterogeneity on more outcomes and test the robustness of our findings more exhaustively. We also estimated binary probit regressions on the same set of outcomes, allowing us to compare the random-effects estimates to the estimates reported so far directly. The variables included in each regression are those of specification (b), that is, child controls (age, gender and year of birth) and parents' controls (family structure, mother's and father's age and education and region of residence). The results are reported in Tables 3.2 and 3.3, which refer to the effects of current poverty and persistent poverty, respectively, with asterisks flagging significant effects in the usual manner.

Table 3.2 The importance of individual-specific permanent components – Current poverty

	Probit		RE probit	
	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Played truant from school	.264*	2.46	.426**	2.93
Suspended/expelled from school	.113	0.81	.138	0.70
How dangerous is smoking few cigarettes?	-.239*	2.13	-.327*	2.26
Generally health is a matter of luck	.288**	3.76	.309**	3.32
How many days have you felt unhappy?	-.146*	2.16	-.158	1.77
I feel I have a number good qualities	-.005	0.06	.083	0.73
I certainly feel useless at times	.037	0.62	.024	0.33
I am inclined to feel I am a failure	.166*	2.25	.199*	1.99
Not want to be a parent	.227**	2.70	.276*	2.23
Not want to marry	.114	1.13	.068	0.52
Leave school when you are 16?	.286**	3.27	.292*	2.22
Self-esteem scale‡	-.279*	2.25	-.236*	2.32

‡ Obtained from ordinary least squares regressions (probit column) and random-effects generalised least squares regressions (RE probit column).

* $p<.05$ ** $p<.01$

[31] The procedure used to categorise these outcomes is similar to that used to obtain Figures 3.1 and 3.2.

Table 3.3 The importance of individual-specific permanent components – Persistent poverty

	Probit		RE probit	
	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Suspended/expelled from school	.199	1.34	.210	1.06
How dangerous is smoking few cigarettes?	-.278	1.93	-.348	1.92
Generally health is a matter of luck	.391**	4.20	.458**	4.03
I feel I have a number good qualities	-.067	0.66	.018	0.12
I certainly feel useless at times	.114	1.51	.165	1.71
I am inclined to feel I am a failure	.210*	2.25	.317*	2.54
At times I feel I am no good at all	-.040	0.52	-.015	0.16
Happy with your appearance?	.080	0.95	.103	0.96
Happy with your family?	.014	0.13	.016	0.11
Self-esteem scale‡	-.281	1.80	-.301*	2.24
Leave school when you are 16?	.377**	3.50	.353*	1.99
Not want to be a parent	.075	0.72	.037	0.21
Not want to marry	.055	0.52	-.005	0.03
What age would like to start a family? ‡	-.149	0.49	.128	0.46

‡ Obtained from ordinary least squares regressions (probit column) and random-effects generalised least squares regressions (RE probit column).

* $p<.05$ ** $p<.01$

Current poverty turns out to be significantly associated with such outcomes as playing truant, believing that health is a question of luck, feeling a failure, not wanting to be a parent, expecting to leave school at age 16 and scoring low in the self-esteem scale. The same outcomes are also significantly associated with persistent poverty, with the exception of playing truant and not wanting to be a parent. Taken all together, these results strongly confirm our previous findings and strengthen the reliability of the inference that can be drawn from the estimates. These estimates, however, do not eliminate the presence of individual- or family-specific unobserved factors that can still bias the estimated relationship of child outcome and family income in the BYP sample.

3.3 Longer-term effects of poverty on child outcomes

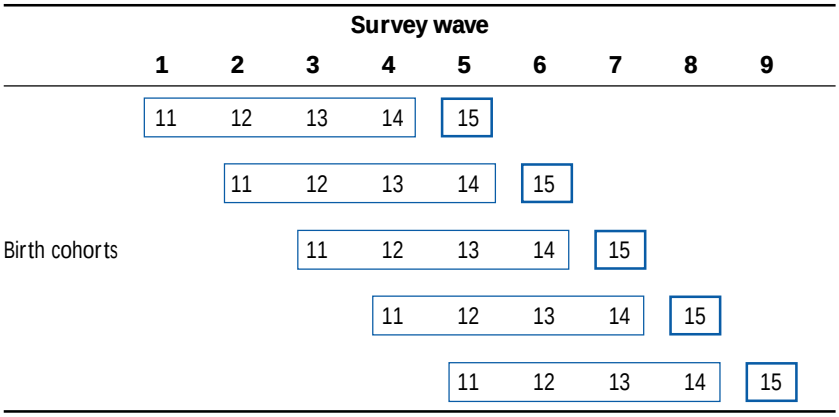
In Chapter 1 we argued that the influence on children's prospects might crucially depend on the period of their lives when they experienced poverty. Ideally, one would like to cover the life course over the entire childhood of the adolescents observed in the BYP, and separately analyse different developmental stages: the pre-school early-childhood period (from birth to the fifth birthday), the primary-school middle-childhood period (from age 6 to 10) and the adolescent period. Each of these stages covers some major transitions in the child's life, ranging from role changes to school entrances, moves and exits, biological maturation and cognitive reorganisations, or combinations of all these 'turning points' (Duncan and Brooks-Gunn, 1997). At present, however, the BYP sample with just six waves of data allows us to address this issue only partially.

For the group of people born between 1980 and 1984, we were able to investigate the relationship of their outcomes measured at age 15 with experience of poverty when they were aged 11 to 14. In addition, for the group of individuals born between 1985 and 1988, we could repeat the analysis while linking their outcomes measured at age 11 to experience of poverty when they were aged 6 to 10. For one cohort of adolescents (those born in 1988), we can go as far back into their childhood as when they were aged three. But the sample size is too small to perform multivariate analysis on just this cohort. We thus limit our attention to the results obtained with the other two groups of adolescents.

3.3.1 Outcomes at age 15

Figure 3.3 shows the birth cohorts and the survey waves that we used to analyse child outcomes at 15. In double-bordered squares we highlight when each cohort of adolescents turn 15: from the fifth to the ninth wave (1995-1999), we have five cohorts of people who were born between 1980 and 1984. The figure also shows the four-year window (in single-bordered rectangles) over which we measure poverty for each cohort. For example, for the 15 year-olds in wave 5 we have poverty measures through the income information collected from their parents between wave 1 (1991) and wave 4 (1994), when they were aged 11 to 14. Similarly, for the 15 year-olds in wave 9, the four-year window over which family income is measured goes back to wave 5 (1995) and reaches wave 8 (1998).

Figure 3.3 Survey waves, birth cohorts and poverty periods involved in the analysis of outcomes at 15 and poverty periods in the BYP sample



The empirical strategy to analyse outcomes at 15 was the same as that used before. On sub-samples of adolescents that varied in size depending on the outcome under analysis between a minimum of 248 and a maximum of 512, we first analysed the bivariate associations between past poverty and all the child outcomes available in the BYP using cross-tabulation techniques. The results of this analysis, which are not shown for simplicity, indicate that eight out the 45 outcomes are significantly correlated with past poverty. These are: playing truant, expecting to

leave school at age 16, feeling happy with school work, feeling unhappy in general, believing that health is a matter of luck, whether parents (or other adults) have talked about drugs, the number of times friends are around the respondent's home to play, study and meet, and the amount of money earned from paid employment. It is clear that there is a substantial overlap of these results with the results we previously described. Therefore, not only is there an association between current and persistent poverty with child outcome, but experience of life in a low-income family at any time during early adolescence (ages 11-14) years may also have consequences that last at least until the end of adolescence (at age 15).

To see whether these long-lasting associations persist after other relevant factors are controlled for, we performed multivariate analysis for each of the significant outcomes. We estimated three different specifications, in which we increasingly added to the poverty measure (specification (a)), child's gender, year of birth and region of residence (specification (b)) and parental characteristics (specification (c)). The results of these regressions are reported in Table 3.4 (as usual, asterisks on outcomes that are significantly affected by poverty). To make the link with our previous findings as straightforward as possible, the table shows also the results obtained using current poverty measured at age 15. The results are not sensitive to the measure of poverty. The reason why the estimates obtained with the current poverty in specification (c) differ from the estimates of specification (b) in Table 3.1 is due to the fact that we now analyse a smaller group of individuals, who come from closer and more homogeneous birth cohorts. Focussing on the results of specification (c), we find that past poverty (as well as current poverty) significantly decreases the likelihood of 15 year-olds to feel unhappy (a result that also emerged in most of the previous analysis), but increases their likelihood of expecting to leave school at the end of the compulsory period.

Figure 3.4 allows us to gauge the magnitude of these estimates by showing the predicted probabilities of the effect of past poverty on these two outcomes. Having experienced poverty when aged 11 to 14 *decreases* the probability of feeling unhappy by more than a quarter (from 30 per cent if the adolescent did not experience poverty to 22 per cent if he/she did), but *doubles* the probability of expecting to leave school at age 16 (increasing it from nine to 18 per cent). This latter result is quantitatively large and important because academic achievement is known to have a beneficial impact on a number of economic and non-economic spheres later in adult life (Haveman and Wolfe, 1995; Blundell *et al.*, 1997). The fact that 15 year-olds, who had lived in a low-income family during their early adolescent years, are expecting to leave school one year later is likely to pose relevant issues that need to be addressed by policy.

Table 3.4 The effect of current and past poverty on outcomes at age 15

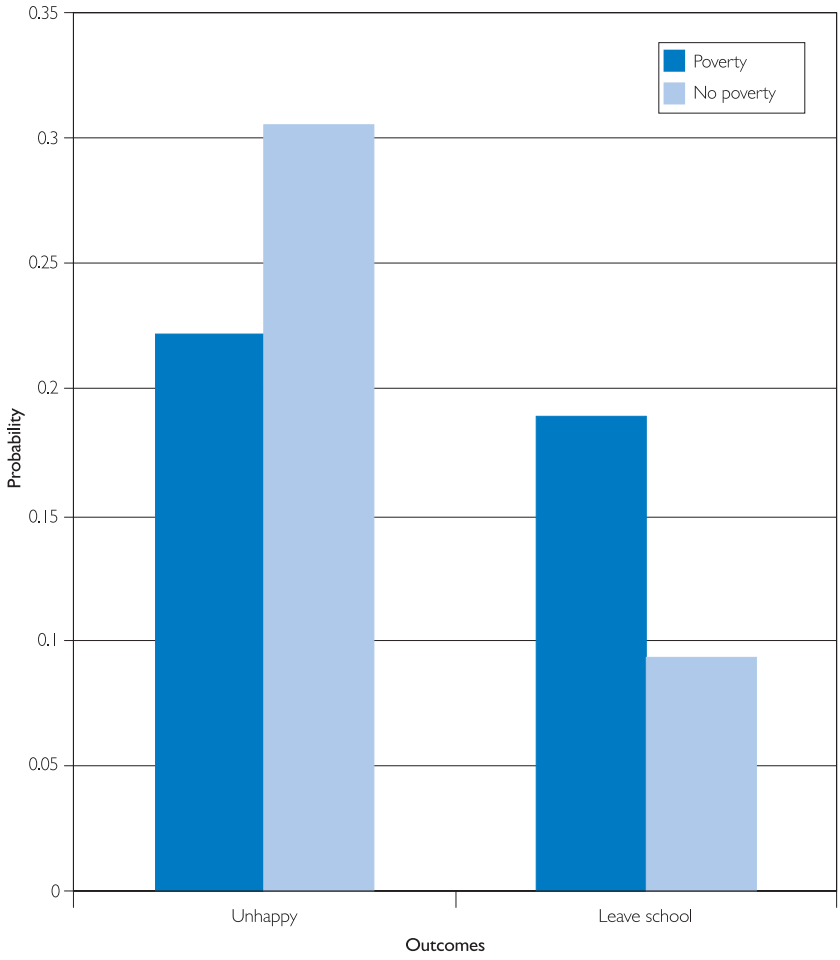
	Poverty measure					
	Current poverty at age 15			Past poverty between ages 11 and 14		
	(a)	(b)	(c)	(a)	(b)	(c)
Times had friends round to your house?	-0.088	-0.068	-0.131	-0.042	-0.065	-0.239
How often played truant from school	0.716*	0.718*	0.444	0.454	0.448	0.112
Parents/other adult talked about drugs?	0.111	0.089	-0.159	0.638*	0.567	0.553
Generally health is a matter of luck	0.288	0.371	0.310	-0.012	0.056	-0.101
How many days have you felt unhappy?	-0.531*	-0.434*	-0.573*	-0.444*	-0.329	-0.427*
Happy with your school work?	-0.193	-0.185	-0.021	-0.270	-0.283	-0.151
Leave school when you are 16?	1.392**	1.343**	1.234*	1.072**	1.034**	0.740*
How much money did you earn last week?†	2.58	2.15	1.49	3.36*	2.80	2.54

Note: Specification (a) includes only the poverty measure; specification (b) includes also child's gender, year of birth and region of residence; specification (c) is as specification (b) and also includes parents' characteristics (family structure, mother's and father's age and education, and the number of persons living in the household).

† OLS regression

*p<.05 ** p<.01

Figure 3.4 Predicted probability for the effect of past poverty on child outcomes at age 15



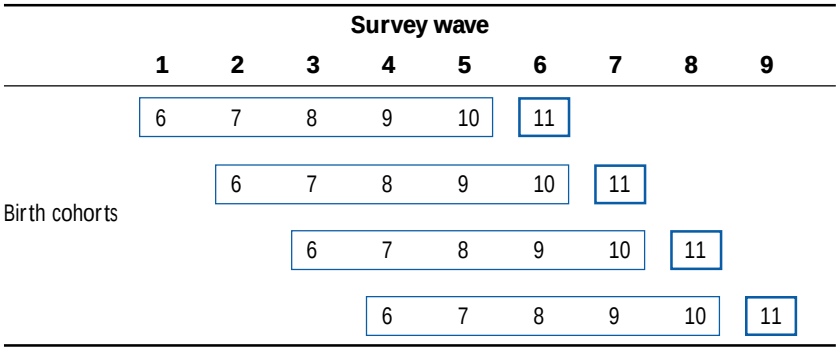
Note: Poverty effect is significant for both outcomes.

3.3.2 Outcomes at age 11

We repeated the analysis presented in Section 3.3.1 for a group of individuals from different birth cohorts, those born between 1985 and 1988.[32] This permitted us to study the effect of past poverty measured when children were aged 6 to 10 on the set of adolescent outcomes when children were aged 11. Figure 3.5 exemplifies the type of information on survey waves, birth cohorts and poverty timing in a fashion similar to that shown in Figure 3.4.

The bivariate associations (not shown for simplicity) reveal that six of the 45 outcomes under analysis are significantly correlated to past poverty. These are: expecting to leave school at age 16, feeling useless at times, feeling a failure, self-esteem, not wanting to be a parent, and the number of times friends are around the respondent's home to play, study and meet. Again, there is some correspondence between these results and those results reported in Section 3.2, although their link is weaker than in the case of the outcomes measured at age 15. Perhaps, the outcome measurement at such an early age as age 11 is responsible for the weaker relationship between adolescent outcomes and poverty, rather than the lack of a true causal link between past poverty and outcomes.

Figure 3.5 Survey waves, birth cohorts and poverty periods involved in the analysis of outcomes at 11 and poverty periods in the BYP sample



The results from the multivariate regressions are reported in Table 3.5, which again – for comparison purposes – presents estimates of the effect of past poverty measured over the 6-10 age period as well as estimates of the effect of current poverty measured at age 11. Figure 3.6 displays the predicted probabilities of the effect of past poverty for three discrete outcomes, two of which (feeling to be a failure and expecting to leave school at age 16) are not significant but are nonetheless shown to make the comparison with previous findings easier. The estimates in Table 3.5 reveal that both feeling useless at times and scoring low in the self-esteem scale are significantly affected by past poverty even after controlling for

[32] Depending on the outcome, the number of individuals under analysis varied between a minimum of 320 and a maximum of 424.

child and parents' characteristics.[33] Notice, that the expectation of leaving school at 16 is also positively and significantly correlated to experience of life in a poor family when aged 6 to 10 according to the estimates of specification (b). But after controlling for parental age and education, this effect becomes weaker and statistically not different from zero. As noted earlier, however, outcomes at age 11 are arguably likely to pick up a constellation of influences other than income poverty. For example, the role models offered to them by friends, school peers and various family members (siblings, parents or other relatives) are probably as influential as family resources in shaping eleven year-olds' attitudes, aspirations, social networks and expectations.

Measuring outcomes at the beginning of the adolescence period provides therefore additional evidence of the importance of family income on children's future success. But this relies on information that is probably noisy and likely to be contaminated by a large measurement error, which leads to poverty effects that are downward biased. An alternative (and probably more appropriate) way to assess the role played by family income poverty during childhood is to measure its impact as late – rather than early – as possible. This is what we pursue next.

Table 3.5 The effect of current and past poverty on outcomes at age 11

	Poverty measure					
	Current poverty at age 11			Past poverty between ages 6 and 10		
	(a)	(b)	(c)	(a)	(b)	(c)
Times had friends round to your house?	0.623**	0.627**	0.563*	0.157	0.125	0.039
I certainly feel useless at times	0.603**	0.598**	0.587*	0.615**	0.622**	0.747**
I am inclined to feel I am a failure	0.524*	0.508*	0.159	0.660**	0.655**	0.294
Self-esteem scale†	-0.681*	-0.663*	-0.461	-0.783**	-0.773**	-0.708*
Leave school when you are 16?	0.423	0.443	0.290	0.861*	0.986*	0.431
Not want to be a parent	0.847*	0.893*	0.767	0.505	0.498	0.340

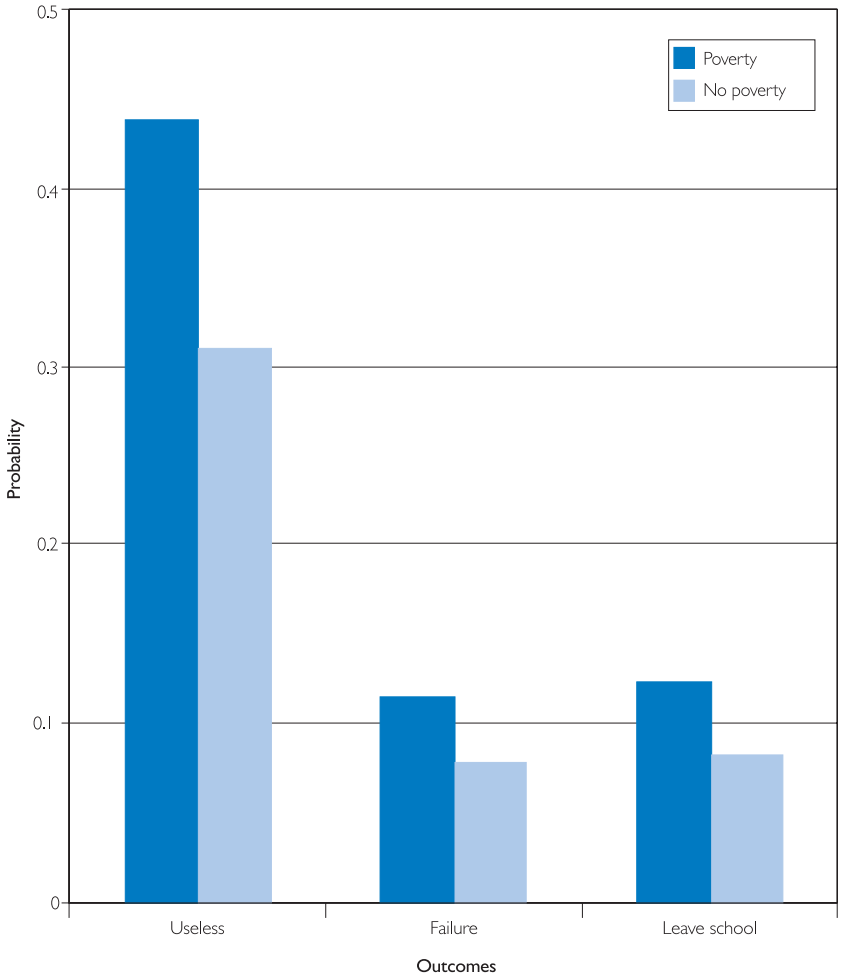
Note: Specification (a) includes only the poverty measure; specification (b) includes also child's gender, year of birth and region of residence; specification (c) is as specification (b) and also includes parents' characteristics (family structure, mother's and father's age and education, and the number of persons living in the household).

