Centre for Longitudinal Studies

CLS Cohort Studies

Working Paper 6

Unequal Entry to Motherhood and Unequal Starts in Life: Evidence from the First Survey of the UK Millennium Cohort

Denise Hawkes
Heather Joshi
Kelly Ward

November 2004

First published in 2004 by the
Centre for Longitudinal Studies
Bedford Group for Lifecourse and Statistical Studies
Institute of Education, University of London
20 Bedford Way
London WC1H 0AL

website: www.cls.ioe.ac.uk

ISBN 1 898453 51 9

The Centre for Longitudinal Studies (CLS) is one of five centres that comprise the Bedford Group for Lifecourse and Statistical Studies (www.ioe.ac.uk/bedfordgroup).

CLS is devoted to the collection, management and analysis of large-scale longitudinal data. It has responsibility for Britain's internationally renowned birth cohort studies, the National Child Development Study (1958 cohort) and the 1970 British Cohort Study, and leads the consortium conducting the ESRC's Millennium Cohort Study.

Unequal Entry to Motherhood and Unequal Starts in Life: Evidence from the First Survey of the UK Millennium Cohort

Denise Hawkes, Heather Joshi* and Kelly Ward

Centre for Longitudinal Studies, Institute of Education, University of London
20 Bedford Way, London, WC1H OAL, UK

CLS Cohort Studies Working Paper No. 6
November 2004

* Author for correspondence: hj@cls.ioe.ac.uk

Acknowledgements
The authors would like to thank the parents of the Millennium Cohort children for their co-operation in producing the data set analyzed here, the funders of the survey - the Economic and Social Research Council and a consortium of UK Government Departments led by the Office of National Statistics, and our colleagues in the Millennium Cohort team at CLS for the teamwork that goes into the creation of this data resource. Further details about the Survey and public access to it can be found at http://www.cls.ioe.ac.uk/Cohort/MCS/mcsmain.htm. Earlier versions of this paper were given at the 2004 conferences of the European Society for Population Economics and of the British Society for Population Studies. It was also presented at seminars at Harvard and Princeton Universities. Comments from these audiences have been appreciated, as would further comments from readers of this working paper.

INTRODUCTION

The timing of childbearing is of interest as it affects the rate of population replacement. A trend towards delaying first births towards age thirty is a common feature of the decline in fertility rates in developed countries at the end of the twentieth century (Gustafsson 2001, Lestaeghe 2001, Sobotka 2004, for example). It is also of particular interest in those countries, such as the US and UK where early childbearing is still relatively common (Chandola et al 2002), for its socio-economic covariates (Ekert-Jaffé et al 2002, Rendall et al 2004). Least advantaged women still tend to have children earlier and the most advantaged to defer childbearing. This social polarization in the age at motherhood has emerged in Britain as the trend towards later childbearing in the last three decades of the century has affected various social groups differentially, and has differential consequences. This paper examines the diversity of the characteristics and circumstances of a large sample of British mothers at the start of the twenty-first century, with a view to exploring and interpreting the socio-economic profile of the age at motherhood.

There are many studies of the socio-economic determinants of the timing of motherhood (e.g. Rendall and Smallwood (2003), Ermisch and Pevalin (2003a), Rendall et al 2003, Rendall et al (in submission), Kiernan (1992, 1997)). In particular, early teenage motherhood is associated with exclusion from both employment and education (Bynner & Parsons 1999). Much has been written about the consequences of entering motherhood early or late not only in terms of outcomes for the mother herself but also for the child, the father and the state (Social Exclusion Unit 1999, US evidence can be found in

Maynard 1997). Cross sectional studies tend to find larger estimates for the potential adverse effects of early motherhood on various adult outcomes than sibling/twin data and longitudinal data which can better control for confounding factors. However a common theme in more recent work appears to be that early motherhood may not itself cause the associated problems. Work by Ermisch and Pevalin (2003b) on the British birth cohort of 1970 (using data on miscarriages to identify the direction of causality) suggests that a teen birth had little independent effect on a woman's qualifications, employment or earnings when she is 30 years old. Work on sisters for the US (Geronimus and Korenman 1992) and twins for the UK (Hawkes 2003) also suggest that early motherhood is strongly associated with poor family background. The effects of entering motherhood early on household income and educational attainment are much smaller. However Ermisch and Pevalin (2003b) do find that the lower employment and educational attainment of any partner present when a teen mother is 30 can be attributed to an adverse outcome in the 'marriage' market, and a companion paper to Ermisch and Pevalin (2003b) finds another independent effect of early motherhood on a woman's mental health (Futing Liao 2003). Early entry to motherhood maybe little more than a signal of a disadvantaged family background which is then the real driver in the subsequently observed poorer adult outcomes for the mother, and consequently her children. On the other hand, early motherhood, in the early twenties as well as the teens, may compound pre-existing disadvantages, setting these families apart from those where childbearing has not started until the late twenties or beyond.

The timing of motherhood, early or late, may be the outcome of a deliberate strategy or it may be unintended, early because of unplanned pregnancy, or late because of unplanned infertility (or unanticipated absence of a suitable partner). Probably each type of account applies to some individuals (Allen & Bourke Dowling, 1998, Wellings et al 1996, Hewlett, 2002). Prejudices about teenage mothers are widespread, poorly informed and especially when held by professionals supposed to be offering support to these families, can be part of the compounding of problems the youngest mothers face (YWCA 2004). Whether early motherhood constitutes a rational choice in the face of limited alternatives in education or employment, or a lack of planning and poor information, any differential outcomes for families started early and late are certainly not chosen by the child. Whatever its cause, young age at motherhood could be viewed as a signal of disadvantage on a number of fronts, including consequences for the children (Pevalin 2003).

We investigate how far early motherhood is associated with low initial resources and how far later motherhood is associated with economic advantages and the accumulation of the woman's human capital. Do the apparent advantages of delaying motherhood extend up to the biological limit? If mothers starting their families in their late twenties are better off than those starting sooner? Does this also apply to postponing motherhood still further into the thirties? Are the particularly late entrants to motherhood particularly advantaged initially and do their current circumstances suggest they and their families gain economic advantages from delay?

The implications of these associations are not only for the mother but also for the next generation. As the established British birth cohort studies have shown (Blanden et al (in press) Gregg et al 1999, Feinstein 1993, Bynner, Joshi and Tsatsas 2000, Ferri et al 2003, Hobcraft 1998, Hobcraft & Kiernan 1999), being born into an advantaged or disadvantaged family may affect their own experience of childhood and prospects in later life.

This paper uses the new national birth cohort study, the UK Millennium Cohort Study (MCS). It offers a child's perspective on the timing of motherhood. As a survey of children, it cannot account for women who have not (yet) had children, nor can it yet trace second generation outcomes, as data is only at present available from its first round, but it does provide an excellent source in which to consider the great diversity among those who have become mothers according to the age at which they did so. Some family background influences on early (or late) entry to motherhood can be distinguished and associated with the diverse current circumstances of families with young children. MCS has surveyed information from 18,553 families (18,819 children) born in the UK over a year in selected electoral wards. The wards were disproportionately sampled to over-represent areas of high child poverty, concentrations of ethnic minorities and the three smaller countries of the UK – Scotland, Wales and Northern Ireland. The first survey took place when the children were 9 months old during 2001-2 (Shepherd et al (2003), Smith and Joshi (2002)). The first follow-up at age 3 is currently (2004) in the field. Surveys of the children at age five and seven are being actively planned, follow up into adulthood is intended, in the path of the previous national birth cohort studies.

In earlier work on the cohort in Scotland Joshi and Wright (2004) showed a consistent association of age at motherhood with large range of variables recording education, partnership, employment, occupation, income, neighbourhood, housing, the plannedness of the cohort pregnancy, infant feeding, mother's mental health and subjective well-being. This paper documents, in greater detail, how the disadvantages of the earlier starters also apply in the rest of the UK, and provides an examination of degrees of delay beyond age 30, finding little evidence of advantages accumulating when motherhood is postponed beyond a certain point.

After presenting cross tabulations in which a number of variables are ranked by age at motherhood, this paper undertakes two strands of multivariate analysis. The first strand considers some observed variables, which may help to explain the age at which the mothers had their first child. The second strand considers age of motherhood as a predictor of the current circumstances of the mother and her child(ren) when the cohort member was nine months old. Selected outcomes studied are: current partnership status, partner's earning status, own earning status, on means tested benefits, equivalised household income, life satisfaction and depression. We control first for the identifiable set of characteristics used in strand 1 which we treat as pre-dating the entry to motherhood, and then include a number of correlates describing current or intervening circumstances, whose causal connection with the age at motherhood and the outcome is less easy to disentangle. These correlates include educational attainment and current location, and as the models build up, some of previously analysed outcomes. Thus

presence of a partner and his qualifications help to explain family income, and family income helps to explain life satisfaction. These are still no more than descriptive accounts, but we do discuss how far the additional variables in the fuller model may be consequences of the timing of motherhood, and how far they may reflect other unmeasured factors which encourage early or delayed motherhood, drawing on the results of other studies.