† OLS regression

* $p<.05$ ** $p<.01$

[33] The effect of poverty on self-esteem is not displayed in Figure 3.6, because it can be directly appreciated from Table 3.5, that is, being poor at any time during ages 6-10 will reduce self-esteem by 0.7 points (using the estimate of specification (c)). This is a relatively modest impact, of the order of a quarter of a standard deviation.

Figure 3.6 Predicted probabilities for the effect of past poverty on adolescent outcomes at age 11



Note: Poverty effect is significant only for the outcome of 'feeling useless at times'.

3.4 Following adolescents 'forward'

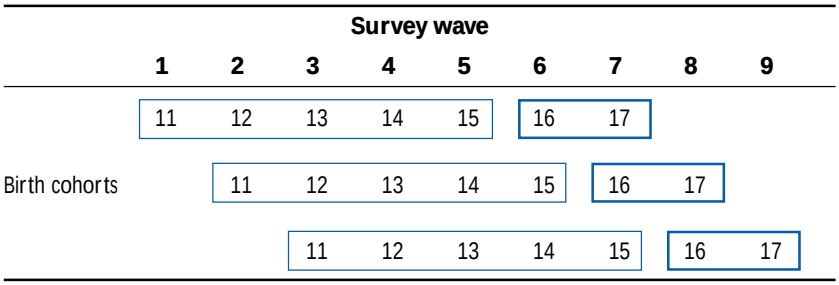
One of the most important issues for policy purposes is to establish whether or not experience of life in a low-income family does have long-lasting consequences, either directly or through other channels. The BYP data do not contain outcomes that can be legitimately considered as direct predictors of future success. But adolescents in the BYP sample can be followed into the main BHPS panel when they turn 16. The BHPS elicits them to provide information on a wide range of life domains, which can then be analysed and related to the experience of poverty when they were aged 15 or less.

Figure 3.7 displays this procedure graphically. In the double-bordered rectangles, we report the ages at which young adults are observed in the main BHPS sample. These ages are 16 and 17. Adult outcomes are measured at those ages and are the following:

- educational achievement (this is a dichotomous variable which takes the value of one if an individual reports five or more GCSE passes with A-C grades or equivalent, and zero otherwise);

- whether or not an individual is in school after the end of compulsory schooling (age 16);
- whether or not an individual who is not in school is unemployed;
- whether or not an individual has a high level of psychological distress;[34]
- whether or not an individual smokes.

Figure 3.7 The BYP 'forward' sample



The single-bordered rectangles in Figure 3.7 show the ages for which we have a measure of family income poverty as well as the BYP outcomes described in Section 2.1. These ages are 11 to 15. In the multivariate analysis of the five adult outcomes listed earlier (education, staying on at school after age 16, unemployment, psychological distress and smoking) we used four of the BYP outcomes analysed in Sections 3.1 to 3.3 as potential determinants. These are: the self-esteem scale, feeling a failure, expectation of leaving school at age 16, and believing that health is a matter of luck. The choice of these BYP outcomes as mediating factors was motivated by two reasons. The first is that these are the outcomes that were more strongly correlated with poverty during adolescence (see the results in Section 3.3). The second reason is that among all the available BYP outcomes, these appear to be (at least a priori) meaningful determinants of the adult outcomes under analysis here. The other variables used in the multivariate regressions are the young adult's gender, year of birth, region of residence and his/her family characteristics measured at age 15 (family structure and parents' age and education). Depending on the outcome, the analysis was performed on a minimum of 249 and a maximum of 273 individuals.

[34] This is derived from questions about a set of subjective indicators of personal well-being from the General Health Questionnaire (and known as the GHQ-12 point measure). These indicators relate to: loss of concentration; loss of sleep; playing a useful role; ability to make decisions; feeling constantly under strain; problems overcoming difficulties; enjoyment of day-to-day activities; ability to face problems; unhappiness or feeling depressed; loss of confidence; belief in self-worth; general happiness. Goldberg (1972) has shown that trained psychiatrists are likely to make a diagnosis of a mental disorder when at least four symptoms of distress are identified on the GHQ-12. For this reason the GHQ-12 is often used as a dichotomous indicator with a cut-off point at a score of 4 (see Frank and Gertler, 1991).

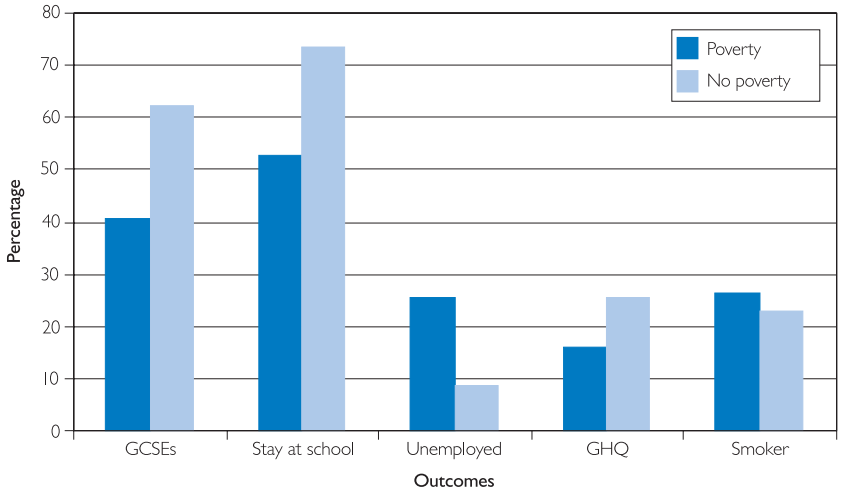
3.4.1 *Bivariate associations*

Before turning to the regression estimates, Figure 3.8 shows the raw associations of past poverty measured when young adults were 11-15 year-olds with our five adult outcomes. It is worth noticing that the associations are significant in the case of educational achievement (GCSEs), staying on at school and unemployment, but are not significant in the case of distress (GHQ-12) and smoking. The fact that distress and smoking behaviour at ages 16-17 are unaffected by poverty during adolescence is not surprising: these outcomes are likely to be shaped by other influences – such as environmental, school and neighbourhood characteristics, peer pressures and friends – which family income is only partially and imperfectly correlated to. But the fact that the other three outcomes are significantly correlated to the experience of poverty during adolescence demands some attention, as it may be relevant for policy purposes.

3.4.2 *Regression results*

We therefore performed multivariate logit regressions to see whether these associations are robust to the inclusion of the child and family variables described before. Three specifications were estimated. Specification (a) contains only the measure of past poverty. Specification (b) adds the child variables to this, while specification (c) additionally includes the family variables. The estimated poverty effects obtained from these regressions are presented in Table 3.6 (asterisks flag the effects that are statistically significant).

Figure 3.8 The association of past poverty (measured at ages 11-15) with adult outcomes for individuals in the BYP sample



Note: GCSEs, Stay on at school and unemployed are significant at the five per cent level (or less). Psychological distress (GHQ) and smoking are not statistically significant.

Table 3.6 Effects of past poverty (measured at ages 11-15) on adult outcomes for individuals in the BYP sample

	Specification		
	(a)	(b)	(c)
Educational achievement			
(5+ GCSEs with A-C grades)	-0.887**	-0.835**	-0.685*
Staying on at school after age 16	-0.908**	-0.851**	-0.856
Unemployed (and not in school)	1.540*	1.529*	1.694
Psychological distress (GHQ-12)	-0.581	-0.541	-0.590
Smoking	0.199	0.182	0.166

Note: Obtained from logit regressions.

* $p<.05$ ** $p<.01$

The relationships between past poverty and these adult outcomes are not altered by the addition of child characteristics. The picture we get from specification (b) in Table 3.6 is the same as that obtained from specification (a) or that displayed in Figure 3.8. Specifically, psychological distress and smoking are unaffected by poverty. But past poverty does significantly reduce the likelihood of receiving five or more GCSEs with A-C grades and staying on at school after age 16, and increase the likelihood of being unemployed. Specification (c) shows instead that only educational achievement remains significantly affected by poverty during adolescence after the family variables were included in the regressions. Two points are in order. First, this result suggests that family characteristics are likely to be important determinants of child outcomes in early adulthood, over and above the effect of income poverty. In particular, parents' education and family structure turn out to be strong predictors of children's outcomes. We shall focus on these factors also in Chapter 5.

Second, the loss of significance of the effects of poverty on staying at school and unemployment appears to be caused by an increase in standard errors rather than by a decline in the magnitude of the estimated coefficients. This suggests that poverty during adolescence is still likely to be a quantitatively important predictor of youth outcomes. Indeed, the predicted probabilities computed on the estimates from specification (c) reveal sharp differences between children who experienced poverty and those who did not when aged 11-15. These probabilities are shown in Table 3.7.

Table 3.7 Predicted probabilities for the effect of past poverty (measured when the child was aged 11 to 15) on adult outcomes

	In poverty	
	yes	no
Educational achievement		
5+ GCSEs with A-C grades	0.455	0.579
< 5 GCSEs with A-C grades	0.544	0.420
Staying on at school		
Yes	0.546	0.713
No	0.453	0.286
Unemployed		
Yes	0.243	0.076
No	0.756	0.923
Psychological distress (GHQ-12)		
Above	0.162	0.248
Below	0.837	0.751
Smoking		
Yes	0.255	0.228
No	0.744	0.771

Note: Obtained from the logit estimates of specification (c) reported in Table 3.6.

Children who grew up in non-poor families have almost 58 per cent probability of receiving five or more GCSEs with A-C grades, 71 per cent probability of staying on at school and, for those not in school, only 7.5 per cent chance of being unemployed when aged 16 or 17. In comparison, children who grew up poor in adolescence have only 46 per cent chance of receiving high grades in at least five of their GCSEs (a 12 per cent difference with respect to non-poor children). Consequently, poor children have just 55 per cent probability of staying on at school and 24 per cent probability of being unemployed at the beginning of adulthood. These are large differences, which fail to be statistically significant in part because of the small size of the sample under study.

3.4.3 Paths through education

The analysis of the strong relationship between educational achievement and poverty during adolescence was pursued one step further. We related three of the educational outcomes in a sequential manner. The intention of leaving school at age 16, which was on the adolescent outcomes collected in the BYP and analysed in Sections 3.1-3.3, can legitimately be considered to determine the achievement of high grades in GCSE qualifications. If this intention is measured just one year before the actual completion of secondary education – that is, when the adolescent is aged 15 – it is likely to proxy the child's school performance relatively well. This is because the child may base his/her intention to leave (or stay on at) school after age 16 on the past school performance, the feedback received from teachers, parents, friends and peers and the anticipation of the actual performance one year later. In turn, high GCSE grades are likely to increase the likelihood of staying on at school after age 16.

Thus, the intention of leaving school affects GCSE grades, which in turn affect the actual decision of staying on at school after age 16. Staying on at school is itself important as it may eventually lead to the achievement of A-level and university degrees or other higher vocational qualifications, which are known to increase lifetime labour income and wealth.

We estimated therefore three separate logit regressions, in all of which we included child characteristics (gender, year of birth and region of residence), family characteristics (parents' age and education and family structure), and whether or not the child experienced life in a low-income family in any year when aged 11 to 15. Table 3.8 reports the results from these three regressions showing the estimates of the poverty measure, and the leaving school and GSCE high grades indicators. As usual, the asterisks flag significant effects. The table also reports χ^2 goodness-of-fit tests, their corresponding *p*-values and the pseudo R^2 for the three equations separately.

Table 3.8 Paths through education

	Outcome		
	Intention of leaving school at age 16	**5+ GCSEs with A-C passes**	**Staying on at school**
Predictor	**[measured at age 15]**	**[measured at age 16]**	**[measured at age 17]**
Ever in poverty when aged 11-15	0.921*	-0.837*	-0.790
Intention of leaving school at age 16	–	-2.463**	-1.310*
5+ GCSEs with A-C passes	–	–	3.050**
χ^2 (d.f.)	34.7(23)	78.9(24)	120.3(25)
p-value	0.055	0.000	0.000
Pseudo R^2	0.181	0.259	0.393

Note: Obtained from logit regressions. Other controls include child variables (gender, year of birth and region of residence) and family background variables (parents' age and education, and family structure). d.f.=degrees of freedom.

* p<.05 ** p<.01

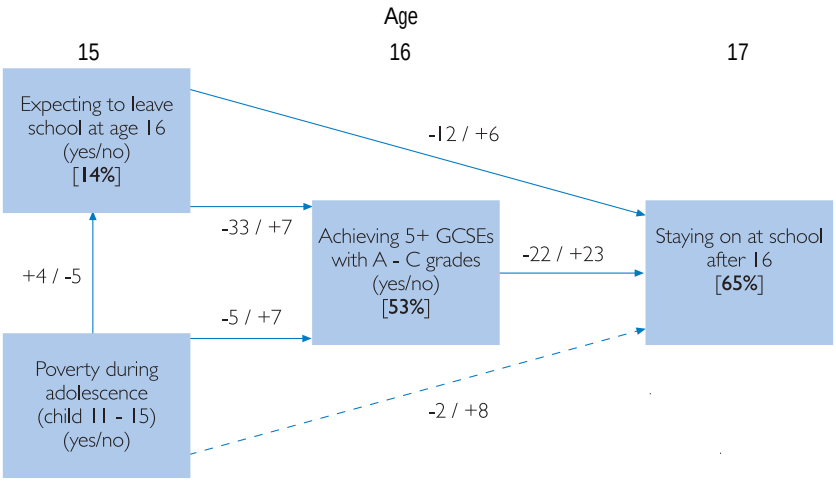
The table clearly demonstrates that poverty during adolescence significantly increases the likelihood of the expectation of leaving school at age 16. This link already emerged earlier in Table 3.4 when we analysed the effect of poverty experience between ages 11 and 14 on outcomes measured at age 15. It captures the important fact that growing up poor (at least during adolescence) has a powerful effect in shaping young people's school expectations, which are 'worse' than those of children who grew up in non-poor families. In addition, poverty has a direct negative effect on the probability of completing five or more GCSEs with A-C grades. The expectation of leaving school at 16 (with the expectation being measured when the child was aged 15) also reduces the likelihood of high-grade GCSEs completion quite substantially. Finally, the probability of staying on at school at age 17 is directly determined by the educational achievement one year earlier as well by the intention of leaving school two years before. Poverty during adolescence, however, does not affect this probability directly.

Figure 3.9 summarises the relationships of these three outcomes with poverty graphically and displays predicted probabilities obtained from the three logit regressions just described. Solid and dotted lines indicate significant and non-significant effects, respectively. Within each of the outcome boxes, the predicted probability that the outcome occurs for an individual with average characteristics is reported in bold. Along each arrow, two numbers are displayed. The first refers to the effect that the 'determining' variable (i.e., where the arrow starts) has on the 'destination' variable (i.e., where the arrow ends) when the determining variable is on (=yes), the second number shows the effect when the determining variable is off (=no). These numbers are also known as marginal effects. For example, in our estimating sample the average predicted probability of expecting to leave school at 16 is 14 per cent (top left box). Having experienced poverty at any time between 11 and 15 years of age increases that probability by four percentage points to 18 per cent, while having grown up in a non-poor family reduces the same probability by five points to nine per cent (vertical arrow on the left).

From Figure 3.9, it is immediately seen that poverty during adolescence does not have any powerful impact on the probability of continuing in full-time education after completion of the mandatory minimum. In fact, having lived in a poor family sometime between ages 11 and 15 reduces the probability of staying on at school by two percentage points only from 65 to 63 per cent. This effect is not significant at any conventional level. But poverty does have an effect on the education path through other channels. First, poverty increases 15 year-olds' expectation of leaving school at 16 by four percentage points (an increase of almost 30 per cent). This expectation turns out to reduce the probability of staying on at school at age 17 by 12 percentage points (from 65 to 53 per cent). It has also a substantial impact on the probability of getting five or more GCSEs with high grades. On average, it reduces this achievement from 53 per cent to 20 per cent.

Second, poverty itself has a direct (albeit smaller) effect on the probability of receiving high-grade GCSEs, with a reduction of five points in probability terms. The gap between individuals who grew up poor and those who did not is of 12 percentage points (the former having 48 per cent chances of getting five or more high-grade GCSEs, the latter having 60 per cent chances). Proceeding along the education path, achievement of five or more GCSEs with A-C grades increases dramatically the probability of staying on at school at age 17 by 22 percentage points (from an average of 65 per cent to 87 per cent). The lack of this achievement is associated instead with a significant reduction of the average probability to 42 per cent. Poverty during adolescence is therefore a powerful predictor of educational 'failure'. It influences progression through the educational system not by affecting the probability of staying on at school after age 16 directly, but by shaping school expectations at earlier ages and by reducing the chances of high-quality achievement at the end of the mandatory schooling.

Figure 3.9 Paths through education between ages 15 and 17



Note: Solid and dotted lines mean significant and insignificant effects, respectively. Figures in bold are the average predicted probabilities for each outcome. Numbers along each arrow are marginal effects (in probability terms) on the 'destination' outcome.

3.5 Summary of findings for the BYP sample

A number of findings are worth noting:

- Poverty appears to have disadvantageous consequences for adolescents on a number of outcomes. Compared to those who never experienced life in a low-income family during their childhood, children who grew up poor have lower self-esteem, are more likely to expect not to marry, believe that health is matter of luck, play truant and expect to leave school at the age of 16.
- Most of these results are not sensitive to the use of different poverty measures, i.e., they emerged regardless of whether we used current poverty or persistent poverty.
- These results are also robust to the introduction of child-specific random effects, which can potentially confound the inference that can be drawn from the estimated effect of family income on child outcomes.
- Experience of life in a poor family when the child was aged 6-10 increases the likelihood of feeling useless and reduces self-esteem by the time the child becomes 11 years old. Its effects on the probability of feeling a failure and the probability of expecting to leave school at age 16 are large but less precisely measured.
- Experience of life in a poor family when the child was aged 11-14 *decreases* the chances of feeling unhappy (measured when the child was 15), but also increases the chances of expecting to leave school at age 16, the mandatory minimum school leaving age.
- This last result is important because the expectation of leaving school becomes a reality when the child turns 16. Indeed, expecting to leave full-time education has a direct negative effect on the decision to stay on at school after age 16. But it also has a large negative impact on the probability of receiving high-grade GCSEs, which is the single most important predictor for continuing the academic career after age 16. Poverty itself does not have a significant effect on the probability of staying on at school, but does significantly reduce the probability of passing GCSEs with high grades.