THE SOCIAL PROFILE OF AGE AT MOTHERHOOD: SOME DESCRIPTION

Our analysis draws on all the natural mothers in the survey for whom it is possible to determine age at entry to motherhood (n = 18,517). In nearly 6 out of 10 cases (58%), it was with a previous child than the cohort member. Table 1 shows that 28.5 percent of the mothers had entered motherhood at age 21 or less, and 40% at or over age 28. The proportion of 'delayers' is higher among the subset of mothers who were having their first child in 2000-1, reflecting the trend towards later first births. However the proportion of delayers is lower in the unweighted samples underlying the analysis because younger mothers are over-represented in the disadvantaged and ethnic areas which were over-sampled in the survey. We present the results for the full sample (all birth orders), not just those mothers whose cohort child was their first, since the relationships we detected between age at motherhood and other covariates were very similar regardless of whether the cohort child was the first born.

The cohort mother's age of motherhood has been derived from the data obtained from her responses to the MCS first survey. Entry to motherhood is defined as the age at which

the mother had her first live birth of a child who had ever lived with her. Hence any births which were reported as having been given away in adoption or previous still births are not counted. The youngest group of teenaged mothers, who form the reference category in regressions, were mostly aged 17 or 18 at the time of their first birth (n = 836 and 1180 respectively). Sample numbers at ages up to 15 were 146, and at age 16, 383. The oldest age group shown in table 1, those aged 31 or over are mostly in their early thirties. This group is split further in the regressions into those aged 31-33 (n = 1894), 946 aged 34-36 and 409 aged 37 or more (of whom 93 were 40 or over).

Table 2 gives a few indications of the demographic characteristics of the cohort families by mother's age at first birth, excluding only 27 families where the informant was not the cohort child's natural mother, and 9 families where it was not possible to infer her age at first birth. At the time of the survey, not necessarily the situation at the first birth, 14% of the mothers were living without a partner. There is a near ten-fold difference in the proportion of youngest and oldest entrants to motherhood who were 'lone mothers' at the time of the survey – 39% where the first child had been born before the mother was 19 compared to 4.3 percent where she had been 31 or more. This is partly because early childbearing is more likely to be unpartnered, and partly because of the greater fragility of early partnerships. Where there is a two parent family, the chances of the couple being married rises with age at motherhood, as do the (high) chances of the mother's partner being the natural father of the cohort child. Reconstituted families are most common among mothers who started early. 22% of cohort children with a mother whose first child was born before age 19 had half or step siblings in the family compared with around

3% of families who started aged 31 or more. The cohort child at age 9 months were not often themselves living with a step-father, but the minority who did so were most likely to have mothers who started young. The minority of children living with their grandparents is highest where mothers had their first child up to 18.

The indications, so far, of more lone mothers among the early mothers helps account for their over-representation in disadvantaged circumstances summarized in table 3 showing indicators of current economic position by age at motherhood. 67% of the current or erstwhile teenaged mothers (up to 18) are estimated to be below the closest Britain has to an official poverty line (60% of a national estimate of median net family income) compared with 7.5% of those entering motherhood at or over 31. Another indicator of the family's financial circumstances is claiming at least one of the four means-tested benefits that approximate the criterion used to stratify local areas in the sampling. This puts 35% rather than 28% of the sample into the low income category, but there is still a corresponding reverse gradient in the chances of claiming benefit as age of motherhood rises. The mothers' subjective account of their financial situation follows a similar pattern. Overall just over one third of the mothers say they have some financial difficulties, a proportion which falls with age of motherhood, but the age gradient is not as steep as for claiming means-tested benefits. The youngest mothers are less likely to say they experience financial difficulties (52%) than the claim means tested benefits (76%). The latest mothers (31+) while less likely to report current difficulties than the early mothers are more likely to claim subjective distress (25%) than means tested benefits (12%).

A major reason for the age pattern in financial circumstances is the age at motherhood pattern in the chances of the woman or her partner being employed. Thus the early mothers, if in a couple, are most likely to be in a 'workless couple', and least likely to have full-time employment 9 months after the cohort child was born.

Table 4 shows a selection of indicators of the living environment at the time of the survey. The early mothers are most likely to live in council accommodation, in a flat rather than a house, and are least likely to have access to a garden. They are also most likely to complain about the quality of the neighbourhood. The majority of those who started childbearing under 21 are currently living in the ethnic or other disadvantaged neighbourhoods, (around 6 in 10) compared with around one quarter of the two eldest groups.

Some of these profiles will be analysed in the next section. The others illustrate some of the many ways in which material conditions happen to vary systematically with age at first birth. The similarity, not shown, of the relationships where the first birth had taken place only nine months before the survey and those where it occurred some years previously suggests that the disadvantages associated with early motherhood persist into later stages of family formation.

Table 5 presents some glimpses of further information about the pregnancy and its outcome which is also not explicitly included in the modelling which follows. We

suggest that the extent to which the mother planned the timing of her birth is relevant to the interpretation of the associations shown in the previous tables, and can be inferred from answers to questions about whether or not the cohort birth was a surprise. 42% of mothers having a first child in the survey said their pregnancy was a surprise. This proportion is greatest for the youngest, 87% (under 19) and 76% (19-21), though there were still 23% of the oldest group who were surprised. The impression that women having births early are less likely to be planners is supported by looking at the whole sample and relating the surprise status of the cohort baby to age at first birth. Table 5 also show that early mothers were less likely to breastfeed (fewer than half those having their first child at or under 18 did so, compared to 89% of those aged 31 or more – with a gradual increase over intermediate ages). We also report a positive gradient in the birthweight of first babies as the age of mother increases, at least up to the late twenties. The 75 gram gap between the weight of first children born to the women who entered motherhood under 18 and those who were 29-30 represents 1.3 standard deviations of this birthweight variable. This suggests there is still evidence (and analysis) to build up about the consequences for children of the timing of motherhood – a complex story of interrelationships between the social and economic resources of parents, parenting, child development, social exclusion and prejudice of which this paper is only offering one building block.

MULTIVARIATE METHOD

Strand one considers some of the possible correlates of age at motherhood from the early life experience of the mothers of the cohort members. This analysis estimates the following equation:

$$agemoth = \alpha + \beta antecedent + \varepsilon$$

where *agemoth* is the age at first motherhood grouped in three year age groups, α is the constant, *antecedent* are those variables which are determined before the birth of the child and ε is the residual. As the MCS dataset focuses on the cohort child itself, its current family life and wider environment there is relatively little information on the early life experience of the cohort member's mother. The antecedent variables we can observe consist of the mothers' ethnic group (recorded as seven dummy variables), whether her parents separated or divorced before the birth of the mothers' first child and whether she had experienced anytime in care as a child. We also treat leaving school at the compulsory school leaving age (16 – or 15 for the few born before 1958) as antecedent, even though in a few cases motherhood may have precipated school leaving. This variable may not be as appropriate to those who have undertaken their education outside of the UK as those who were educated in the UK. However it does still provide a measure of attendance in education post 15/16 for all. In most cases we could possibly also have treated the level of educational qualifications attained as antecedent to motherhood, given the results of Hawkes (2003) and Ermisch and Pevalin (2003b), but here we have been more cautious and included this element of educational history as possibly determined concurrently or consequent upon family formation. In addition for the sub sample of mothers, for whom the cohort member was their first child, additional

variables (on region and area type) can be included as antecedent variables, particularly for those who have not moved since birth. As we treat the dependent variable as an ordered discrete variable, we use an ordered probit estimation.

Strand two attempts to consider some of the possible associations between adult outcomes at the time of the cohort child being nine months old and age at motherhood. It is worth noting that the cohort child may not be the first child in the family and therefore some of these mothers may have entered motherhood at some years prior to the interview. The model will attempt to unpack some of the possible consequences of entering motherhood at various points in the life course. Strand two estimates the following equation:

$$outcome = \alpha + \beta agemoth + \delta antecedent + \gamma contemporary + \nu$$

where *outcome* is one of eight adult outcomes considered including the presence of a partner, equivalised household income and mother's life satisfaction. As before, α is the constant, *agemoth* is the age at first ever motherhood grouped in three year age groups, *antecedent* are those variables which are determined before the birth of their first child, ν is the residual while in addition *contemporary* are subsequent and contemporary covariates. The antecedent variables are as described in strand one while the contemporary variables include qualifications, which may have been gained after compulsory school leaving, region of residence, and longstanding illness (in some case a fourth model includes details of a partner's qualifications and health, or the level of equivalised net family income). Once again either an ordered probit or probit estimation method is used. Age at first motherhood is unlikely to have a linear impact on many of

these covariates and so is entered as seven dummy variables of three year age groups. The omitted category is those who entered motherhood up to the age of 18.

For each of the eight outcomes at least 3 models are estimated. Model one includes just the age at motherhood terms to establish an unadjusted age profile, model two includes the antecedent variables and models three (and in some cases four) also include subsequent and contemporary variables. All of the regressions allow for the weighting clustering and stratification of the sample design.