4 THE BRITISH HOUSEHOLD PANEL SURVEY

The analysis so far rested on the sample of adolescents interviewed in the BYP. Most of that analysis (with the exception of that presented in Section 3.4) looked at adolescent outcomes that were measured sometime between ages 11 and 15 and related such outcomes to experience of life in a low-income family when the child was aged 15 or less.

But we also analysed another sample, which allows us to uncover the effect of child poverty on older individuals and for a different set of outcomes. This is a special sample of young adults selected from the first nine waves of the British Household Panel Survey (BHPS). In Autumn 1991, the BHPS interviewed a representative sample of 5,500 households, containing about 10,000 people. The same individuals have been re-interviewed each successive year. If they leave their original household to form new households, then all the adult members (i.e., those aged 16 or more) of the new households are also interviewed as part of the survey. Children in the original households are also interviewed once they reach the age of 16. Some 88 per cent of the original BHPS sample were re-interviewed for the second wave (1992) and the response rates from the third wave onwards have been consistently higher than 95 per cent. The BHPS data, therefore, do not suffer from any serious bias resulting from attrition. This means that the young adults sample used in our analysis remained broadly representative of the population of Britain as it changed through the 1990s.

4.1 Sampling strategy and estimating samples

4.1.1 The main sample

To estimate the effects of poverty on children's outcomes as young adults, we first matched young adults (aged 16 or above) in the study to one or both of their biological or adoptive parents interviewed in at least one of the nine years. We then used the information on family income poverty to determine whether and when a young adult has lived in a poor family over any of the panel years. In addition we used the information that parents had provided about their family and work backgrounds to determine the patterns of family structure and parental worklessness that applied when their children were growing up (from birth to age 16).[35]

[35] Ermisch and Francesconi (2001) describe how family and employment histories from the BHPS can be used to construct measures of family structure and parents' employment patterns over the entire childhood of each young adult that can be matched with his/her parents.

This sampling strategy yielded a main sample (MS) of 948 men and 839 women (a total of 1,787 individuals) who:

a were aged 16 or over and were born between 1970 and 1983;

b did not have any serious health problems or disabilities;

c were living with their biological, adoptive or step-parent(s) for at least one year during the first nine waves of the panel study (1991-1999);

d had mothers from whom complete employment histories had been gathered covering their entire childhood (from birth to their 16th birthday) as well as information on other variables (see Section 4.4).

We imposed condition (a) in order to have a relatively homogeneous group of young adults, who went through a relatively similar educational system, yet allowing for a sufficiently large number of birth cohorts. Condition (b) was introduced to reduce the problem of parents' obviously choosing their employment patterns during the child's childhood based on health considerations for the child.[36] Condition (c) allowed us to recover a precise measure of family structure (see Section 4.4), which a huge body of research has demonstrated to be extremely important for youth outcomes (McLanahan and Sandefur, 1994; Haveman and Wolfe, 1995; Ermisch and Francesconi, 2001c). Finally, we imposed condition (d) so that, by construction, we would have full information on the variables that are crucial to construct one of our measures of poverty, i.e., parental worklessness during childhood (see Section 4.3).

4.1.2 The restricted sample

The condition that children should have spent at least a year with their biological, adoptive or step-parent(s) during the panel study (condition (c)) was imposed so that data on family background from the parents' records could be reliably matched with data on their child.[37] However, such a condition would create the potential for sample selection bias if there were unobserved factors affecting young adults' outcomes that had also affected the chances that children would be living with their parents. For that reason we also constructed a Restricted Sample (RS), consisting of individuals from the Main Sample (MS) who were living with at least one parent when aged 16-17.[38] The justification for doing this was that, over the 1990s, 95 per cent of all young people aged 16-17 lived at home

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[36] This selection is commonly used in this and related literatures. See, among others, Blau and Grossberg (1992) and references therein. Ermisch and Francesconi (2000) argue that, even in a sample of non-disabled children, parents are likely to choose their employment patterns on the basis of child human capital investment considerations. This underlines the existence of a correlation between parents' employment patterns during childhood and the unobservables that are associated with child outcomes.

[37] This is indeed the only way in which we can obtain information on parents' worklessness during childhood.

[38] The age restriction on this sample means that individuals were born between 1974 and 1983. The age range is then 16-25, while the age range in MS is 16-29.

with their parents (Ermisch, 1997). Thus, the restricted sample, which consists of 693 men and 623 women (a total of 1,316 individuals), is likely to be a random sample, representative of the whole population of that age, from which any selection bias had been eliminated or largely attenuated. Table 4.1 summarises the number of individuals present in each sample by gender and gives also the total number of person-wave observations.

Table 4.1 BHPS samples of young adults by gender

	Men	Women	Total
Main sample (MS)			
Number of individuals	948	839	1787
Number of person-wave observations	5,024	4,489	9,513
Restricted sample (RS)			
Number of individuals	693	623	1,316
Number of person-wave observations	3,381	3,041	6,422

4.2 Child outcomes in the BHPS sample

We now present our main dependent variables. The next section will introduce our key measures of poverty, while Section 4.3 will show the other variables used in the multivariate analysis.

4.2.1 Leaving parental home

This outcome was defined as young people leaving their parental home not for educational purposes. As soon as an individual is observed moving out of his/her parents' home (and is not in full-time education), he/she stops contributing to the estimating sample.[39] This explains the difference in the numbers of person-wave observations reported in Table 4.2 and those reported in Table 4.1. Table 4.2 shows that almost 14 per cent of young adults were observed leaving their parental home each year in the main sample, while 12 per cent were observed to do so in the younger restricted sample. The table also shows that this outcome was more often observed for women than for men in both samples.

Table 4.2 Leaving parental home by sample and gender

	Men		Women		All	
Sample	**%**	***N***	**%**	***N***	**%**	***N***
Main sample	12.6	4,123	14.9	3,300	13.7	7,453
Restricted sample	11.1	2,916	12.9	2,471	11.9	5,387

N is the number of person-wave observations that are 'at risk' of leaving the parental home.

[39] Sometimes we will also refer to this outcome as 'forming a new household'.

Table 4.3 Highest educational qualification by sample and gender

	Men		Women		All	
Sample	**%**	***N***	**%**	***N***	**%**	***N***
Main sample						
No qualification	8.9	84	5.6	47	7.3	131
Less than GCSEs	10.6	100	8.2	69	9.5	169
GCSEs (or equiv.)	28.5	270	31.6	265	29.9	535
A-level	23.1	219	23.5	197	23.3	416
Higher vocational qualifications	18.7	177	19.7	165	19.1	342
University degrees	10.3	98	11.4	96	10.9	194
Restricted sample						
No qualification	9.0	63	6.8	42	7.9	105
Less than GCSEs	11.2	78	7.4	46	9.4	124
GCSEs (or equiv.)	30.9	214	33.2	206	32.0	420
A-level	24.1	166	25.4	159	24.7	325
Higher vocational qualifications	16.2	112	17.6	110	16.9	222
University degrees	8.7	60	9.7	60	9.2	120

N is the number of individuals in each educational category.

4.2.2 Educational qualifications

The measure of educational attainment for these data was the highest educational qualification that young people had achieved in the last year in which they were interviewed. Therefore, the samples used to estimate this outcome will contain one observation per individual. We distinguished six different academic qualifications, which are (in ascending order):

- no qualification;
- less than GCSE/O-level (or equivalent) qualifications;
- GCSE/O-level (or equivalent) qualifications;
- A-level qualifications;
- higher vocational qualifications;
- university and higher degrees.

Table 4.3 shows that the distribution of educational attainment is similar across the two samples. About seven per cent of young adults in the main sample have no academic qualification, another ten per cent have qualifications short of GCSE level, while 30 per cent of them report qualifications above A level. The educational differences by gender are small, but women show a clearly higher educational achievement than men.

4.2.3 *Unemployment and other economic inactivity*

This outcome was defined as young people being unemployed and not being in full-time education, looking after children, or taking part in a government training programme. All the available person-wave observations were used to examine this outcome. As Table 4.4 shows, the inactivity rate was around seven per cent in any one year for individuals in the main sample, and about six per cent for the rather younger members of the restricted sample. Notice, however, that relatively more men than women are observed being inactive: almost nine per cent versus 5.6 per cent in the main sample, and almost eight per cent versus 4.4 in the restricted sample.

Table 4.4 Economic inactivity by sample and gender

	Men		Women		All	
Sample	**%**	***N***	**%**	***N***	**%**	***N***
Main sample	8.7	5,024	5.6	4,489	7.2	9,513
Restricted sample	7.8	3,381	4.4	3,041	6.2	6,422

N is the number of person-wave observations over the entire sample period.

4.2.4 *Early childbearing*

This outcome was defined as young women having given birth by their twenty-first birthday. Therefore, as soon as a woman has a child, she does not contribute to the sample. She also stops contributing if she is childless at age 21. A decision was taken to focus on young mothers only, because relatively few men in the sample had become fathers by that age and lived with their children. Table 4.5 shows that, on average, 2.6 per cent of previously childless women aged 16-21 in the main sample had a child each year, and 2.3 per cent in the restricted sample. As would be expected, the rate at which young women gave birth for the first time was highest for those aged 21 and lowest for 16-year-olds.

Table 4.5 Early childbearing by sample

	Women	
Sample	**%**	***N***
Main sample	2.6	2,942
Restricted sample	2.3	2,480

N is the number of woman-wave observations that are 'at risk' of having a child by age 21.

Table 4.6 Health outcomes by sample and gender

	Men		Women		All	
Sample	**%**	***N***	**%**	***N***	**%**	***N***
Main sample						
Smoking	42.9	5,024	42.0	4,489	42.5	9,513
Psychological distress	15.5	5,024	23.4	4,489	19.2	9,513
Restricted sample						
Smoking	42.4	3,381	41.6	3,041	42.0	6,422
Psychological distress	15.3	3,381	23.0	3,041	19.0	6,422

N is the number of person-wave observations over the entire sample period.

4.2.5 Smoking and psychological distress

Our measure of smoking behaviour is exactly as that used in the analysis of the 'forward' sample of the BYP into BHPS (see Section 3.4). It takes a value of one if an individual regularly smokes, and zero otherwise. We performed the empirical analysis using also another measure, based on whether or not an individual smokes 10 or more cigarettes a day, and obtained the same results as those presented in Chapter 5. In what follows, therefore, we use the simple measure of smoking and report the estimates for this outcome only. Table 4.6 indicates that more than two in five young people smoke, with virtually no differences by gender.

The measure of mental health was also used in the analysis presented in Section 3.4, and it was based on the General Health Questionnaire (GHQ, 12 point measure).[40] Young people were defined as experiencing a high level of psychological distress if their score in the GHQ-12 was greater than or equal to four. Table 4.6 shows that nearly one in five young people report psychological distress. As many mental health studies have already documented, the proportion of women being under psychological strain is larger. In both the main and the restricted samples, almost one quarter of women were observed with a GHQ-12 score above the threshold. The proportion for men was only 15 per cent.

4.3 Measures of poverty

4.3.1 Current and persistent poverty

We used two types of measures of poverty. The first is the same as that used in the analysis of the BYP data. It is therefore based on experience of life in a low-income family sometime during the panel years. As before, we performed our multivariate regression analysis using both current and persistent poverty, whose definitions are given in Section 2.2. To make comparisons easier, we also restricted our attention to the same sample of young adults who have full information on both current

[40] This measure derives information on the following indicators: loss of concentration; loss of sleep; playing a useful role; ability to make decisions; feeling constantly under strain; problems overcoming difficulties; enjoyment of day-to-day activities; ability to face problems; unhappiness or feeling depressed; loss of confidence; belief in self-worth; and general happiness.

and persistent poverty. The study of the timing of poverty during childhood is, however, limited when using such measures. In fact, they both cover the post-childhood period (ages 16 and above) for most cohorts of young adults under analysis. But for a few cohorts, we could use these two measures to see whether or not a young adult spent time in a poor family during childhood. For example, for those aged 16 in the last available wave (1999), we can go as far back into their childhood as age eight. One could then follow this cohort and observe their poverty experience for the rest of childhood.

But we can actually do better than this and analyse another measure of poverty over the *entire* childhood of the young adults from all cohorts in our samples rather than just one or few cohorts. This 'telescoping' can be done by exploiting the information contained in the employment histories that were collected by the BHPS. The 'cost' of the analysis based on this telescoping is that we have to define poverty in terms of parents' worklessness rather than low income. In fact, the BHPS does not collect long-window retrospective data on wages, incomes or expenditures.

4.3.2 Employment histories and parents' worklessness

The third wave (1993) of the BHPS gathered retrospective employment histories for each adult panel member interviewed that year. This included information about all the jobs that they had held between the time they left full-time education and September 1990, when the first wave (1991) of the BHPS began collecting information. Measurements were taken of the length of time (in months) that the parents of each young adult had spent in paid employment when they were children. These were obtained for each year from birth to the sixteenth birthday of the young adults. To summarise our analysis conveniently and to provide a simple and meaningful representation of the effect of poverty (or worklessness) over childhood, we distinguished three developmental stages in the children's lives: from birth to the fifth birthday (pre-school years), from age six to age ten (primary school years), and from 11 to 15 (adolescence).

As discussed in Section 4.1, young people were only included in the samples if complete information was available about their mother's employment patterns during their childhood with other background measures relating to their mothers (e.g., mother's education and date of birth). If fathers were successfully matched to their natural, adoptive or step-children, but we could not obtain a complete record of their employment histories, we assumed they always worked over the months

information was missing. By doing so, we are likely to reduce the incidence of parental worklessness, but its effect on youth outcomes should be unaltered as long as the father's information is missing at random.[41] Approximately 17 per cent of the young adults in the main sample did not have information about their father's working histories (see Table C.1). An additional 13 per cent did not have a 'father-figure' present during the nine panel years who could be interviewed.[42] For this last group of young adults, the worklessness measure refers only to the non-employment patterns of mothers.

Parental worklessness occurred when both the father and the mother were not in paid work for at least one month in each of the first sixteen years of life of the child. The time window over which worklessness is defined is twelve months: it starts ticking when the child was born and it stops when the child becomes 16. Notice that mother and father are not required to be both out of the labour force in the *same* month. This would reduce the incidence of parental worklessness quite dramatically and, consequently, the multivariate analysis would not be able to identify the parameters of interest (particularly when we look at the poverty effects by developmental stage).[43]

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[41] It is hard to establish whether or not information is missing at random. Simple cross-tabulations reveal that fathers with missing employment history information are evenly distributed by age, education and current occupation. Similarly, mothers who live with partners with missing employment history information are evenly spread over the age, education and current occupation distributions. These findings may be taken as (at least partial) evidence that father's employment information is indeed missing at random.

[42] Thus, the total proportion of young adults without relevant father-figure information is therefore 30 per cent. In the restricted sample, the proportion of young adults whose father-figure did not report work history information is 16 per cent with another 17 per cent not having a father-figure. The definition of 'father-figure' includes both biological fathers and stepfathers, but in this report we shall refer to them as 'fathers' for short.

[43] We also performed the entire analysis using a measure of worklessness derived from the retrospective non-employment histories collected in wave two (1992) of the BHPS and from additional information on non-employment experiences included in the histories collected in wave three. We find a very small proportion of individuals having lived in a 'workless' family during their childhood. It is well established however that recall errors are particularly severe in the case of non-employment or unemployment spells (Dex, 1995; Elias, 1996, Paull, 1997). Although the results obtained using this alternative measure are similar to those presented in Chapter 5, we shall not report them.

Table 4.7 The distribution of poverty in the BHPS samples by gender

Poverty measure	Men		Women		All	
and sample	%	*N*	%	*N*	%	*N*
Current poverty						
Main sample	24.9	5,024	24.4	4,489	24.7	9,513
Restricted sample	24.5	3,381	22.9	3,041	23.8	6,422
Persistent poverty						
Main sample	15.1	5,024	14.8	4,489	15.0	9,513
Restricted sample	17.3	3,381	16.7	3,041	17.1	6,422
Parents' worklessness						
Main sample		948		839		1,787
All ages (0-15)	46.9		46.5		46.8	
Child aged 0-5	39.0		38.4		38.7	
Child aged 6-10	25.1		25.4		25.2	
Child aged 11-15	17.5		17.8		17.6	
Parents' worklessness						
Restricted sample		693		623		1,316
All ages (0-15)	48.8		46.5		47.9	
Child aged 0-5	41.1		39.0		40.3	
Child aged 6-10	27.9		27.1		27.6	
Child aged 11-15	17.6		17.0		17.4	

Note: *N* is the person-wave observations for the current and persistent poverty measures, and the number of individuals for the parental worklessness measure.

Table 4.7 reports the proportion of young people who had experience of life in a low-income family (current and persistent) by gender and sample. To provide a picture for the entire sample of data used in estimation, the table reports these figures using the pooled samples of person-wave observations (as they were used to study the inactivity or health outcomes). We observed about one in four young people in both the main and restricted samples having lived in a low-income family sometime during the panel years, according to the current poverty measure. This figure is remarkably close to those reported for the BYP sample. Using the measure based on persistent poverty, we observed one in six people having spent time in a poor household. This figure is only slightly lower than that found with the BYP data. For both samples and both poverty definitions, gender differences are negligible.

Table 4.7 also reports the proportion of young adults whose parents had been observed workless sometime during their entire childhood and by developmental stage. Because this measure cannot change over the panel years when the outcomes are observed, we used the same samples as those used to analyse the educational outcomes. Notice that the worklessness measure is not mutually exclusive by developmental stage: that is, having lived with workless parents when aged, say, 0-5 does not imply having lived with workless parents in the other developmental

stages, nor does it exclude such a possibility. This is why the three figures by developmental stage do not add up to the figure for all ages. The table shows that almost 47 per cent of the young people in the main sample and 48 per cent of those in the restricted sample have lived at least one year over their childhood in which both parents had some time off work. These proportions are similar across gender. Interestingly, the largest incidence of parental worklessness (between 38 and 40 per cent) is observed when the child was a pre-schooler, the lowest (around 17-18 per cent) when the child is an adolescent.

4.3.3 Validating the worklessness measure

Providing a convincing validation of a complex measure is always a difficult task. We cannot claim that our measure of worklessness is an ideal indicator of poverty or lack of resources at the time the individuals in our samples were growing up. Perhaps the appropriateness of this measure can be better appreciated by contrasting its performance against the performance of the measure based on low family income in explaining child outcomes in early adulthood. Therefore, we will pay some attention to this issue while discussing our results in Chapter 5.

We performed, however, also a formal validation exercise. We estimated probit regressions, in which the dependent variable was the poverty measure based on family income and, among the independent variables, we included the poverty measure based on parents' worklessness. The regressions also included controls for child's gender, age and year of birth, parents' education and age at the child's birth, number of siblings, and dummy variables for firstborn and only child (see Section 4.4 for a description of all such variables). The purpose of these regressions is to see whether there is any correlation between the two poverty measures after we hold constant a number of child and family characteristics. Before discussing the results from this exercise, a few caveats should be kept in mind. First, the parents' worklessness measure refers to the entire childhood of the young adults present in our study. The low-family-income measure refers instead to their early adulthood period. We attempted to adjust this temporal mismatch by controlling for year dummies (besides year of birth of the young people) in our regressions. Anyway, it should be clear that these two measures are associated with different time periods and refer to different points in the life cycle of young people and their parents. Second, no matter how many controls we included, there may always be a residual variance in the dependent variable (being poor according to the low-income definition) that is spuriously correlated to our variable of interest (being poor according to the worklessness measure).