RESULTS

Strand one: Analysis of age of motherhood

Table 6 analyses age at motherhood in terms of our measure of antecedent circumstances, and for the women having their first child some measures of their current location. The first panel shows that age at first motherhood is associated negatively with family breakdown in the previous generation, with having been in care, with leaving school at/before the compulsory school leaving age and with all ethnic groups other than White and 'Other'. Bangladeshis and Pakistanis have the earliest births. Similar results are obtained if we restrict the sample to those who have given birth for the first time in 2000-1 (but those from the Black Caribbean and Black African groups are no longer significantly earlier than the Whites). Extending this model on the sub sample to include information on current location (panel 3) shows a significant association of early motherhood with living in disadvantaged and ethnic areas. Most of the negative ethnic effects disappear in this extended model except those for Pakistanis and Bangladeshis,

suggesting an ecological influence as important as, or more, important than individual characteristics in generating the differential fertility we observed. The ecological terms also moderate the impact of the other antecedent variables. We interpret this as reflecting the influence of poor labour market prospects in precipitating early motherhood. We attempted to allow for regional variations, after flagging those cases that had moved home since the first birth, and found no significant difference except for a tendency to earlier births in Wales and Northern Ireland. Those families who had moved since a first birth are unlikely to have moved region, but they are strongly over-represented among the younger first-time mothers. Their mobility is more likely to be an outcome than an explanation of their childbearing. However omitting the mobility indicator does not affect the pattern of the results. The cut of points for each set of results show a similar pattern. The distance between the cut of points are larger for those in the youngest groups and the oldest groups and relatively constant across those who enter motherhood in their mid twenties/early thirties.

It is also debatable whether leaving school at the minimum age is a precursor of early motherhood for those who first child was born before or at that age. As a preliminary investigation we excluded 528 such cases in panel 1 (all birth orders) and 169 in panels 2 & 3 (first births only), but the resulting estimates were little changed. When data on immigration history becomes available we will be able to investigate also how many of these very early first births occurred overseas. In addition we shall be able to adjust the compulsory school variable for those educated outside UK for those educated outside the UK.

Strand two: Age of mother as a predictor of economic circumstances

Table 7 considers the presence of a partner at interview, the obverse of lone motherhood. This indicator mostly reflects processes of partnership dissolution, although un-partnered motherhood, where it occurs, is also more likely amongst younger women as shown in the data on lone mothers who had never lived with the cohort child's father in table 2 above. The first model of table 7 considers just the pattern by age at first motherhood also evident in the first row of table 2. Relative to those who entered motherhood up to 18 years of age, all the other groups are more likely to have a partner at the time of the MCS survey. However this is not a linear pattern, positive terms increase up to the age of 31 – 33, but later mothers, at 34 onwards, have less of a positive chance of being partnered. If there is a positive effect of delaying motherhood on the chances of being in a two-parent family at the time of the interview, it would appear to tail off at the highest ages.

In model 2 we include the antecedent variables. The inclusion of these antecedent variables reduces the age at motherhood terms in all cases; but the pattern remains, with those who entered motherhood at 31 – 33, still most likely to have a partner. The terms for ethnic group reflect the contrasting family structures of communities from the Indian subcontinent (more likely than whites to be married) and of the two Black groups, less likely to be partnered. In model 3 we include variables describing the current situation. The age at first motherhood terms are reduced further in size but the relative pattern of the coefficients on the 3 year age bands and their statistical significance remain. This

model shows that partnership is more common among women with recent employment experience and higher qualifications, (especially nvq 4 and 5, graduate and postgraduate level qualifications), and those living in more advantaged areas. It is also marginally less common in the three 'Celtic' countries. It is clearly debatable whether the avoidance of lone motherhood is necessarily the outcome of all these other contemporary factors, but at least the model documents an association.

Table 8 looks only at those with partners (and information from them), and considers the partner's employment status. This was one of the adverse consequences of early motherhood, working through the 'marriage market', suggested by Ermisch and Pevalin (2003b). The first model once again sets out the pattern if age at first motherhood is considered alone. There is a strong positive association with delaying motherhood up to age 28 – 30, reaching a plateau through the early thirties, falling somewhat for the oldest entrants. The second model includes the antecedent variables; this again reduces all of the coefficients but maintains the overall pattern. Women with less advantaged family backgrounds or who left school at the minimum age are more likely to have partners who are out of work. All the ethnic terms are negative, reflecting the higher rates of unemployment among fathers in the minority ethnic groups (based throughout on the mother's ethnic group). Model 3 introduces the contemporary variables entered in table 7, and model 4 also includes information on the partner's qualifications and longstanding illness. These also reduce all of the coefficients on the age at first motherhood, but only marginally, maintaining the pattern and significance. Delaying motherhood still appears to increase the probability of any partner being employed, up to the 28 – 30 age band

which may indeed be a result of increasing bargaining power on the marriage market. But it is also associated with the set of variables introduced in these models. Recently employed and educated women living in advantaged areas are more likely to have employed partners, though the association with their own qualifications is weakened when the partner's qualifications are included (Model 4). The inclusion of area type in Models 3 and 4 probably accounts for the weakening of the ethnic effect on unemployment. Model 4 also shows, not surprisingly, that partners with a longstanding illness are less likely to be employed.

Table 9 considers the employment of the mother at interview. The first model shows that the later mothers are more likely to be in the labour market than the younger mothers and this increases monotonically with age. Rather than peaking around 30, the increase continues strongly across the 30s. Model 2 includes the antecedent variables which reduces all the effects slightly but maintains the pattern. Women with disrupted families in childhood, or who left school early are less likely to be employed, as are those in most ethnic minority groups except Black Caribbean. In model 3 the age pattern is also largely maintained with much smaller coefficients on age at motherhood, mediated by the battery of current circumstances and highest qualifications. Women with high qualifications, no longstanding illness and living in less disadvantaged areas The term registering the number of other children in the family has the expected negative sign, but the presence of a partner has a positive coefficient. Since lone motherhood is age-at-motherhood related, the inclusion of this term helps to moderate the otherwise unexplained age pattern. The combination of qualification and location information reduces the negative ethnic group

terms (and also the effect of having left school early). These models reflect, without completely explaining, the low employment rates of lone mothers even after government policy sought to encourage it through measures such as the National Childcare Strategy, Working Families Tax Credit and New Deal for Lone Parents. Note the higher propensity of mothers in the three Celtic Countries to be employed. This contrasts with the negative terms for partners' employment in Scotland and Wales.

Table 10 considers one binary measure of low income: those on means tested benefits the four benefits involved are as close as possible to those used to rank areas for the stratification of the sample, but include benefits available somewhat higher up the income scale than the 60% line. It covers to whole sample for which the data are available, 15,819 cases, including both lone mothers and those in partnerships. The chances of receiving means-tested benefits fall with rising age at motherhood and reach a floor for those aged 31 or more. Including the antecedent variables reduces the effects while maintaining the order in model 2. Including the current variables also roughly halves these original estimates but maintains their significance and order. The high propensity of earlier mothers to be on benefits is partly explained by their childhood circumstances, their lack of qualifications and employment, the poor employment and education of their partners if they have any, and where they live. The ethnic differentials apparent in model 2 seem to be mostly accounted for by the contemporary variables, possibly the ethnic area term.

Table 11 analyses another binary indicator of low income, being below 60% of median income threshold used in the official 'child poverty statistic' and for MCS data by Bradshaw and Mayhew (forthcoming). The sample of 14,723 of those with non-missing data is a bit smaller than table 10. The age profile of being below the 60% threshold reaches a minimum for those entering motherhood between 31 and 33. The small contrast with table 10 at the highest ages is within estimated margins of error. While the antecedent variables are also predictive of being below the poverty line they make only a modest contribution to explaining the age-at-motherhood profile in 'poverty'. The more recent variables in models 3 reduce the age of motherhood terms by more than half. The extra information about the partner in model 4 makes only modest further differences, so that the otherwise unexplained association of age at motherhood with this poverty indicator is still significant for all age groups except for those 19-21. The association with childhood factors is more reduced than in table 10. However the individual ethnic differentials are larger and more robust for having income below the 60% threshold than for claiming means tested benefits. However the ethnic area is more significant for means tested benefits than for being below the 60% threshold. Nevertheless the message from these two attempts to classify objective poverty is that we can say that early mothers are more likely to be 'poor' than those who deferred to their mid twenties or thirties partly because they have less education, more older children, fewer employed partners, less employment themselves, live in less advantaged areas, are somewhat more likely to have (or to have partners with) a longstanding illness and are more likely to belong to ethnic minorities.

Table 12 expands the analysis of table 11 to include four income groups, rather than two, using the rather crudely measured grouped income data also adjusted for family composition using the same equivalence scales as used in official Statistics in the same period as the data was collected (DWP, 2000-2001). The pattern observed is the familiar one with the probability of a higher income reaching a plateau at age of motherhood at 31- 33 but displaying the steepest profile in probabilities of the variables considered here. With more information about high incomes the higher levels of qualification have more explanatory power. Again, the antecedent and contemporary factors help to explain variations in income but do not eliminate a significant independent association with age at motherhood.