The probit estimates (not reported for convenience) show that these two measures are strongly and positively associated. Being poor according to the worklessness measure at any point during childhood increases the likelihood of being currently poor according to the low-income definition by ten percentage points. This effect is significant at the one-per cent

level. We also detect a positive and significant relationship between the worklessness measure by developmental stage and low income. The largest correlations emerge in the case of parents' worklessness when the child was aged 0-5 and 11-15. The χ^2 test for the joint significance of these three variables is 50.14, with a *p*-value that reject the hypothesis of the variables being jointly equal to zero at any conventional level.

Another way of appreciating the strong correlation between our two measures of poverty is to compute a statistic known as Akaike's information criterion (AIC).[44] This statistic discriminates between the specification that includes all the variables but the worklessness measure (labelled as 'basic') and the specification that includes also the worklessness measure. Although the best-fitting specification is the one with the largest log likelihood, the preferred specification is the one with the smallest AIC value. Table 4.8 reports the AIC values for the basic specification and the two specifications with the worklessness measure during the entire childhood and the worklessness measure by developmental stage. Without exceptions, including the worklessness measures improves the model fit, suggesting that the correlation between the low-income measure is highly correlated with the worklessness measure. This is true also when we looked at the sample of men and women separately. In addition, distinguishing the parents' worklessness patterns by developmental stage turns out to improve the fit even further. Although much more work is needed to evaluate the substitutability of poverty concepts such as low income and worklessness, the strong correlation between these two measures provided us with enough confidence to proceed with the analysis.

Table 4.8 Cross-validating the worklessness measures – Akaike's information criterion (AIC)

Specification	All	Men	Women
Basic	2134.4	1156.0	1007.2
Basic + worklessness	2124.8	1155.2	1001.4
Basic + worklessness by developmental stage	2090.2	1141.4	984.2

Note: AIC = -2(log likelihood)-2(c+1), where c is the number of covariates used in estimation. The log likelihood are obtained from probit regressions.

4.4 Other controls

Table C.1 presents the means of the other variables used in the analysis of the youth outcomes contained in the BHPS data. These statistics are computed on the pooled sample of men and women – because gender differences in such means are relatively modest – and using one observation per individual (as in the study of the educational outcome).

[44] With this method, the log likelihood is penalised in order to reflect the number of parameters to be estimated in our probit regressions. The AIC is defined as AIC=-2(log likelihood)-2(c+1), where c is the number of covariates used in estimation. This is the statistic reported in Table 4.8.

4.4.1 Personal characteristics

Just under half in both the main and the restricted samples were women. The age of the young adults in the main ranged between 16 and 29, with an average just above 22. The age range 16 to 25 for young people in the restricted sample was narrower, with an average of less than 21. The average year of birth for people in the main sample was 1976, compared with 1978 for those in the restricted sample. In both samples, individuals are evenly spread across age groups, with the restricted sample having a slightly larger concentration at the lower end of the age distribution.

4.4.2 Family structure: experience of life in a lone-parent family

The second wave (1992) of the BHPS gathered retrospective information on complete fertility, marital and cohabitation histories for all the adult panel members interviewed that year. This information was the basis of our understanding of whether the young adults in our sample had spent any time in a lone-parent family in the first 16 years of their childhood. For the purpose of analysis, children were defined as:

- being raised in an *intact* family if they had lived continuously with both biological parents (or with one biological and adoptive parent);
- having spent time in a *non-intact* family if they had ever lived with a biological or adoptive mother who was neither cohabiting nor married. This could happen if their parents had separated or divorced, or because they were born outside a live-in relationship and their mothers did not cohabit or marry within a year of the birth.[45] The ages at which children became part of a lone-parent family were divided into the three developmental stages defined before.[46] This family structure measure was constructed in a way that the proportions in each of the developmental stages sum up to the total proportion.

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[45] If the birth occurred outside of a partnership and the mother partnered within one year, we assumed that the mother had moved in with the biological father (as assumed in Bumpass, Raley and Sweet, 1995; Ermisch and Francesconi, 2000b and 2001c). For adopted children, we use information on the year in which they were adopted to match in the mother's family history appropriately. In 96 per cent of the cases, children live with their biological parents.

[46] We experimented with other, more detailed measures of family structure, e.g., experience of life in a stepfamily, and the durations (in years) of different family structures. But this simple dichotomy by developmental stage performs as well in predicting most of the outcomes of interest as more complex measures. In addition, Ermisch and Francesconi (2000b) find that only 242 women had a pre-partnership birth as of 1992 (wave 2), representing 0.05 per cent of all women in that survey year. Since we cannot determine whether or not they subsequently lived with the child's father, we assume that the women who formed a union within one year of the birth did so with the father. Of the 242 women who had a pre-partnership birth, 77 (32 per cent) moved in with the child's father on this assumption. Because of the small sample sizes, therefore, we cannot explore the distinction between children who experienced a family disruption when aged 0-5 and children born into a single-parent family.

4.4.3 *Parents' education and age at birth*

Table C.1 shows that about one in four young people in both samples had experienced life in a lone-parent family during their first sixteen years of life. Of these, some 43 per cent had lived in a lone-parent family when they were aged 0-5, another one-third had lived in a non-intact family when aged 6-10, and the remaining quarter experienced life in such a type of family during adolescence.

By matching young adults with their parents, we were able to measure other background characteristics (e.g., parents' education and family size) that would have been unavailable otherwise.

As discussed in Chapter 1, parents' own educational achievements may well reflect their attitudes towards education and the cultural environment where children are raised. Thus, parents' education may pick up some family characteristics that are likely to confound the direct effect of family income. If poverty effects disappear after parental education is controlled for, then poverty is likely to work through intergenerational links of human capital, and income-maintenance programme may turn out to be much less relevant than policies aimed at increasing education and skill acquisition.

Between one quarter and 30 per cent of mothers in both samples had no academic qualifications, while almost 50 per cent of fathers were observed without qualifications (Table C.1). The high proportion in the case of fathers is due to the fact that we assigned those cases with missing fathers' information to such a category. In both samples, just less than one in ten parents held a university degree.

As in the analysis of the BYP sample, the ages of parents at the time their children were born were also included in the analysis to reduce sources of (otherwise unobserved) heterogeneity that would confound the relationship between poverty and youth outcomes. The average age for mothers when their child was born was 26. Fathers were approximately two years older. About 12 per cent of young adults in the study had been born when their mothers were aged 21 or under, but only four per cent had a father who was that young. Another four-five per cent had mothers who were 35 or over, and eight-nine per cent had fathers who were 35 or over at the time of their birth.

4.4.4 *Family demographics*

In Chapter 1 we pointed out that family size may be an important determinant of children's success, because parents' resources (time and money) are likely to be spread more thinly as the number of children (and other family members) in the household increases. Similarly, birth order is assumed to have a relationship with the way in which parents allocate their resources across children. In view of this, our analysis took account of the number of brothers and sisters that each young adult had. It also included a variable taking notice of whether the respondent was an only child and whether he or she was the first born in the family. This

showed that approximately seven per cent of the young people were only children, and that 36-37 per cent were first-born. Most of the young adults in the estimating samples had one or two siblings, on average they had 1.7 brothers and sisters (and a maximum of seven).

4.5 Statistical methods

The statistical techniques applied to this sample were those of multivariate regression. In other words, when assessing the impact of parental employment on the outcomes for young people, the analysis applied statistical controls for the other relevant variables described in Section 4.4, including personal characteristics, parents' education, parents' age at time of birth and family structure. The results of the analysis that treats each young adult as an individual observation in the main and restricted samples are known as *between-family estimates*. In calculating them, parents' educational qualifications were used to control for the potential association between ability and parents' employment patterns, association that could be particularly important when analysing parental worklessness. Failure to apply this control would have risk confusing any effects of parental non-employment on their children's outcomes with the association between parents' educational (and other) 'endowments' and those of their children (see also the discussion in Chapter 1). We performed our multivariate analysis on pooled samples of men and women as well as for men and women separately.

To ease their interpretation, all the estimates will be presented in the same format: namely, an assessment of 'marginal effects' of being in poverty on the outcomes for a young adult after controls have been applied for other variables (calculated at the sample values for the other variables). For example, the between-family estimates from the main sample point to a positive marginal effect of 2.4 percentage points on the probability of young people leaving their parental home if they experienced life in a low-income family (current measure, see Table 5.1). To gauge its full impact, this figure must be added to the baseline probability. On average, young adults in the main sample have a 13.6 per cent probability of leaving their parental home. People who are in current poverty have a 16 per cent probability (i.e., 13.6 plus 2.4) to do so.

While investigating the issue of timing, we shall present marginal effects of parents' worklessness by developmental stages as well as over the entire childhood (for each outcome). The estimates over the entire childhood will allow us to check whether our findings are robust across poverty measures.

5 RESULTS FROM THE BHPS SAMPLE

This chapter considers the relationships between growing up poor (measured in terms of either parents' low income or worklessness) and each of the study outcomes in turn. A summary discussion of the influences of the other control variables on youth outcomes will be presented in a later section, but – because of economical considerations – these estimates will not be shown.

5.1 Leaving the parental home

In the main sample, we obtain a positive coefficient for the experience of life in a low-income family in the estimation of the chances of children leaving their parental home. As previewed in the previous chapter, being in a currently poor family increases the probability of moving out of one's parental home by 2.4 percentage points (Table 5.1). This effect is mainly produced by young men leaving their parents' dwellings, who have a 3.6 per cent higher probability of leaving than their non-poor counterparts (as opposed to an insignificant 1.1 per cent higher probability for young women). If we use the measure of persistent poverty, the chances of leaving the parental home increase to more than five percentage points for both men and women. Looking at the results obtained from the restricted sample, however, we find evidence of no significant effect of current poverty. But persistent poverty does increase the likelihood of young people forming a new household even in the restricted sample, particularly in the case of men, who have 4.5 higher percentage points than their non-poor counterparts. The effect for women is lower and significant only at the 10 per cent level.

As noted in Chapter 1, the timing of poverty is likely to be crucial for child development and subsequent behaviour. The information contained in the employment history files allow us to telescope over the first sixteen years of life of all young adults in the study and measure the occurrence of parents' worklessness at any point in time. In Table 5.2, we report the results obtained with parents' worklessness, both over the entire childhood and by developmental stage. Compared to the previous estimates, these estimates show a lower (and not significant) impact of parents' non-employment patterns during childhood on their children's probability of leaving home. Furthermore, no significant influences could be detected with the restricted sample. Although not always significant, the largest effects emerge if the young adult had experience of life in a workless household when he/she was aged 11 to 15. In the case of men in the main sample, this effect is large (almost four per cent higher chances) and significant at the five per cent level.

Table 5.1 The impact of poverty on the probability of leaving parental home – Marginal effects (percentage points) by gender

	Main Sample		Restricted Sample	
	Current	Persistent	Current	Persistent
All				
Baseline probability	0.136	0.136	0.118	0.118
In poverty	0.024**	0.049***	0.006	0.032**
N	7,453		5,387	
Men				
Baseline probability	0.126	0.126	0.110	0.110
In poverty	0.036**	0.054***	0.010	0.045**
N	4,123		2,916	
Women				
Baseline probability	0.149	0.149	0.128	0.128
In poverty	0.011	0.053***	0.001	0.027*
N	3,330		2,471	

Note: Obtained from discrete-time transition rate models (logit regressions). *N* is number of person-wave observations at risk of leaving parental home.

* p<.10 ** p<.05 *** p<.01

Table 5.2 The impact of parental worklessness on the probability of leaving parental home – Marginal effects (percentage points) by gender and developmental stage

	Main Sample		Restricted Sample	
	All ages (0 - 15)	Developmental stage	All ages (0 - 15)	Developmental stage
All				
Parents' worklessness	0.013		0.006	
Parent's worklessness:				
0-5		-0.010		-0.010
6-10		0.015		0.012
11-15		0.026*		0.023
Men				
Parents' worklessness	0.028*		0.015	
Parents' worklessness:				
0-5		-0.006		-0.016
6-10		0.009		0.017
11-15		0.038**		0.018
Women				
Parents' worklessness	0.008		0.002	
Parents' worklessness:				
0-5		-0.021		-0.014
6-10		0.026		0.022
11-15		0.010		0.024

Note: Obtained from discrete-time transition rate models (logit regressions). Baseline probabilities are shown in Table 5.1.

* p<.10 ** p<.05 *** p<.01

5.2 Educational attainment

Because education is grouped in six categories, this outcome was estimated using ordered logit regressions. Tables 5.3a and 5.3b display baseline probabilities and deviations from them (in probability terms) for those who did and those who did not experience current poverty in the main and restricted samples respectively, and Table 5.4 displays the same information when poverty is proxied by parents' worklessness during childhood.

Table 5.3a shows that 57 per cent of all (poor and non-poor) young adults hold an academic qualification of A-level or more (summing up the relevant baseline probabilities). Living in a family that is currently poor substantially decreases this probability to 54 per cent, with a difference between poor and non-poor children of five percentage points. This difference is statistically significant at the five per cent level, as indicated by the asterisks. The results obtained with the measure of persistent poverty are not shown for brevity, but are qualitatively similar to those in Table 5.3a. The largest and most significant impact is experienced by young men, who see their chances to have less than GCSE or no qualifications increase by more than ten per cent (from 44.2 to 48.8 percentage points) with respect to the chances faced by a randomly picked young men. Conversely, the difference between poor and non-poor men in the probability of achieving A-level or higher qualifications is around 7.5 percentage points (in favour of the non-poor individuals). The effects for women are in the same direction, but are smaller and not precisely estimated. A similar picture emerges when we consider the poverty effects in the restricted sample (Table 5.3b). In this case, young men who have lived in a household characterised by low family income face again a ten per cent lower probability to receive A-level or higher qualifications as compared to the baseline. This produces a gap of almost nine percentage points as compared to those who did not experience low family income (56.6 minus 47.8 per cent). Again, the results found with the persistent poverty measure uphold those just presented, but are not presented for brevity.

Table 5.4 reports the poverty effects over the entire childhood and by developmental stage obtained with the main sample. The asterisks indicate that the difference between poor and non-poor individual's educational attainments is statistically significant.[47] Parents' worklessness during childhood and low family income has similar impacts on the likelihood of educational attainment. The probability of achieving A-level or higher qualifications is 48 per cent for those who experienced life in a workless household during their childhood, five percentage points less than for those who did not. This difference is large and significant. There is evidence that the largest effects on education occur if the child lived in a

[47] The results obtained with the persistent poverty measure are virtually identical to those reported in Table 5.4. They are therefore not shown here.

workless household during pre-school years and, particularly, when he/she was in primary school. The lack of resources at the beginning of the school career (when the child was aged 6-10) is likely to affect not only school performance and expectations (see the results in Chapter 3) but also subsequent attainment. Thus, poverty appears to have long-lasting effects in people's life chances.[48]

The table also reveals that it is men who suffer most in terms of educational achievement from their parents' non-employment patterns during childhood. Men who experienced life in a workless household when they were 6-10 have 45.6 per cent chances of getting A-level or higher qualifications, as opposed to 52 per cent chances had they lived in a non-poor family at those ages. Also women who lived in poor households have lower educational attainments, but the difference between women who grew up poor and women who did not is not statistically significant.

[48] It is interesting to notice that most of the US studies reported in Duncan and Brooks-Gunn (1997) cannot detect any significant effect of poverty experienced during school years on ability and achievement measures. After having considered the possibility of measurement problems, they conclude from the series of replication analyses that 'the question of why parents' income becomes less important as children move through their school years still remains' (p. 604). This 'enigma of the school years' does not emerge in our case.

Table 5.3a The impact of current poverty on the probability of educational attainment – Marginal effects (percentage points) by gender from the Main Sample

	Predicted attainment					
	No qualifications	Less than O-level/ GCSE	O-level/ GCSE	A-level	Higher vocational qualifications	Degrees
All						
Baseline probability	0.061	0.084	0.283	0.245	0.202	0.122
In poverty**	0.069	0.093	0.301	0.244	0.187	0.104
Not in poverty**	0.055	0.079	0.278	0.249	0.209	0.129
N			1,787			
Men						
Baseline probability	0.072	0.095	0.275	0.251	0.196	0.111
In poverty**	0.084	0.108	0.296	0.249	0.175	0.088
Not in poverty**	0.061	0.086	0.266	0.257	0.209	0.121
N			948			
Women						
Baseline probability	0.049	0.072	0.296	0.242	0.206	0.135
In poverty	0.052	0.077	0.306	0.242	0.199	0.124
Not in poverty	0.046	0.071	0.292	0.242	0.210	0.138
N			839			

Note: Obtained from ordered logit regressions. *N* is the number of individuals.

** means that the difference between poor and non-poor individual's educational attainments is significant at the five per cent level.

Table 5.3b The impact of current poverty on the probability of educational attainment – Marginal effects (percentage points) by gender from the Restricted Sample

	Predicted attainment					
	No qualifications	Less than O-level/ GCSE	O-level/ GCSE	A-level	Higher vocational qualifications	Degrees
All						
Baseline probability	0.065	0.084	0.303	0.265	0.175	0.108
In poverty**	0.075	0.093	0.321	0.263	0.159	0.088
Not in poverty**	0.058	0.078	0.296	0.270	0.183	0.114
N			1,316			
Men						
Baseline probability	0.069	0.100	0.300	0.265	0.168	0.099
In poverty***	0.084	0.115	0.323	0.260	0.144	0.074
Not in poverty***	0.056	0.089	0.289	0.274	0.182	0.110
N			693			
Women						
Baseline probability	0.060	0.067	0.310	0.266	0.180	0.116
In poverty	0.064	0.070	0.318	0.266	0.174	0.108
Not in poverty	0.058	0.066	0.308	0.268	0.183	0.118
N			623			

Note: Obtained from ordered logit regressions. *N* is the number of individuals.

** means that the difference between poor and non-poor individual's educational attainments is significant at the five per cent level.

*** means that the difference between poor and non-poor individual's educational attainments is significant at the one per cent level.

Table 5.4 The impact of parents' worklessness on the probability of educational attainment – Marginal effects (percentage points) by gender and developmental stage from the Main Sample

Parent's worklessness and child gender	Predicted attainment					
	No qualifications	Less than O-level/ GCSE	O-level/ GCSE	A-level	Higher vocational qualifications	Degrees
All						
Poor**	0.098	0.110	0.311	0.219	0.171	0.090
Non-poor**	0.082	0.094	0.293	0.229	0.192	0.109
Poor:						
0-5*	0.107	0.111	0.300	0.221	0.182	0.085
6-10**	0.109	0.107	0.310	0.222	0.171	0.080
11-15	0.096	0.104	0.303	0.224	0.177	0.095
Non-poor:						
0-5*	0.085	0.090	0.291	0.233	0.194	0.107
6-10**	0.076	0.089	0.286	0.238	0.195	0.115
11-15	0.092	0.101	0.298	0.226	0.183	0.100
Men						
Poor*	0.126	0.118	0.286	0.222	0.167	0.082
Non-poor**	0.096	0.100	0.271	0.228	0.192	0.113
Poor:						
0-5*	0.127	0.118	0.296	0.220	0.164	0.085
6-10**	0.130	0.120	0.294	0.217	0.159	0.080
11-15	0.119	0.111	0.279	0.219	0.175	0.096
Non-poor:						
0-5*	0.103	0.105	0.277	0.225	0.183	0.106
6-10**	0.102	0.104	0.275	0.226	0.187	0.107
11-15	0.118	0.110	0.278	0.219	0.176	0.098
Women						
Poor	0.059	0.081	0.312	0.235	0.200	0.113
Non-poor	0.052	0.074	0.298	0.237	0.212	0.127
Poor:						
0-5	0.058	0.079	0.306	0.234	0.204	0.119
6-10	0.058	0.080	0.308	0.234	0.203	0.117
11-15	0.062	0.084	0.316	0.234	0.196	0.109
Non-poor:						
0-5	0.054	0.077	0.306	0.235	0.206	0.122
6-10	0.056	0.078	0.305	0.235	0.205	0.121
11-15	0.054	0.076	0.301	0.236	0.209	0.124

Note: Obtained from ordered logit regressions. Baseline probabilities are shown in Table 5.3a. The terms 'poor' refers to experience of life in a family with workless parents.