Table 13 considers our first measure of mother's well being that of her life satisfaction. The survey asked the mother to record 'satisfaction with your life so far' on a scale from 1 to 10 where 1 was completely unsatisfied and 10 completely satisfied. For this analysis we have taken as an indicator those who are satisfied with their life as those recording at least 7 on this scale. Delaying motherhood to the age of 33 appears to improve life satisfaction while further delay does not go on adding further improvements. The age contrasts are however of a smaller order of magnitude than in income, employment or partnership. Both the antecedent and contemporary factors help to moderate these effects. However including income helps to explain much of the difference in life satisfaction, but not all, as those who entered motherhood between 25 and 33 remain significantly more satisfied with their life than those starting early or late. In addition in general those who experienced family breakdown or lived in care, and those from the

Indian ethnic group are consistently less satisfaction with their life currently while those who were employed during pregnancy, those with higher education, those with smaller numbers of children, those without illness and those with a partner are consistently more satisfied with life. These effects also survive when income is included.

Table 14 considers another measure of the mother's well being, or mental health, in terms of malaise. The survey used an abbreviated (9 item) version of Rutter's Malaise Inventory (Shepherd et al 2003). We took as an indicator of depression scoring at least three adverse symptoms out of nine. Once again delaying motherhood appears to reduce malaise. However this peaks at 31 - 33 and the differentials are smaller than most of the variables considered earlier. Including antecedent disadvantages (mostly significantly associated with malaise) accounts for much of this gradient, finding malaise only significantly different for those entering motherhood aged 25- 33. Including the current factors without income reduces the age terms substantially, and in Model 4 malaise is well predicted by low income, low qualifications, lack of partner, large family size, being Pakistani or Indian, and in contrast to the life satisfaction model, living in a disadvantaged area. Once all this is taken into account there is no significant differences (at the 95% level) by age at first motherhood, we have more insight into why this outcome varies across women who start motherhood from their teens to their early thirties, and material resources play a clear role in subjective wellbeing. If one wishes to argue early motherhood has non-pecuniary compensations it would be necessary to say that their well-being in the counterfactual condition of delayed motherhood would have been even more inauspicious.

CONCLUSIONS

The social differentials between mothers who started childbearing at different ages have been examined in terms of some characteristics which are likely to predate family formation, such as family of origin and ethnic group; and those which may either pre-date or also be the consequence of delaying, or failing to delay motherhood, such as qualifications, current family composition and location. This is still not an exhaustive account of material in all the domains covered by the first survey. The Children of the New Century have unequal starts in life associated with inequality in the previous generation and with the age at which their mothers became parents.

The Social Profile of Entry to Motherhood

We find stronger evidence of disadvantages associated with early childbearing than of advantages accumulating with postponing motherhood into the thirties. Both types of variable we considered are generally least favourable for mothers whose first child was born when they were relatively young (before or close to age twenty) compared to those starting families in their late twenties. There is much less difference between this group and those starting families at ages over 30. Although teenage mothers are relatively rare, those starting childbearing up to age 24 also stand out for having some of the distinctive characteristics and experiences of early childbearing. Although more advantaged women avoid early childbearing, those who start very late appear less socially differentiated. (Note that women who are still childless are not observed). Entering motherhood around age 30 is now normal. Early motherhood is more selective than later motherhood. Whilst

the highly qualified are unlikely to have children before their mid twenties, the converse is not true that the less qualified only have births early. Conditional on being a mother at all, there does not seem to be great immediate economic differentials by age at first birth among the minority postponing the first birth into the thirties. The only 'outcome' variable which continued to rise with age at motherhood up to the latest age group was the mother's propensity to be employed. Most other indicators peaked or plateaued around age 30.

Early motherhood

In the analysis of the disadvantages surrounding early motherhood, the factors we treat as antecedent (parents separating in childhood, ever having been in social care as child, leaving school at the minimum age of 16 (or 15) and ethnic group) moderate the association between early motherhood and all of these outcomes, helping statistically, to account for it, but not for all of it. One might conclude from this result that the residual economic disadvantages of early motherhood are not due to earlier disadvantages, but we cannot reach this conclusion as we acknowledge that our measurement of antecedent circumstances is limited, and the unexplained differences remaining by age at motherhood may also reflect unmeasured prior factors as well as adverse consequences.

We have then introduced factors which may be either consequences, antecedents or joint outcomes of other correlates of early motherhood – highest qualifications, country and area of residence, long-term illness, the number of children born subsequently (and in relevant models the presence of and characteristics of a partner). Other studies suggest

that many of these disadvantages, notably low qualifications, are likely to be pre-existing. Their introduction to the models has the effect of further moderating the relationship between age at motherhood and the outcome variables, but not usually eliminating, suggesting a (statistically) independent association between earlier childbearing and the family's living standards not accounted for by measured covariates, which again could be either cause or consequence, but in any case reflects disadvantages for the early starters not otherwise accounted for. This suggests a particular vulnerability of families where the mother had her first child in or before her early twenties in addition to the indicators we have measured.