*, ** mean that the difference between poor and non-poor individual's educational attainments is significant at the ten and five per cent level, respectively.

5.3 Economic activity

Given the reduction in young people's (particularly men's) educational attainment associated with experience of life in a poor (either low-income or 'workless') family, the analysis is expected to reveal a comparable pattern in relation to the chances of being unemployed or otherwise economically inactive. Indeed, the estimates in Table 5.5 show that being currently poor increases the probability of economic inactivity by 3.4 percentage points in both samples, while being persistently poor has a smaller effect of 2.7 (and 2.2) percentage points in the main (restricted) sample, but always statistically significant. With a baseline probability of only 7.2 per cent (or 6.2 per cent in the case of the restricted sample), these effects are large. A positive effect of 3.4, for example, means an increase of 47 per cent with respect to the baseline.

Table 5.5 The impact of poverty on the probability of economic inactivity – Marginal effects (percentage points) by gender

	Main Sample		Restricted Sample	
	Current	Persistent	Current	Persistent
All				
Baseline probability	0.072	0.072	0.062	0.062
In poverty	0.034***	0.027***	0.034***	0.022***
N	9,513		6,385	
Men				
Baseline probability	0.087	0.087	0.077	0.077
In poverty	0.044***	0.028**	0.051***	0.019*
N	5,024		3,358	
Women				
Baseline probability	0.055	0.055	0.045	0.045
In poverty	0.023**	0.024**	0.013*	0.029***
N	4,489		3,027	

Note: Obtained from logit regressions. *N* is number of person-wave observations.

* p<.10 ** p<.05 *** p<.01

Not only are young men more likely to be inactive than women of comparable ages, but they are also more strongly affected by their experience of life with poor parents. Living in a low-income family increases the chances of inactivity for men by 50 per cent in the main sample (from 8.7 to 13.1 percentage point) and by 66 per cent in the restricted sample (from 7.7 to 12.8 percentage points). The poverty effects for women are smaller, but always well determined. Particularly large are the effects of persistent poverty, with an increase of 64 per cent in the probability of inactivity, from 4.5 to 7.4 per cent, for the women in the restricted sample.

Table 5.6 The impact of parental worklessness on the probability of economic inactivity – Marginal effects (percentage points) by gender and developmental stage

	Main Sample		Restricted Sample	
	All ages (0 - 15)	Developmental stage	All ages (0 - 15)	Developmental stage
All				
Parents' worklessness	0.026***		0.033***	
Parent's worklessness:				
0-5		0.025**		0.028***
6-10		0.004		0.003
11-15		0.037***		0.034***
Men				
Parents' worklessness	0.032**		0.037**	
Parents' worklessness:				
0-5		0.027**		0.042***
6-10		0.006		0.003
11-15		0.044***		0.038***
Women				
Parents' worklessness	0.020**		0.025**	
Parents' worklessness:				
0-5		0.001		0.007
6-10		0.002		0.003
11-15		0.030***		0.025**

Note: Obtained from logit regressions. Baseline probabilities are shown in Table 5.5.

* p<.10 ** p<.05 *** p<.01

The poverty effects obtained with the measure based on parents' worklessness strongly support the previous results. Table 5.6 shows a large, positive impact of parents' worklessness during childhood on the probability of economic inactivity during young adulthood. Again, the strongest effect is on men who have experienced poverty: they are 3.2 (3.7) per cent more likely to be unemployed or inactive than those whose parents worked during their childhood in the main (restricted) sample. Interestingly, the critical timing of parents' worklessness is when the child was in pre-school years (ages 0-5) and in adolescence (ages 11-15). This finding emerges in both the main and the restricted samples. For men in the main sample, having had experience of life with workless parents during pre-school years increases the probability of inactivity by 2.7 percentage point. If parents were workless when children were adolescent, then they would face 4.4 per cent higher chances of inactivity. In the case of women, there is no evidence of an early effect of poverty experience on inactivity. But we do find that having lived with workless parents during adolescence increases the probability of inactivity by 2.5-3 percentage points, a substantial impact.

5.4 Early childbearing

The analysis using child poverty defined on family income suggests that experience of life in a poor family increases the chances that young women would have a child by the age of 21. Being currently poor increases the annual probability of early childbearing by 1.3 percentage points in both estimating samples, while being persistently poor increases the annual probability of early childbearing by 1.1 percentage points, again in both samples. These are large (and in the main sample also precisely measured) effects considering that the baseline average for annual birth probability is only 2.1 per cent.

Using parents' worklessness, we find again a strong and positive impact of poverty on the probability of early childbearing for women in both samples, confirming that both parental non-employment patterns during childhood and low family income during young adulthood capture similar characteristics that are associated with the early fertility behaviour of women. The strong and positive poverty effect is entirely driven by the experience of life with workless parents during adolescence (when daughter was aged 11-15). Even though women who lived in households where both parents were not economically active when they were adolescent do not have lower educational attainments than women who lived with at least one economically active parent, they may still be at a greater risk of acquiring a 'culture of poverty' (Wilson, 1987), through their higher likelihood of giving birth before age 21. Notice, however, that parents' worklessness in pre-school years and primary-school years have little effect on the probability of their daughter giving birth at an early age.

Table 5.7 The impact of poverty on the probability of early childbearing – Marginal effects (percentage points) for women

	Main Sample		Restricted Sample	
	Current	**Persistent**	**Current**	**Persistent**
Baseline probability	0.021	0.021	0.021	0.021
ln poverty	0.013**	0.011*	0.013**	0.011*
N	2,942		2,480	

Note: Obtained from discrete-time transition rate models (logit regressions). *N* is number of women-wave observations at risk of having a child by age 21.

* p<.10 ** p<.05

Table 5.8 The impact of parental worklessness on the probability of early childbearing – Marginal effects (percentage points) by developmental stage for women

	Main Sample		Restricted Sample	
	All ages (0 - 15)	Developmental stage	All ages (0 - 15)	Developmental stage
Parents' worklessness	0.030***		0.033***	
Parents' worklessness:				
0-5		0.010		0.013
6-10		0.006		0.002
11-15		0.027***		0.030***

Note: Obtained from discrete-time transition rate models (logit regressions). Baseline probabilities are shown in Table 5.7.

*** p<.01

5.5 Health

5.5.1 Smoking

Experience of life in a low-income family is also correlated to a greater likelihood of smoking for people in the main sample. For this sample, this effect emerges clearly in the case of women, whose probability of smoking is increased by nine and 14 percentage points if they are living in a household that is currently and persistently poor, respectively (Table 5.9). The effects for men are half those sizes and not statistically significant. There is also little impact among people in the restricted sample, with the exception of some effect of persistent poverty, but only at the ten per cent level.

The estimates obtained using the worklessness measure mimic the results based on the low-income measures (see Table 5.10). For the pooled sample of men and women, we do find an eight-nine per cent greater probability of smoking for those young adults who lived in a workless household when they were aged 0-5. The analysis by gender reveals that this effect emerges for men in both samples, but not for women in the restricted sample.

Table 5.9 The impact of poverty on the probability of smoking – Marginal effects (percentage points) by gender

	Main Sample		Restricted Sample	
	Current	Persistent	Current	Persistent
All				
Baseline probability	0.425	0.425	0.421	0.421
In poverty	0.064**	0.099***	0.043	0.066*
N	9,513		6,385	
Men				
Baseline probability	0.429	0.429	0.423	0.423
In poverty	0.044	0.060*	0.074*	0.082*
N	5,024		3,358	
Women				
Baseline probability	0.420	0.420	0.418	0.418
In poverty	0.092**	0.139***	0.024	0.083*
N	4,489		3,027	

Note: Obtained from logit regressions. *N* is number of person-wave observations.

* p<.10 ** p<.05 *** p<.01

Table 5.10 The impact of parental worklessness on the probability of smoking – Marginal effects (percentage points) by gender and developmental stage

	Main Sample		Restricted Sample	
	Current	Persistent	Current	Persistent
All				
Parents' worklessness	0.034*		0.026	
Parent's worklessness:				
0-5		0.084**		0.089**
6-10		-0.038		-0.046
11-15		0.023		0.023
Men				
Parents' worklessness	0.033*		0.062	
Parents' worklessness:				
0-5		0.080*		0.125**
6-10		-0.041		-0.010
11-15		0.010		-0.029
Women				
Parents' worklessness	0.038*		0.017	
Parents' worklessness:				
0-5		0.087*		0.044
6-10		-0.043		-0.061
11-15		0.045		0.045

Note: Obtained from logit regressions. Baseline probabilities are shown in Table 5.9.

* p<.10 ** p<.05

5.5.2 *Psychological distress*

From the estimates obtained using the main sample, there is evidence of a well-determined impact of persistent poverty on the probability of experiencing psychological distress (Table 5.11). The effect of current poverty is smaller and less precisely measured. For the young adults in the restricted sample, we cannot detect any significant impact of poverty on a high GHQ level.

This lack of significance is mirrored by the results obtained with the parental worklessness measure. The only significant effect (at the ten per cent level) is for the pooled group of men and women in the main sample, who have 2.4 per cent higher chances of having mental health problems if they lived with non-employed parents when they were aged 11-15 (the results are not shown for convenience).

Table 5.11 The impact of poverty on the probability of experiencing psychological distress – Marginal effects (percentage points) by gender

	Main Sample		Restricted Sample	
	Current	**Persistent**	**Current**	**Persistent**
All				
Baseline probability	0.192	0.192	0.190	0.190
In poverty	0.024*	0.032**	0.017	0.030*
N	9,513		6,385	
Men				
Baseline probability	0.155	0.429	0.153	0.153
In poverty	0.012	0.031*	0.022	0.024
N	5,024		3,358	
Women				
Baseline probability	0.234	0.234	0.230	0.230
In poverty	0.037*	0.033*	0.013	0.040
N	4,489		3,027	

Note: Obtained from logit regressions. *N* is number of person-wave observations.
* p<.10 ** p<.05

5.6 Other influences

The study examined a number of other factors that might have influenced young people's outcomes, aside from poverty (measured in terms of currently or persistently low family income or parents' worklessness during childhood). These included the young persons' personal traits, family structure and size. Because of space limitation, we shall only discuss the results for three salient aspects of young adults' background, which can be relevant for their relationship with poverty issues and their policy implications, namely, family structure and parents' age and education.

5.6.1 *Parents' age*

There is not a systematic effect of parent's age on children's outcomes. For women, we found, however, a strong relationship between having a mother who was aged less than 21 at birth and the risk of having a child by age 21. This recurrence of early motherhood across generations is

likely to be correlated with other family and individual characteristics that we cannot control for (e.g., fecundity, age at menarche and contraceptive use) and may trigger a variety of other long-term consequences (e.g., dependence on benefits and unattachment to the labour market).

5.6.2 *Parents' education*

For ease of exposition, we divide the relationships between parents' education and outcomes depending on their statistical significance in the following groups:

- For both young men and young women, mother's and father's educational attainments significantly *increase* the chances of their children's higher educational achievement and *decrease* the probability of their children's economic inactivity.
- A higher mother's education also decreases the chances of her daughter giving birth by age 21, but father's education does not have any impact on this outcome.
- Parents' educational attainments do not influence their children's chances of leaving the parental home, smoking or experiencing psychological distress.

We also found that the way in which parents' education affects youth outcomes is similar by gender.

5.6.3 *Family structure*

Experience of life in a non-intact family at any time during childhood (and, especially, when the child was in pre-school or school-years) appears to have pervasive effects on almost all outcomes under study. In particular:

- It significantly increases the likelihood of leaving the parental home for both men and women, regardless of the poverty measure used in estimation.
- For men, it decreases the probability of higher educational achievements and increases the probability of economic inactivity. The effects for women are in the same direction, but are not precisely measured.
- It increases the probability of having a child by age 21 for women.
- It is strongly associated with a higher probability of smoking for both men and women.
- It is correlated to a higher likelihood of experiencing psychological distress, particularly in the case of men.

Most of these results are in line with previous research findings conducted in the United States (McLanahan and Sandefur, 1994; Haveman and Wolfe, 1995; Mayer, 1997) and in Great Britain (Ní Bhrolcháin, Chappel and Diamond, 1994; Cherlin, Kiernan and Chase-Lansdale, 1995; Kiernan, 1992, 1996 and 1997; Ermisch and Francesconi, 2001c).

It is worth noticing that, in the samples under analysis, the effects of family structure and parents' educational attainment coexist with the effects of poverty. Consequently, at least some of the estimated links between poverty and child outcomes are not simply due to family circumstances that often occur with poverty, but are possibly due to lack of income or parents' non-employment patterns during childhood. Growing up poor is therefore likely to have substantial consequences on a number of aspects of young people's life chances.

5.7 Sibling difference estimates

5.7.1 Conceptual issues

So far this study has reported between-family estimates, that is, estimates that rely on comparisons *between* families to measure the association of parents' low income or parental worklessness with the outcomes of their children. In Chapter 1 we argued that between-family estimates are, in general, likely to be biased and inherently difficult to interpret. We briefly illustrate why this may be the case also in the context of this analysis and provide one important, although far from perfect, remedy.

One problem that arises when trying to measure the effect of poverty is that parents make decisions about their employment status (and thus labour income coming into the household) alongside other choices about the way in which their time and money are spent. Children are born with personal attributes and individual abilities, which in Chapter 1 we called 'endowments'. These endowments include children's traits and characteristics such as temperament, motivation and innate ability and are genetically and culturally linked to their parents' own set of specific endowments. Of course, parents are at least partially aware of these endowments, even if researchers cannot observe them. Mothers and fathers take them into account when making decisions about how parental resources (e.g., time and money) should be devoted to their children. For example, for a given total household income, they may choose to spend more time with a child who has difficulties in school, or they may want to increase total income to finance the higher education of a child who demonstrated high learning abilities. On the other hand, decisions about how much money and time parents invest in their children's education will also depend on personal endowments. Parents who are highly motivated and educated will tend to put a high value on educating their own children.

It is therefore clear that any research attempt to obtain an unbiased estimate of the link between family income (or poverty) and child outcomes must account for the tendency for children with high endowments to gain better qualifications and to face lower risks of unemployment and early childbearing, and to have parents whose own endowments are also high. Highly educated and motivated parents may spend more of their time in employment and earn more money to spend on their children (childcare, books, holidays, schools, etc.). But they may also spend more of their remaining time challenging their children in educational activities. In the absence of data which gather information about each of these inputs, it is however difficult to gauge how exactly these different resources (and

their different timing) impact on children's educational attainments, psychological well-being and future success.

These issues emphasise the importance of controlling survey data on family income (or parental worklessness) for other parental factors that affect child outcomes. In the previous analyses, we did so by including, for instance, measures of parents' education, age at birth of the child and childhood family structure. Yet, no matter how many parental variables are measured and controlled for in a data set, it is unlikely that we will ever be able to include all the relevant aspects of family background and parents' preferences that are correlated with their own and their children's endowments.

The suggestion that parental endowments are usually the *same* for *all* children in a family points to a way in which our data set with information on siblings can be used to control for their influence. Indeed, the information on brothers and sisters in the BHPS makes it possible to relate difference between the young adults' outcomes for siblings to differences in their parents' worklessness patterns at the time they were children (and to differences in other personal or family characteristics). As long as brothers and sisters share a common family environment over their childhood (e.g., parents' ability and parenting style), then the sibling difference estimator is likely to remove many of the unobserved characteristics that are problematic in the case of the between-family estimates. However, it is possible that one of the parents' (or both parents') employment patterns could be a response to the idiosyncratic endowments of their children, such as giving birth to a dyslexic child or a musical virtuoso. It is also possible that some children will experience a change in their parents' circumstances that never applied to their brothers or sisters. For example, a father developing an alcohol problem not only affects his child's future success directly but may also lead the mother to change her employment (or non-employment) patterns. Even so, the data on sibling differences gathered in the BHPS may offer a valuable and largely unexploited opportunity to control the data for parental endowments, increasing the likelihood that any association found earlier between childhood poverty and child outcomes reflects a causal relationship.[49]

5.7.2 Main and restricted samples of sibling pairs

Both the main and restricted sample described and estimated earlier were used to estimate the effect of parental worklessness patterns during childhood on young adult outcomes using controls based on observed differences between siblings. Of the 1,789 individuals in the main sample, 604 (or 34 per cent) could not be matched to their adult siblings in any of the panel years (either because their siblings were not interviewed between 1991 and 1999 or because they are only children). This sample will be

[49] For applications of the sibling difference estimator in other related areas of child outcomes and parents' behaviour, see Ermisch and Francesconi (2001b and 2001c) and references therein.

denoted as Siblings in the Main Sample (or SMS). In the case of the restricted sample, 502 (or 38 per cent) of the 1,316 individuals could not be matched to their adult siblings. We will denote this sample as Siblings in the Restricted Sample (SRS). The distributions of the remaining 1,183 individuals in the main sample and 814 individuals in the restricted sample are given in Table 5.12.

Table 5.12 Distribution of siblings (individuals) and sibling pairs in SMS and SRS

Sibling sample	Number of:			
	siblings per household	households	individuals	comparisons (sibling pairs)
SMS				
	2	408	816	408
	3	98	294	294
	4	17	68	102
	5	1	5	10
Total		524	1,183	814
SRS				
	2	311	622	311
	3	52	156	156
	4	9	36	54
Total		372	814	521

Note: SMS=siblings in the main sample; SRS=siblings in the restricted sample.

The 1,183 young adults in the main sample who have been matched to at least one sibling (SMS) come from 524 households: 408 of these households have two siblings in our sample, 98 have three siblings, 17 have four siblings, and one has five siblings. A total of 814 comparisons is then obtained from this sample.[50] From the restricted sample we can compute a total of 521 sibling comparisons, which can be obtained from 814 individuals in 372 households. In addition to the differences in parents' worklessness during childhood, the other individual and family characteristics used in estimation are the differences in: age, gender, mother's and father's age at birth (21 or below and 35 or above), whether or not the child was the first born, and experience of life in a non-intact family by developmental stage.[51] The distributions of these variables among the individuals in SMS and SRS are very similar to those reported in Table C.1 and therefore are not shown here.

[50] The 408 two-sibling households give rise to 408 comparisons, one per siblings' pair; the 98 three-sibling households produce 294 comparisons, three in each household; the 17 four-sibling households give rise to 102 comparisons, six in each household; and the only five-sibling household in the data yields 10 sibling comparison, as there are 10 possible comparisons between five siblings.

[51] In the case of leaving the parental home and early childbearing, the sibling comparisons are made at common ages, because both family formation and having a child are inherently age dependent. In these regressions, therefore, we do not include age difference as regressor. For all other outcomes, siblings were matched on the year of observation (or, in the case of education, on the last available year). This turns out to be important in the case of inactivity, because by doing so we avoid comparisons at different points in the business cycle.

For all outcomes we performed multivariate logit analyses. In the case of education, we dichotomised the outcome and our measure of educational achievement has become whether or not young people achieve an A-level pass or higher qualification. Since it is rare to obtain A-levels before the age of 18, we limit the estimating sample for this outcome to young people who were that age or older. We only estimated pooled samples of young men and women. The number of sibling comparisons, particularly in the restricted sample, is in fact too small to support a serious analysis by gender. As in the early analysis of this chapter, the estimates are reported in terms of 'marginal effects' of having lived in a workless family on the young adult outcomes after the influences of the other variables have been controlled for. Furthermore, in the estimation we compute standard errors that are robust to arbitrary forms of correlation within siblings or half-siblings. The significance level of each effect (as usual signalled with the help of asterisks) reflects therefore that robustness. Finally, because our main objective is to illustrate the timing of the effects of poverty, we focus only on the effects by developmental stage and do not report the estimates over the entire childhood.

It is important to give an idea of what our six dependent variables look like. For each outcome, they take a value of one if there is a difference between siblings, and zero otherwise. We have about 18 per cent of sibling differences with a different leaving home outcome, another 34 per cent with a different educational outcome, 13 per cent with a different inactivity outcome, almost four per cent with different early childbearing decisions, 35 per cent with different smoking behaviour, and 27 per cent with a different psychological distress outcome.

5.7.3 Results

Tables 5.13 and 5.14 report the sibling difference estimates for all outcomes for young adults in the main and the restricted samples, respectively. Clearly there are some important differences between the estimates discussed earlier in this chapter and those found with the sibling difference approach. But the first thing to notice is the striking similarity in the response to parents' worklessness for many outcomes across the estimation methods. This similarity is in term of the sign, the magnitude and the significance level of the effects.

In the case of leaving the parental home, we find evidence of a strong positive effect of parents' worklessness when the child was aged 11-15 in both the main and the restricted samples. Thus, having lived in a household where parents have been workless during the child's adolescence increases the probability that the child leaves the parental home by 4.1 per cent and 3.1 per cent in the main and restricted samples, respectively. Both effects are significant. The between-family estimates in Table 5.2 detect a similar effect only for the individuals in the main sample, with the effect for men being virtually identical to that reported in Table 5.13.

For the young people in the main sample, educational attainment does not seem to be affected by experience of poverty during childhood. There is evidence of a large reduction in the chances of achieving A-level or higher qualifications (7.2 per cent lower probability), but this effect is significant only at the 10 per cent level. One explanation for the different results obtained here and those reported in Table 5.4 (where we found strong poverty effects for the whole sample and for men in particular) is that the between-family estimates confound parental endowments with parental investments in child human capital, and thus we cannot rely on them. Another explanation is that the dependent variables used in the two estimations are different. To test this explanation, we performed another battery of regressions with the new education variable as our dependent variable using the between-family estimator. The estimates from this analysis are strongly consistent with those reported in Table 5.13. None of the effects of parental worklessness by developmental stage are statistically significant at conventional levels (they are jointly significant at the 10 per cent level), with the largest effect of –0.049 being associated to worklessness when the child was aged 6-10. The estimates obtained from the restricted sample suggest a large and significant reduction of the probability of achieving A-level or more if parents' worklessness was experienced when the child was aged 11-15 (Table 5.14). Given that the baseline probability of achieving A-level or more is around 0.55, 8.8 lower percentage points represent a large impact. Again, the between-family estimates obtained with the new dependent variable are similar to those reported in Table 5.14, suggesting that the difference between the sibling-difference estimates and the between-family estimates reported earlier are mainly due to the different definition of the dependent variables rather than to the failure of adequately controlling for family background in the latter estimates.

The findings for economic inactivity contain strong parallels with the findings that emerged in Table 5.6 (particularly in the case of the restricted sample). There are adverse effects of parents' worklessness when the child was aged 0-5: in both samples such an experience leads to an increase in the probability of inactivity of about 3.5 percentage points, a huge effect given that the baseline probability is never above 7.5 per cent. The results from the main sample do not show any additional effect associated with worklessness in the other two developmental stages. The estimates from the restricted sample, however, reveal another large and precisely measured effect: experience of life in a workless household when the child was aged 11-15 increases the probability of economic inactivity during early adulthood by 3.4 percentage points.

Table 5.13 The effect of parental worklessness on young adult outcomes by developmental stage – Sibling difference estimates obtained from the Main Sample (SMS)

	Developmental stage in which parents' worklessness is measured:		
Outcome [sample size]	**0-5**	**6-10**	**11-15**
Leaving parental home [*N*=3,508]	0.002	-0.001	0.041***
Achieved A level or more [*N*=603]	-0.072*	-0.008	-0.031
Inactivity [*N*=6,169]	0.036***	0.005	0.007
Early childbearing (women only) [*N*=507]	0.023**	0.041**	0.015
Smoking [*N*=6,169]	0.037***	0.004	0.028**
Psychological distress [*N*=6,169]	-0.012	0.007	0.039***

Note: Figures are marginal effects obtained from logit regressions. *N* is the number of sibling comparisons used in each regression. In all outcomes (except education), there may be more than one sibling pair. Significance levels are determined with estimated standard errors that account for arbitrary forms of correlation within siblings or half-siblings.

* $p<0.10$ ** $p<0.05$ *** $p<0.01$

The analysis comparing sibling outcomes suggests that parents' worklessness during childhood has also a strong effect on the probability of their daughter giving birth at an early age. Parents who were workless when their daughter was aged 0-5 are likely to see her annual probability of early childbearing increasing by between 2.3 and 4.5 percentage points (Tables 5.13 and 5.14, respectively). If parental worklessness occurred when children were in school years (ages 6-10), the main sample results suggest a further rise in the annual probability by 4.1 percentage points (Table 5.13). These are large effects considering that the baseline average for annual birth probability is only about 3.5 per cent. Interestingly, we do not find evidence of any statistically significant impact on early childbearing of parents' worklessness when their daughter was an adolescent. This result differs from those reported in Table 5.8, where the strongest association between poverty and childbearing emerged for women who lived in workless households when they were aged 11-15. The sibling-difference estimates suggest that this association is probably spurious, in the sense that it is likely to confound the 'true' causal effect of poverty on early childbearing with some unmeasured parental endowments. It is, however, poverty in early and middle childhood that has greater bearings on the probability of giving birth by age 21. This effect is compounded by a similar family structure effect, whereby experience of life in a non-intact family during pre-school and school years substantially increases the probability of early childbearing (not shown).

Considering the results from the two samples jointly, childhood poverty has also a significant effect on the probability of smoking. The chances of smoking are increased not only by poverty experienced when the child was aged 0-5 (as was found with the between-family estimates in Table 5.10) but also by the experience of life with workless parents during school years (Table 5.14) and during adolescence (Table 5.13). Therefore, having lived in a poor family at any point during the entire childhood is likely to increase the risk of smoking in early adulthood.

The findings for mental health show that there is an increase in the probability of experiencing psychological distress by almost four percentage points for young adults who lived in a poor household when they were adolescent (Table 5.13). This result, however, does not emerge when we look at the estimates from the restricted sample, where it actually switches sign, but it loses its statistical significance (Table 5.14). Regardless of the estimating sample, mental health appears to be also marginally affected by poverty experienced in the other two developmental stages.

Table 5.14 The effect of parental worklessness on young adult outcomes by developmental stage – Sibling difference estimates obtained from the Restricted Sample (SRS)

	Developmental stage in which parents' worklessness is measured:		
Outcome [sample size]	**0-5**	**6-10**	**11-15**
Leaving parental home [*N*=1,519]	0.012	0.011	0.031**
Achieved A level or more [*N*=335]	0.002	0.010	-0.088***
Inactivity [*N*=3,760]	0.035***	0.018	0.034***
Early childbearing (women only) [*N*=386]	0.045***	0.024	0.027
Smoking [*N*=3,760]	0.024	0.071***	0.019
Psychological distress [*N*=3,760]	0.014	-0.023	-0.011

Note: For details see footnote of Table 5.13.

* $p<0.10$ ** $p<0.05$ *** $p<0.01$

5.8 Summary of findings for the BHPS sample

The measure of poverty based on low family income and the measure of poverty based on parents' worklessness during childhood produced relatively comparable results. This is encouraging because the results obtained with the worklessness measure can be confidently used to address the issue of the timing of poverty. In the analysis of the BHPS sample, a number of findings emerged.

- Living in a poor household speeds up the leaving home process. Having spent time in a poor household during adolescence, however, seems to affect the probability of forming a new household only for men and not for women. Similarly, experience of life with workless parents in earlier developmental stages neither accelerates nor delays this important life transition.
- Poverty has a sizeable impact on educational achievements. It is again men who appear to be most severely affected. Young men who grew up poor see their chances of achieving A-level or higher qualifications reduced by about 10 per cent. Interestingly, the lack of parental income turns out to be critical for the education outcome when children were in primary school, i.e. when they were aged six - ten. Lack of income during the pre-school years is important but to a lesser extent. On the other hand, young women's educational attainment does not appear to be substantially affected by parental resources. For them, other background characteristics, such as parents' education and family structure, are more relevant.
- The lower educational attainment associated with time spent in a poor household (either during early adulthood or during childhood) is compounded by higher chances of economic inactivity. Both men and women who have lived in poor families are more likely to be inactive, regardless of the sample or the poverty measures used in estimation. These effects are generally large and precisely estimated. This outcome seems to be particularly sensitive to experiences of poverty which occurred when the child was either in pre-school years (ages 0-5) or in adolescence (ages 11-15).
- For women, growing up poor is also associated with a substantially higher risk of early childbearing.[52] The largest effect on this outcome works through experience of life in a workless household when the girl was aged 11-15. The lack of parental resources during adolescence is quite likely associated with worse family living conditions, housing and other aspects of material well-being that may affect the decision of having a child at an early age.
- Finally, poverty does not have clear consequences on young people's health. Duncan and Brooks-Gunn (1997) find relatively similar results for children in the United States. Young adults who spent some time in their childhood with workless parents or still live in low-income families are more likely to smoke. This effect is however small and not always well determined. Poverty also increases the probability of psychological distress but, again, this impact is not robust to the measure of poverty and is not precisely estimated.

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[52] Haveman, Wolfe and Wilson (1997) find that parental income has hardly any effect on teenage out-of-wedlock childbearing. It should be noticed that our definition of early birth includes marital and non-marital births which occurred by age 21 or below, rather than non-marital births only that occurred by age 19 or below.

- Both parents' education and family structure have systematic and strong impacts on most of the young adults' outcomes. There is also evidence that if the mother herself was aged 21 or less when her daughter was born, then the odds that the daughter has an early birth are higher.

The special features of the BHPS allow us to use another set of estimates, the sibling-difference estimates, which are based on comparisons *within* (rather than) *between* families. In this way we can control more reliably and comprehensively for family background, making it less likely that the estimates are contaminated by unmeasured or unmeasurable factors. In general, the results obtained from the sibling-difference comparisons reinforce our previous findings, suggesting that the relationships between child poverty and child outcomes are not just associations which confound 'true' effects with parental endowments but are likely to be causal.

In particular, having lived in a family with workless parents during early childhood (ages 0-5) is associated with:

- a higher risk of unemployment and other economic inactivity in early adulthood;
- an increased risk of early childbearing in the case of women;
- slightly higher chances of smoking.

Experience of life in a workless household during school years (ages 6-10) has fewer effects and tends to:

- increase the chances of become a mother by age 21;
- increase the probability of smoking.

Finally, children who lived in households with workless parents during adolescence (ages 11-15) seem to be affected in all their spheres of life and tend to have:

- higher chances of leaving their parental home as young adults;
- lower educational attainments;
- a higher risk of economic inactivity;
- a higher probability of smoking in young adulthood;
- higher chances of experiencing a high level of psychological distress.

6 CONCLUSIONS

6.1 Review of findings on poverty

This study has used a variety of simple and complex statistical techniques to explore the links between experience of poverty either during childhood or in early adulthood and children's outcomes as adolescents and young adults. Most of its findings carry potentially important implications for public policy and for future research. A number are likely to stir up public debate concerning their relevance and the effectiveness of policies to address them. It is, therefore, important to begin these concluding remarks by being clear about some of the research's limitations.

First, although a large number of family background variables were controlled for in analysing both the BYP and the BHPS samples, these variables are only a few of the many factors that have a bearing on children's development and life chances. They may even be relatively minor ones, when viewed as part of a constellation of relevant factors including parents' personality, their emotional stability, parenting practices and quality of care and time that children receive from their parents and carers. Using samples of young people that allowed comparisons between siblings from the same family (as in the analysis of the young adults' outcomes) is one way to limit this issue as much as possible. This method allows us to eliminate any persistent family and community characteristics shared by siblings or half-siblings that could not otherwise be measured.

Second, poverty is a complex and multi-faceted concept to operationalise (see Jenkins *et al.*, 2001). In this study, poverty was measured in terms of either low family income (Chapters 2-5) or parents' worklessness (Chapters 4 and 5). Both measures are no doubt correlated with the parents' ability to access goods and services that are necessary to child development and subsequent success. However, income (either from employment or from other sources) is just one element of the complex relationship between parental resources and children's outcomes. Children's consumption, housing and living arrangements, parental expenditures on young children and the cultural environment in which they grow up are key aspects of children's development, which are only partially approximated by income or non-employment patterns (and the other background variables included in our analysis).

Third, we have no information on the type, quantity or quality of the childcare used and the schools attended by poor and non-poor families alike. Clearly these aspects are likely to play a role not only in affecting the constraints faced by children and their families but also in shaping the outcomes observed in this study. When considering the implications for current public policy it should be remembered that changes in the child care and school systems may well have altered the environment in which the adolescents and young adults in our samples lived when they were pre-schoolers or young children, up to almost 30 years ago.

6.1.1 *Adolescent sample*

One of the themes of the report has been the interaction between income poverty and adolescents' outcomes. Chapters 2 and 3 have addressed this issue. The level of financial resources available to adolescents and their parents does not affect some of the outcomes gathered in the BYP and contained in our study. But it does affect other outcomes. Table 6.1 shows some of the key findings for this sample. In the table, the terms 'large' and 'moderate' refer to both the magnitude and the significance of the effect of poverty on the probability of the outcome being observed. A blank space means that the poverty effect is either very small or not significant (or both).[53] To be labelled in one way rather than another, the effect must be robust across the estimated specifications and/or the measures of poverty used.

We summarise our main results in four points. First, experience of poverty when people were adolescent made them less likely to report feeling unhappy than those who had not been poor. On the other hand, poverty has also a series of disadvantageous consequences on various aspects of adolescents' well-being. In particular, it *increases* the likelihood of:

- feeling useless;
- playing truant;
- believing that health is a matter of luck;
- expecting to leave school at age 16;

and it *decreases* self-esteem.

Second, poverty during early adolescence (ages 11-14) tends to decrease the likelihood of reporting being unhappy and increase the likelihood of expecting to leave school at age 16 (both measured when the child was aged 15). Poverty during school years (ages 6-10) tends to reduce self-esteem and the probability of feeling useless (measured when the child was aged 11).

Third, poverty during adolescence (ages 11-15) turns out to have serious consequences on young people's success when they grow older (Table 6.2). In particular, experience of life in a low-income family tends to:

- reduce children's educational attainment (by reducing their chances of achieving a good number of GCSEs with high grades).

It also reduces the likelihood of staying on at school after age 16 and increases the likelihood of unemployment, although these effects are not precisely estimated.

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[53] Effects that are significant at the ten per cent level are considered 'not significant' in this context.

Table 6.1 Summary results: Effects of poverty in the adolescent sample

Outcome	Poverty measured during adolescence (ages 11-15)	Childhood stages in which 'poverty' was measured	
		6-10†	11-14‡
Self-esteem	- (large)	- (large)	
Feeling unhappy	- (moderate)		- (moderate)
Feeling useless	+ (moderate)	+ (moderate)	
Not want to marry	+ (large)		
Health is a matter of luck	+ (large)		
Play truant	+ (moderate)		
Expect to leave school at age 16	+ (large)		+ (large)

Note: '+', '-' mean a positive or negative effect of poverty on the probability of the outcome being observed (in the case of self-esteem, they mean the effect of poverty on the scale points). The terms 'large' and 'moderate' refer both to the magnitude and to the significance of the effect.

† Outcomes are measured at age 11.

‡ Outcomes are measured at age 15.

Fourth, the effect of poverty on educational attainment at 16 has potentially important implications for the entire school career. Although poverty per se does not have a significant impact on the probability of staying on at school, it does reduce the probability of passing GCSEs with high grades and increase the probability of expecting to leave school at age 16. These two are critical determinants of the likelihood of staying on at school, and attaining higher levels of education.

Therefore, poverty during childhood and adolescence is likely to shape a number of attitudes, expectations and behaviours that are self-reinforcing and feed each other back once future attitudes, expectations and behaviours are realised. For example, we repeatedly observed that the lack of family financial resources reduces the adolescents' expectation of staying on at school after age 16. This expectation may be based on considerations other than poverty, which we do not observe in our study (e.g., poor school performance, unsatisfactory interactions with teachers and other

educators, insufficient motivation to do well at school, lack of role models). However, this same expectation is self-fulfilling: children who expect to leave school at age 16 are more likely to do so than other children. Children with this expectation, who are more concentrated in poor families, tend to perform poorly in their GCSE exams and thus their chances of academic success are greatly jeopardised. If there is an intragenerational link between schooling and economic success (see, among others, Blundell *et al.*, 1997), we are likely to expect an intergenerational transmission of poverty, with poor parents having children who perform poorly in school and have lower subsequent chances of high earnings and incomes.

Table 6.2 Summary results: Effects of poverty in the adolescent 'forward' sample

Outcome (measured at ages 16-17)	Poverty measured at ages 11-15
5 or more GCSEs with A-C grades	- (large)
Stay on at school	- (moderate)
Unemployed	+ (moderate)
Psychological distress	
Smoking	

Note: '+', '-' mean a positive or negative effect of poverty on the probability of the outcome being observed. The terms 'large' and 'moderate' refer both to the magnitude and to the significance of the effect.

6.1.2 Young adult sample

The other main theme of this report has been the interactions between poverty and young adults' outcomes. For these, we defined our measure of poverty as the parents' worklessness patterns over the entire childhood of their children. It turns out that parental worklessness and family income are highly correlated, suggesting that this measure of poverty is able to capture some of the most salient changes in family and individual behaviour that are associated with changes in net family income. The number of outcomes under analysis here is smaller, but they are of great relevance for children's future life chances and success opportunities. The results found with this sample support the evidence obtained from the adolescent sample. A summary of these results is in Tables 6.3 and 6.4, which refer to the results for men and women, respectively.

For men, poverty has large effect on all outcomes except health. In particular, it tends to:

- increase the likelihood of leaving one's parental home earlier;
- reduce the child's educational attainment;
- increase the risk of unemployment and economic inactivity.

A look across the columns of Table 6.3 reveals the importance of the childhood stage in which income is measured:

- family economic conditions in school years (ages 6-10) appear to be crucial for educational achievement.
- family economic conditions in adolescence (ages 11-15) seem to be important to shape behaviours such as leaving the parental home and being economically inactive.
- poverty in early childhood (ages 0-5) seems to be less important, even though it increases the probability of economic inactivity.

For women, Table 6.4 highlights the importance of the type of outcome considered. Specifically, experience of life with workless parents tend to:

- increase the probability of leaving the parental home earlier;
- increase the risk of a girl becoming economically inactive as young adult;
- increase the chances of becoming a mother before age 21.

The results across the columns clearly reveal that experience of poverty during adolescence appears to be far more important in shaping behaviours such as inactivity and early childbearing than it does in early and middle childhood.

Table 6.3 Summary results: Effects of poverty in the young adult sample – Men

	Stage in which 'poverty' was measured			
Outcome	**All ages**	**0-5**	**6-10**	**11-15**
Leave parental home	+ (large)			+ (large)
Education	- (large)	- (moderate)	- (large)	
Economic inactivity	+ (large)	+ (large)		+ (large)
Smoking				+ (moderate)
Psychological distress				

Note: '+', '-' mean a positive or negative effect of poverty on the probability of the outcome being observed. The terms 'large' and 'moderate' refer both to the magnitude and to the significance of the effect (both main and restricted samples and all measures of poverty).

Therefore, experience of life in poor (or workless) families and the correspondent loss of parental resources are associated with outcomes for educational attainment, economic situation, household formation and early childbearing which are generally 'worse' than those for children

who grew up in non-poor families. The timing of the poverty effects is not conclusive, but suggests that the entire childhood is potentially important, with perhaps a greater role of parental resources played during adolescence. This may have a straightforward interpretation in terms of role model, parental stress and material hardship, which shape adolescents' expectations and behaviours (see Chapter 3) and affect their decisions in early adulthood. Notice, however, that young men's educational attainment and risk of unemployment are also strongly related to poverty experienced in the early stages of childhood or during the pre-school years. Therefore, poverty experiences in those stage of development cannot be neglected.

Table 6.4 Summary analysis: Effects of poverty in the young adult sample – Women

Outcome	Stage in which 'poverty' was measured			
	All ages	0-5	6-10	11-15
Leave parental home	+ (moderate)			
Education				
Economic inactivity	+ (large)			+ (large)
Early childbearing	+ (large)			+ (large)
Smoking	+ (moderate)			
Psychological distress				

Note: '+' means a positive effect of poverty on the probability of the outcome being observed. The terms 'large' and 'moderate' refer both to the magnitude and to the significance of the effect (both main and restricted samples and all measures of poverty).

Although our measure of poverty has limits (which we pointed out in Chapter 4), it also has one important virtue. Because it is based on parents' non-employment patterns, it suggests that parental employment is likely to be critical for children's success, by providing them with financial resources, goods and services needed to succeed. Obviously, parents' employment is not the only input. Emotional support, time and close relationships between parents and children are likely to be as critical as parents' involvement with the labour market. As Ermisch and Francesconi (2001b) have pointed out, the *timing* and the *type* of parents' (particularly mothers') employment is also essential.

6.1.3 Sibling comparisons

The BHPS young adult sample allowed us to address also a question that is critical in most analyses of child poverty and child outcomes, that is: 'Are poverty effects causal?'. One of the most appealing techniques for handling unobserved parental characteristics is to compare individuals in

the same family. Models that relate differences in outcomes between siblings to differences in the experience of poverty for those siblings have probably eliminated most of the confounding influence of fixed parental characteristics, both measured and unmeasured (or unmeasurable).

We used sibling-difference estimates to test the robustness of our previous findings to the presence of unobserved parents' fixed effects. Because our primary focus was on the timing of the poverty experience, we related differences in outcomes between siblings (or half-siblings) to differences in experience of life with workless parents by developmental stage. Men and women were pooled in one sample because the small number of sibling comparisons (particularly in the restricted sample) could not allow us to perform statistically meaningful analyses by gender.

Despite a few interesting differences between the sibling-difference estimates and the between-family estimates, this exercise upholds many of the findings previously illustrated, suggesting that poverty (or parental worklessness) during childhood does have a long-term effect on child outcome in early adulthood. Table 6.5 summarises the key results.

All effects in Table 6.5 are quantitatively large. But some effects in specific developmental stages appear to be persistently identified in both the main and the restricted samples. In particular:

- experience of life in a workless household during pre-school years (ages 0-5) increases the risk of inactivity and early childbearing;
- experience of life with workless parents during adolescence (ages 11-15) increases the chance of leaving the parental home.

Other effects are less consistently detected in the two samples under analysis. From Table 6.5 it is clear that most of these effects are linked to an experience of poverty when the child was an adolescent. Although there is evidence of some relationship between child outcomes and poverty during school years (child aged 6-10), the smaller and less persistent effects of poverty during those years raises many intriguing questions, which cannot be addressed here. Do peer effects 'substitute' family economic conditions during school years in shaping young people's subsequent outcomes? Is it instead the role played by schools? Why is that parents' economic position becomes again important during adolescence?

Table 6.5 Summary analysis: Effects of parental worklessness in the BHPS sample – Sibling-difference estimates

	Stage in which 'poverty' was measured		
Outcome	**0-5**	**6-10**	**11-15**
Leave parental home			+ (large)
Education			- (moderate)
Economic inactivity	+ (large)		+ (moderate)
Early childbearing	+ (large)	+ (moderate)	
Smoking	+ (moderate)	+ (moderate)	+ (moderate)
Psychological distress			+ (moderate)

Note: Note: '+', '-' mean a positive or negative effect of poverty on the probability of the outcome being observed. The terms 'large' and 'moderate' refer to the significance of the effect in both main and restricted samples.

6.2 Other influences

Two of the most important aspects of a young person's success are his/her parents' education and the type of family in which he/she grew up as a child. More educated parents have children with higher educational achievements, lower risk of inactivity and lower risk of early childbearing. Growing up in a non-intact family has negative consequences for children's well-being across the entire range of outcomes under study. Interestingly, these findings are in line with other results found for American children (McLanahan, 1997). There is also evidence that if the mother herself was aged 21 or less when her daughter was born, then the odds that the daughter has an early birth are higher.

Can we say whether family structure and parents' education matter more than poverty? The answer is ambiguous. Although both family structure and parents' education are related to poverty, they are not proxies for poverty itself. In most cases, for example, coming from a non-intact family reduces a child's chances of success, even after parental worklessness (and therefore low income) is taken into account. On the other hand, we may also say the opposite: that poverty hinders a child's life chances, even after family structure is controlled for, and thus income *per se* has an effect on children's outcomes. This consideration has direct consequences for policy, which we address next.

6.3 Pointers for policy

6.3.1 An holistic approach

We draw attention to three findings of this report which can be relevant for policy. First, the results from the adolescent sample are in line with the results from the adult sample, even if most of the individuals in the two samples come from different birth cohorts and different family environments. There is a *marked consistency* in the way in which adolescents respond to the lack of family income and the way in which young adults respond to parental worklessness patterns. This is striking given that we looked at outcomes for adolescents that are different from the outcomes for young adults.

Second, this consistency in responses, however, cannot be taken as evidence that individuals and families are not sensitive to the timing and the type of the interventions. That is, policy programmes that are aimed at families with adolescents are likely to produce different results from programmes aimed at supporting children in their early school years. For example, the results summarised in Table 6.5 indicate that Income Support programmes targeting families with adolescents may be successful in improving the adolescents' educational prospects and labour market involvement. But they may not necessarily reduce their risks of early childbearing. For this outcome, earlier interventions seem to be more appropriate.

Third, the fact that parents' income or non-employment patterns, age at birth, education and family structure have all an impact on children's chances of success is another crucial finding of this study. This means that family policies and income-maintenance programmes are not mutually exclusive and are both likely to be relevant. In particular, the fact that parent absence still matters after taking poverty into account does not imply that policy makers should not try to minimise the economic distress of single mothers. Indeed, reducing the economic insecurity of families headed by lone mothers is probably the most effective tool for protecting children from the negative consequences of family disruption (McLanahan, 1997). Reducing poverty might also mitigate some other negative effects of living in a family which does not provide a sufficiently stimulating environment for children (e.g., through lower expectations or poorer motivations). If these families were more economically secure, they might be able to buy better and more expensive goods and services needed by their children to accumulate higher human capital.

The results from this report and other recent results obtained from analyses of similar BHPS data, which can be found in Ermisch and Francesconi (2001b and 2001c), suggest that special attention should be given to the timing of interventions over the *entire* childhood. Indeed:

- poverty during adolescence (ages 11-15) seems to affect some crucial expectations and attitudes toward school and health, household formation, education, and the risks of unemployment and, to a lesser extent, early childbearing;

- poverty during school years (ages 6-10) tends to affect educational achievement and the risk of having a baby by age 21 (although both these effects are relatively weak from the sibling-difference estimates);
- poverty during early childhood (ages 0-5) appears to affect the risks of economic inactivity and early birth;
- family structure during early childhood and primary school years seems to have strong effects on educational attainment, economic inactivity and early childbearing.

Although this complex mix of effects is an over-simplified representation of our findings and of the actual transmission of (dis)advantage in each family, it clearly points to the need of a holistic policy approach, which tries to find a balance between the most effective *type* of policy, the appropriate *timing* of the intervention and its *political* feasibility.

6.3.2 Intergenerational links

Another important pointer for policy is that our results (both from Chapter 3 and from Chapter 5) demonstrate that a further effect of social disadvantage when growing up is the existence of an intergenerational spillover. Children of poverty are likely to experience not only a loss of resources while growing up, but also (and in part as a consequence of such a loss) lower opportunities for success. For example, it is clear that lower family income (either because parents' jobs are not 'good' or because they do not work) is correlated with some form of material hardship. In Britain, poor children may not necessarily go hungry or may not necessarily live in unacceptable housing conditions. But rich children may actually do better in school or avoid getting pregnant, because they have a guest room in their house and can see and study with their friends in a pleasant environment, or because they have a balanced diet or because their parents have a second car and can take them to music or swimming classes.

Poor children may come from families that were already at a disadvantage in terms of lower education or in the labour market. The clearest example emerges with our evidence of intergenerational recurrence of early motherhood. In general, poor children are more likely to form lower expectations about their success at school or at work, and they in fact turn out to be less successful in achieving higher levels of education or getting jobs or avoiding getting pregnant. It is hard to believe that this intergenerational transmission of poverty can be entirely rectified by income-maintenance or support programmes, which are probably most effective when aimed at improving short-term problems. Long-term intergenerational issues are perhaps better addressed with long-term interventions, such education programmes for both the young and the old. But one of the problems posed by the presence of complex spillovers across generations is that all interventions (and, in particular, long-term interventions) may carry unintended consequences (e.g., lowering expectations or favouring a 'poverty-culture' behaviour). Much more research, therefore, is needed to investigate the impact of intergenerational spillovers on social disadvantage.

6.4 Final remarks

This has been a systematic analysis of the BHPS, to show the links between poverty and a wide range of child outcomes. It has been limited in many ways, with the difficulty in finding good measures of poverty and a sufficiently comprehensive set of individual and family characteristics (as mentioned in Section 6.1). Because of such limitations, our results ought to be interpreted with care. But it should be emphasised that this report is the first systematic attempt to address the relationship between poverty and adolescents' and young adults' outcomes for a large and nationally representative sample of children, who were born over a twenty-year period, between the beginning of the 1970s and the end of the 1980s. It should also be emphasised that this report has been one of the first studies that investigated the data from the British Youth Panel collected in the BHPS. This has proved quite useful in its own right and also in conjunction with the analysis of the young adult sample. There are a number of useful leads which might be pursued further, looking, for example, at 'harder' outcomes for young adults who have been observed in the adolescent sample, besides education. This will be possible as more waves of data of the BYP and the BHPS become available.

We have nevertheless identified some of the processes at work. The problem remains. Three million British children live in poor families. Parental worklessness is also a striking reality for many British families in the 1990s and at the beginning of the new millennium. The analysis shows that both poverty and parental worklessness have disadvantageous consequences on a variety of adolescents' and young adults' outcomes, which critically shape their subsequent chances of success. The long shadow that poverty and parental worklessness have on people's lives brings evidence to support the argument that, in order to break the intergenerational transmission of disadvantages, income-maintenance programmes ought to be judiciously combined with long-term interventions, such as education programmes for both the young and the old.

APPENDIX A ADDITIONAL INFORMATION ON THE BYP DATA

A.1 Introduction

As the BYP data had received relatively little attention from the research community, this appendix provides additional information on them.

In wave 4 the main focus of the BYP survey was the health, health behaviour, psychological well-being and aspirations of young people, and in particular to see how these are associated with family relationships. For this reason also, the adult questionnaire contained a small number of new questions for parents of eligible children that were designed to match key questions in the BYP. In waves 5 and 6 further questions on health behaviour and psychological well-being were asked, while in waves 7 and 8 the focus shifted to social networks.

The questions for the children are tape-recorded and delivered through use of a personal stereo system, which respondents can control at their own pace. The child can therefore also complete the questionnaire while adult members of the household are being interviewed. The purpose of the personal stereo system is to ensure confidentiality even where family members might be present. Printing only response categories further assists this; that is without the questions themselves on the questionnaire form. Any household member scanning the child's responses would therefore not be able to link these with the original questions.

More information on the BYP can be found in Section IV.15 of the BHPS User Documentation, which is at:

http://www.iser.essex.ac.uk/bhps/doc/index.htm.

Table A.1 British Youth Panel – item inclusion by wave

	Wave					
	4	5	6	7	8	9
School						
How often played truant from school				•	•	•
Suspended/expelled from school				•	•	•
Leave school when you are 16?	•	•	•	•	•	•
Social networks						
Times had friends round to your house?	•	•	•	•	•	•
How many close friends do you have?	•	•	•	•	•	•
Do your friends ever use illegal drugs?	•	•	•	•	•	•
Youth clubs						
Gangs						
Work and money						
Pounds: money last week for yourself?	•	•	•	•	•	•
Pence: money last week for yourself?	•	•	•	•	•	•
Money for self last week	•	•	•	•	•	•
Last week, hours spent working for pay?*	•	•	•	•	•	•
Items asked only to those aged 14-16 years:						
How much money did you earn						
last week?	•	•	•	•	•	•
The job is secure	•	•	•			
Work hours short, with free time	•	•	•			
The work involves using your brain	•	•	•			
The job is well-paid	•	•	•			
Is important and feels worthwhile	•	•	•			
Which is the most important thing of all?	•	•	•			
Self-esteem and psychological well-being						
How many days have you felt unhappy?	•	•	•	•	•	•
Past week – nights lost sleep worrying?	•	•	•	•	•	•
I feel I have a number good qualities	•	•	•	•	•	•
certainly feel useless at times	•	•	•	•	•	•
I am a likeable person	•	•	•	•	•	•
I enjoy taking exercise to keep fit	•	•	•			
I am inclined to feel I am a failure	•	•	•	•	•	•
At times I feel I am no good at all	•	•	•	•	•	•
On the whole, my health is very good	•	•	•	•	•	•
Happy with your school work?	•	•	•	•	•	•
Happy with your appearance?	•	•	•	•	•	•
Happy with your family?	•	•	•	•	•	•
Happy with your friends?	•	•	•	•	•	•
Describe how you feel about your life?	•	•	•	•	•	•
Smoking and health						
How often do you smoke?	•	•	•	•	•	•
Will you start/continue smoke next year?	•	•	•	•	•	•
How dangerous is smoking few cigarettes?	•	•	•			
Parents/other adult talked about drugs?	•	•	•			
In the next years you might be tempted?	•	•	•			

continued

* asked only of those 14-16 in wave 4

Table A.1 continued

	Wave					
	4	5	6	7	8	9
Attitudes						
Generally health is a matter of luck	•	•	•	•	•	•
Living together no marriage is wrong	•					
Better for children if parents divorce than unhappy	•					
The man should be head of the household	•					
Aspirations						
Age you think when you leave home?	•	•	•	•	•	•
Not want to be a parent	•	•	•	•	•	•
Not want to get married	•	•	•	•	•	•
At what age want to get married?	•	•	•	•	•	•
What age would like to start a family?	•	•	•	•	•	•

Table A.2 Self-esteem scale

Item	Item-test Correlation	Item-rest Correlation	Inter-item covariance	Cronbach's alpha
EstA	0.5605	0.3716	.2363147	0.7347
EstB	0.7932	0.5988	.152489	0.6515
EstC	0.5250	0.3443	.2463282	0.7422
EstE	0.7464	0.5626	.1755085	0.6678
EstF	0.8180	0.6381	.1426814	0.6318
Self-esteem scale			.1907045	0.7381

Note: EstA = "I feel I have a number good qualities"; EstB = "I certainly feel useless at times"; EstC = "I am a likeable person"; EstD = "I am inclined to feel I am a failure"; EstF = "At times I feel I am no good at all". Self-esteem scale is a continuous scale built using these six items. The most commonly used reliability coefficient is Cronbach's alpha, which is an estimator of internal consistency of a multi-item scale. The alpha coefficient for the self-esteem scale is 0.738 which is adequate for a six item scale.

Table A.3 Sample characteristics by missing poverty indicator

	Missing poverty indicator		
	No	**Yes**	**Total**
Current poverty measure			
Age at interview			
10	120	23	143
11	792	125	917
12	791	129	920
13	754	139	893
14	760	150	910
15	622	106	728
	$\chi^2(5) = 4.06$ *p*-value = .541		
Sex			
Male	1992	351	2343
Female	1847	321	2168
	$\chi^2(1) = 0.03$ *p*-value = .869		
Family structure (column %)			
Two natural parents	2384	524	2908
	(62.10)	(77.98)	(64.46)
Natural mother step father	283	55	338
	(7.37)	(8.18)	(7.49)
Natural father step mother	30	3	33
	(0.78)	(0.45)	(0.73)
Natural mother only	945	76	1021
	(24.62)	(11.31)	(22.63)
Natural father only	108	11	119
	(2.81)	(1.64)	(2.64)
Other	89	3	92
	(2.32)	(0.45)	(2.04)
	$\chi^2(5) = 81.30$ *p*-value = .000		
Persistent poverty measure			
Age at interview			
10	99	44	143
11	685	232	917
12	683	237	920
13	644	249	893
14	645	265	910
15	544	184	728
	$\chi^2(5) = 6.59$ *p*-value = .253		
Sex			
Male	1688	655	2343
Female	1612	556	2168
	$\chi^2(1) = 3.05$ *p*-value = .080		

continued

Table A.3 continued

	Missing poverty indicator		
	No	**Yes**	**Total**
Family structure (column %)			
Two natural parents	2149	759	2908
	(65.12)	(62.68)	(64.46)
Natural mother step father	206	132	338
	(6.24)	(10.90)	(7.49)
Natural father step mother	19	14	33
	(0.58)	(1.16)	(0.73)
Natural mother only	791	230	1021
	(23.97)	(18.99)	(22.63)
Natural father only	73	46	119
	(2.21)	(3.80)	(2.64)
Other	62	30	92
	(1.88)	(2.48)	(2.04)
	$\chi^2(5) = 50.25$ *p*-value = .000		

Note: The table reports the distribution of the BYP sample by age and sex of the child and by the structure of the family in which the child lives distinguishing those who have from those who do not have a poverty indicator. The table reports the $\chi 2$ statistic and its corresponding *p*-value for the test that the two distributions are different. We reject this hypothesis in the case of age and sex of the child. That is, children with missing poverty data come from the age and gender distribution. Instead, we cannot reject this hypothesis in the case of family structure. Children living with both natural parents are more likely to have missing poverty data than children living with only one parent are.

Table A.4 British Youth Panel – sample characteristics Pooled data over waves 4-9 (N=4,511)

	N	%
Age at interview		
10	143	3.2
11	917	20.3
12	920	20.4
13	893	19.8
14	910	20.2
15	728	16.1
Sex		
Male	2,343	51.9
Female	2,168	48.1
Family structure		
Two natural parents	2,908	64.5
Natural mother step father	338	7.5
Natural father step mother	33	0.7
Natural mother only	1,021	22.6
Natural father only	119	2.6
Other	92	2.0

continued

Table A.4 continued

	N	%
Father's age group		
16-35	383	8.9
36-45	2,963	69.3
46+	931	21.8
Mean (years)	42.6	
Mother's age group		
16-35	1,004	22.5
36-45	2,773	62.1
46+	686	15.4
Mean (years)	39.6	
Father's education		
Degree or higher	385	13.1
A level/HND	812	27.6
O level/CSE	905	30.8
None	835	28.4
Mother's education		
Degree or higher	302	7.2
A level/HND	824	19.7
O level/CSE	1,863	44.5
None	1,201	28.7
Region of residence		
London	362	8.3
Rest of South	1,534	34.9
Midlands	773	17.5
North-west	514	11.7
North and north-east	682	15.5
Wales	233	5.3
Scotland	303	6.9
Number of people living the in household (child included)		
2	144	3.3
3	695	15.8
4	1,753	39.8
5	1,239	28.1
6+	570	12.9
Father's employment status		
Not in paid work	483	15.7
Full-time employment	2,498	81.1
Part-time employment	99	3.2
Mother's employment status		
Not in paid work	1,208	28.7
Full-time employment	1,473	35.0
Part-time employment	1,527	36.3

Note: N is the number of person-wave observations.

APPENDIX B ADDITIONAL RESULTS OBTAINED FROM THE BYP DATA

B.1 Introduction

This appendix contains other results obtained from the BYP data, which are discussed in the text but are not presented there for simplicity.

Table B.1 Bivariate associations of outcomes and current poverty indicator – pooled data waves 4-9

	χ^2	*p*	*N*
School			
How often played truant from school	25.4**	0.000	1,920
Suspended/expelled from school	3.9*	0.046	1,920
Leave school when you are 16?	56.1**	0.000	3,131
Social networks			
Times had friends round to your house?	34.6**	0.000	3,833
How many close friends do you have?†	1.65	0.097	3,816
Do your friends ever use illegal drugs?	3.6	0.169	3,351
Work and money			
Money for self last week (age 15 only)†	1.99*	0.046	609
Last week, hours spent working for pay?†	4.2*	0.039	3,364
Items asked only to those aged 14-16 years:			
How much money did you earn last week?†	0.82	0.408	1,083
The job is secure	1.5	0.475	699
Work hours short, with free time	7.5*	0.024	700
The work involves using your brain	0.3	0.851	699
The job is well-paid	2.2	0.328	700
Is important and feels worthwhile	0.3	0.856	700
Which is the most important thing of all?	6.4	0.169	698
Self-esteem and psychological well-being			
How many days have you felt unhappy?	11.5**	0.009	3,834
Past week – nights lost sleep worrying?	7.9*	0.049	3,833
I feel I have a number of good qualities	11.6**	0.009	3,802
I certainly feel useless at times	11.0*	0.012	3,825
I am a likeable person	8.0*	0.045	3,805
I enjoy taking exercise to keep fit	7.7	0.053	1,901
I am inclined to feel I am a failure	42.8**	0.000	3,811
At times I feel I am no good at all	6.9	0.072	3,819
Self-esteem scale†	4.84**	0.000	3,745
On the whole, my health is very good	3.4	0.337	3,183
Happy with your school work?	21.6**	0.001	3,828
Happy with your appearance?	12.7*	0.047	3,822
Happy with your family?	18.4**	0.005	3,830
Happy with your friends?	3.0	0.807	3,825
Describe how you feel about your life?	25.6**	0.000	3,821

continued

Table B.1 Continued

	χ^2	*p*	*N*
Smoking and health			
How often do you smoke?	7.6	0.107	3,805
Will you start/continue smoke next year?	2.3	0.132	2,671
How dangerous is smoking few cigarettes?	17.1**	0.001	1,906
Parents/other adult talked about drugs?	0.8	0.367	1,905
In the next years you might be tempted?	3.0	0.082	1,748
Attitudes			
Generally health is a matter of luck	65.4**	0.000	3,175
Living together no marriage is wrong	4.1	0.393	645
Better for children if parents divorce than unhappy	1.2	0.876	652
The man should be head of the household	2.8	0.579	654
Aspirations			
Not want to be a parent	25.8**	0.000	3,068
Not want to marry	17.9**	0.000	3,067
Age you think when you leave home?†	1.86	0.062	3,700
At what age want to get married?†	1.73	0.082	2,679
What age would like to start a family?†	2.57*	0.010	2,658

† t-test difference of means

* $p<.05$ ** $p<.01$

Table B.2 Bivariate associations of outcomes and persistent poverty indicator – pooled data waves 4-9

	χ^2	*p*	*N*
School			
How often played truant from school	5.5	.136	1665
Suspended/expelled from school	7.6**	.006	1665
Leave school when you are 16?	62.6**	.000	2703
Social networks			
Times had friends round to your house?	30.1**	.000	3296
How many close friends do you have?†	0.7	.481	3286
Do your friends ever use illegal drugs?	5.5	.063	2880
Youth clubs			
Gangs			
Work and money			
Last week, hours spent working for pay?†	6.9**	.008	2907
Items asked only to those aged 14-16 years:			
How much money did you earn last week?†	1.2	.219	948
The job is secure	0.1	.952	601
Work hours short, with free time	8.9*	.011	602
The work involves using your brain	0.1	.920	601
The job is well-paid	0.7	.711	602
Is important and feels worthwhile	0.9	.645	602
Which is the most important thing of all?	4.7	.316	588

continued

Table B.2 continued

	χ^2	*p*	*N*
Self-esteem and psychological well-being			
How many days have you felt unhappy?	4.4	.222	3295
Past week – nights lost sleep worrying?	6.3	.095	3295
I feel I have a number of good qualities	8.4*	.038	3267
I certainly feel useless at times	14.9**	.002	3287
I am a likeable person	11.9**	.008	3270
I enjoy taking exercise to keep fit	2.9	.395	1618
I am inclined to feel I am a failure	48.9**	.000	3275
At times I feel I am no good at all	13.4**	.004	3282
Self-esteem scale†	4.7**	.000	3216
On the whole, my health is very good	4.4	.216	2716
Happy with your school work?	19.7**	.003	3289
Happy with your appearance?	17.8**	.007	3283
Happy with your family?	34.8**	.000	3291
Happy with your friends?	3.0	.805	3286
Describe how you feel about your life?	27.4**	.000	3282
Smoking and health			
How often do you smoke?	9.6*	.047	3271
Will you start/continue smoke next year?	0.3	.573	2281
How dangerous is smoking few cigarettes?	13.4**	.004	1623
Parents/other adult talked about drugs?	3.7	.056	1622
In the next years you might be tempted?	3.0	.082	1487
Attitudes			
Generally health is a matter of luck	61.2**	.000	2711
Living together no marriage is wrong	12.4*	.014	542
Better for children if parents divorce than unhappy	5.1	.275	547
The man should be head of the household	2.8	.582	549
Aspirations			
Not want to be a parent	8.8**	.003	2622
Not want to marry	12.4**	.000	2622
Age you think when you leave home?†	1.7	.076	3189
At what age want to get married?†	2.3*	.021	2300
What age would like to start a family?†	2.7**	.006	2280
TV and computer use			
How many TV sets do your family have?	12.8**	.005	426
Do you ever use a computer at home?	46.5**	.000	1277
Frequency of home computer use	22.1**	.000	1234
Have a computer at home	62.9**	.000	3300

† t-test difference of means

* $p<.05$ ** $p<.01$

Table B.3 Percentage (and frequency) of children in poverty by employment status of mother and father – Current measure of poverty

	Mother			
Father	**Full-time**	**Part-time**	**Not working**	**No mother**
Full-time	2	6	28	4
	(886)	(1014)	(460)	(108)
Part-time	0	20	57	64
	(30)	(32)	(21)	(16)
Not working	30	64	74	80
	(114)	(73)	(243)	(53)
No father	7	33	71	–
	(443)	(378)	(484)	

Table B.4 Estimated probabilities for the significant outcomes from specification (b) in Table 3.1

	In poverty	
	Yes	**No**
How often played truant from school		
Never	.818	.872
Once or twice	.126	.091
Several times	.035	.023
Often	.020	.012
Generally health is a matter of luck		
Strongly agree	.069	.055
Agree	.144	.121
Neither	.209	.190
Disagree	.358	.371
Strongly disagree	.217	.261
How many days have you felt unhappy?		
0	.351	.308
1-3	.458	.468
4-10	.139	.161
11+	.050	.060
I am inclined to feel I am a failure		
Strongly agree	.028	.021
Agree	.093	.074
Disagree	.405	.367
Strongly disagree	.473	.537
Not want to be a parent		
Yes	.170	.122
No	.829	.877
Leave school when you are 16?		
Yes	.173	.118
No	.826	.881

Bold numbers (or their sums for multi-category outcomes) are reported in Figure 3.1.

Table B.5 The effect of persistent poverty on adolescent outcomes: Estimates and absolute t-ratios from regression models – pooled data waves 4-9

		+child (a)		+child+parent(1) (b)		+child +parent(2) (c)	
	Type‡	Coeff.	|t-ratio|	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Times had friends round to your house?	o	-.043	0.36	-.104	0.83	-.009	0.07
Suspended/expelled from school	b	.794**	2.70	.375	1.12	.067	0.20
How often do you smoke?	o	.214	1.47	-.031	0.20	.144	0.80
How dangerous is smoking few cigarettes?	o	.375*	2.52	.216	1.31	-.129	0.66
Generally health is a matter of luck	o	.425**	3.24	.270*	2.02	.159	1.09
Living together no marriage is wrong	o	.267	1.24	.086	0.35	.027	0.10
I feel I have a number of good qualities	o	-.247*	2.23	-.094	0.75	-.076	0.53
I certainly feel useless at times	o	.322**	3.12	.208	1.85	.120	0.93
I am a likeable person	o	-.038	0.29	.006	0.04	.207	1.28
I am inclined to feel I am a failure	o	.590**	5.43	.348**	2.97	.210	1.54
At times I feel I am no good at all	o	.211*	2.11	.102	0.95	.002	0.02
Self-esteem scale	r	-.537**	3.72	-.281	1.80	-.106	0.61
Happy with your school work?	o	-.100	0.92	.057	0.46	.071	0.50
Happy with your appearance?	o	.233*	2.17	.234*	1.98	.328*	2.38
Happy with your family?	o	.311*	2.45	.275*	2.02	.279	1.83
Describes how you feel about your life?	o	.063	0.53	.121	0.91	.258	1.74
Leave school when you are 16?	b	1.010**	5.77	.658**	3.34	.296	1.34
Not want to be a parent	b	.356*	2.03	.122	0.64	-.314	1.53
Not want to marry	b	.440*	2.45	.094	0.48	-.205	0.95
At what age want to get married?†	r	-.430	1.70	-.330	1.19	-.682*	2.06
What age would like to start a family?†	r	-.610*	2.24	-.149	0.49	-.280	0.82
Last week, hours spent working for pay?‡‡	b	-.206	1.56	-.342*	2.39	-.253	1.52

† child controls: gender, age, year of birth

†† parent controls (1): family structure, mother's and father's education, mother's and father's age, region of residence (mode replacement)

(2): as (1) plus number of persons in the household and employment status of father and mother (mode replacement)

‡ Ordered logit [o] binary logit [b] OLS [r]

‡‡ Waves 5-9 only

* p<.05 ** p<.01

Table B.6 Robustness checks: Effect of lagged current poverty indicator (wave *t*-1) on current adolescent outcomes (wave *t*), all covariates are measured in wave *t* – pooled data waves 5-9

		+child (a)		+child +parent(1) (b)		+child +parent(2) (c)	
	Type‡	Coeff.	|t-ratio|	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Times had friends round to your house?	o	-.039	0.34	-.119	0.94	.039	0.29
How often played truant from school	o	.360	1.71	.085	0.34	-.059	0.23
Suspended/expelled from school	b	.670*	2.51	.223	0.70	.192	0.57
How dangerous is smoking few cigarettes?	o	.291	1.85	.134	0.76	-.126	0.61
Generally health is a matter of luck	o	.454**	3.63	.300*	2.32	.163	1.15
How many days have you felt unhappy?	o	-.185	1.70	-.203	1.75	-.184	1.48
Past week - nights lost sleep worrying?	o	-.241	1.80	-.278	1.81	-.217	1.30
I feel I have a number of good qualities	o	-.302*	2.57	-.125	0.95	-.072	0.51
I certainly feel useless at times	o	.219*	2.11	.107	0.95	.051	1.42
I am a likeable person	o	-.132	1.05	-.052	0.39	.044	0.32
I am inclined to feel I am a failure	o	.527**	4.64	.319**	2.61	.241	1.87
Happy with your school work?	o	-.215*	2.35	-.090	0.74	-.071	0.55
Happy with your appearance?	o	.191	1.79	.211	1.78	.299*	2.28
Happy with your family?	o	.143	1.21	.137	1.08	.107	0.79
Describes how you feel about your life?	o	-.001	0.02	.030	0.25	.155	1.21
Not want to be a parent	b	.361	1.84	.214	1.02	-.035	0.15
Not want to marry	b	.497**	2.64	.301	1.44	.039	0.17
Leave school when you are 16?	b	.967**	5.81	.773**	3.94	.525*	2.49
Last week, hours spent working for pay?	b	-.028	0.23	-.106	0.81	.126	0.86
Self-esteem scale	r	-.485**	3.29	-.228	1.42	-.124	0.76

† child controls: gender, age, year of birth

†† parent controls (1): family structure, mother's and father's education, mother's and father's age, region of residence (mode replacement)
(2): as (1) plus number of persons in the household and employment status of father and mother (mode replacement)
The time-varying controls are measured in wave *t* (at the same time as the outcome, but one period after the measurement of poverty status)

‡ Ordered logit [o] binary logit [b] OLS [r]

‡‡ Waves 5-9 only

* p<.05 ** p<.01

Table B.7 Robustness checks: Effect of lagged current poverty indicator (wave *t*-1) on current child outcomes (wave *t*), all covariates are measured in wave *t*-1 – pooled data waves 5-9

		+child		+child +parent(1)		+child +parent(2)	
	Type‡	Coeff.	|t-ratio|	Coeff.	|t-ratio|	Coeff.	|t-ratio|
Times had friends round to your house?	o	-.036	0.31	-.108	0.84	.044	0.31
Played truant from school	o	.363	1.72	.058	0.24	.062	0.24
Suspended/expelled from school	b	.679*	2.56	.295	0.95	.352	0.98
How dangerous is smoking few cigarettes?	o	.297	1.89	.126	0.71	-.219	1.03
Generally health is a matter of luck	o	.450**	3.59	.285*	2.19	.195	1.27
How many days have you felt unhappy?	o	-.187	1.72	-.188	1.64	-.155	1.20
Past week - nights lost sleep worrying?	o	-.240	1.79	-.211	1.42	-.157	0.91
I feel I have a number of good qualities	o	-.303*	2.58	-.162	1.23	-.142	0.98
I certainly feel useless at times	o	.222*	2.13	.123	1.11	.107	0.85
I am a likeable person	o	-.132	1.05	-.118	0.90	.041	0.28
I am inclined to feel I am a failure	o	.525**	4.62	.337**	2.79	.294*	2.18
Happy with your school work?	o	-.247*	2.31	-.061	0.51	-.077	0.56
Happy with your appearance?	o	.191	1.79	.212	1.80	.264	1.85
Happy with your family?	o	.145	1.22	.066	0.53	-.020	0.15
Describes how you feel about your life?	o	.000	0.01	.029	0.25	.116	0.85
Not want to be a parent	b	.359	1.83	.181	0.86	-.158	0.64
Not want to marry	b	.502**	2.66	.242	1.17	-.176	0.72
Leave school when you are 16?	b	.957**	5.74	.764**	3.86	.569*	2.55
Last week, hours spent working for pay?	b	-.031	0.25	-.074	0.57	.189	0.27
Self-esteem scale	r	-.486**	3.30	-.272	1.72	-.212	1.22

† child controls: gender, age, year of birth

†† parent controls (1): family structure, mother's and father's education, mother's and father's age, region of residence (mode replacement)
(2): as (1) plus number of persons in the household and employment status of father and mother (mode replacement)
The time-varying controls are measured in wave *t*-1 (at the same time as the measurement of poverty status)

‡ Ordered logit [o] binary logit [b] OLS [r]

‡‡ Waves 5-9 only

* p<.05 ** p<.01

APPENDIX C ADDITIONAL INFORMATION ON THE BHPS SAMPLES OF YOUNG PEOPLE

This appendix contains some information about the BHPS samples, which are discussed in the text but are not presented there for simplicity.

Table C.1 Means of variables used in the analysis of the BHPS samples

Variable	Main Sample (*N*=1,787)	Restricted Sample (*N*=1,316)
Female	0.470	0.473
Age (years)	22.062	20.667
Age group:		
16 (base)	0.078	0.106
17	0.089	0.121
18	0.083	0.107
19	0.091	0.112
20	0.091	0.106
21	0.089	0.102
22	0.082	0.093
23 and more	0.397	0.253
Year of birth – 1900	76.547	78.223
Age of mother at birth:		
≤ 21 years	0.118	0.119
22 – 34 (base)	0.833	0.840
≥ 35	0.049	0.041
Age of father at birth:		
≤ 21 years	0.036	0.038
22 – 34 (base)[a]	0.873	0.883
≥ 35	0.091	0.079
Ever lived in a non-intact family	0.249	0.261
Ever lived in a non-intact family when aged:		
0-5	0.107	0.114
6-10	0.078	0.087
11-15	0.063	0.060
Mother's education:		
No qualification (base)	0.301	0.273
Less than O level (or equivalent)	0.103	0.102
O level (or equivalent)	0.202	0.204
A level (or equivalent)	0.071	0.078
Higher vocational qualifications	0.245	0.258
University and higher degrees	0.078	0.085
Father's education:		
No qualification (base)[a]	0.473	0.483
Less than O level (or equivalent)	0.053	0.045
O level (or equivalent)	0.116	0.112
A level (or equivalent)	0.076	0.077
Higher vocational qualifications	0.205	0.202
University and higher degrees	0.077	0.081

continued

Table C.1 Continued

Variable	Main Sample (*N*=1,787)	Restricted Sample (*N*=1,316)
Number of brothers	0.903	0.911
Number of sisters	0.804	0.801
Only child	0.072	0.067
Firstborn	0.360	0.369
Missing father's work history information	0.167	0.162
Missing father's information	0.296	0.331

N is the number of young adults.

[a] Includes cases with missing father's information.

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