It is in the analysis of our measures of subjective well being that the age at motherhood differentials are more nearly completely accounted for when family income is included as a covariate. This variable mediates almost entirely the relationship between age at motherhood and our two measures of well-being – mother's life satisfaction and malaise. This suggests that material circumstances are a strong determinant of expressing particularly low life satisfaction, and that if the early mothers had the same incomes as the later mothers they would be no more dissatisfied. This is not surprising, but it is also disappointing, for the strong association of well-being with income suggests that early mothers are not drawing compensating satisfactions from family life and the time they are spending with their child(ren). We do not actually know how much more or less they would have enjoyed life in the counterfactual of having had children later, but the comparison with other, later mothers, suggests that there may be unperceived pitfalls when having a baby is seen as a fast track to love or adult status.

In further exploratory work we have included in the outcome regressions the time between the first birth and the birth of the cohort member to each of the final models presented in strand 2. In all cases the additional variable does not affect the pattern of age at motherhood effects found and therefore does not affect the story presented. Its inclusion produces a significant positive trend for employment of the partner, employment of the mother and net family income group reflecting more positive outcomes for older mothers holding the number of children constant. A significant negative effect is found for means tested benefits, household income being less than 60% of the median and malaise whilst no significant effect is found for the presence of a partner or life satisfaction. This suggests that for a given number of children the larger the gap between the first birth and the birth of the cohort member the more likely that at interview the partner is employed, the mother is employed and the higher the net family income.

Ethnic differentials

This paper has controlled for, but not focused on, the very distinctive family formation patterns (and economic circumstances) of the main ethnic minority groups in the UK. Pakistani and Bangladeshi women have a high propensity to start motherhood young within marriage, and a low propensity to be employed. Black groups tend to show the opposite. Low employment rates of men in all the ethnic minority groups contribute to low incomes. These disadvantages are associated with the areas in which ethnic groups are concentrated, which formed one of the survey strata in England, but the fuller model

still does not account for all the disadvantage of all ethnic groups. We have not investigated the possibility of interactions between age at motherhood and ethnic group; Robson and Berthoud (2003) report these factors to be independent sources of disadvantage, as we assume here.

Area Effects

Living in an area of child poverty or of concentration of ethnic minority settlement is associated with early motherhood and a number of economic disadvantages. The value of a survey such as this one which has information on individual as well as area level disadvantages is that it is possible to see how far the ecological association is attributable to composition or context. The regressions presented here suggest that the individual and ecological terms share explanatory power. On the whole, the area terms have not been reduced to insignificance by the inclusion of individual information, (the exceptions being the absence of a significant estimate for mothers' employment in 'disadvantaged' areas or on malaise in ethnic areas when other variables are included). In some cases the introduction of area terms appears to have moderated the estimates for individual characteristics such as ethnicity. Though this conclusion requires further investigation, it does seem as if the stratification part of the design of the survey is tapping some spatial patterns whereby inequalities are compounded and perpetuated. This paper is largely descriptive and therefore the analysis undertaken is relatively simple. However further work could be undertaken to consider these area effects in more detail. For example, a multilevel model could be fitted to the data to try to directly model the variation by wards (clusters). Secondly more work could be undertaken to consider the ecological

influences found to see if they are genuine effects and to ensure that they are not picking up the effect of a measure of disadvantage not included in the models.

Policy implications

The Millennium Cohort Study was designed to collect information on disadvantaged areas, of interest to policy makers as concentrations of disadvantage, possibly compounded by the fact that disadvantaged families live in proximity. Early motherhood is an analogous state. It collects people whose initial prospects are poor, and tends to compound those poor prospects. Policies may either attempt to discourage people from entering the state, or treat its occupancy as an indicator of need. There is of course concern that one strategy may cancel out the other, but we have little evidence that many early mothers deliberately chose the timing of their first child. It looks as though many may have failed to avoid it, and some have found it rather hard going, so we would expect a policy aimed at the families of early mothers who already exist would not necessarily induce more early motherhood, particularly if complemented with better opportunities for education, training and employment as well as better information about contraception and relationships.

The British Government's Teenage Pregnancy Strategy to halve the rate of childbearing, under age 18 (SEU 1999), would, if feasible, help to avoid some adverse consequences for the mothers and their families, but deferring motherhood would not eliminate the pre-existing disadvantages which characterize these cases, some of which we have identified. Our results also suggest there would be benefits to postponing motherhood by all those

who still start before their mid twenties, although we also point to the pre-existing disadvantages of these mothers too. The chances of a complete shift occurring, right across the board, to later motherhood, would also be increased if the inequalities of opportunity underlying inequalities in age at motherhood were abated, as the Teenage Pregnancy Strategy also recognised (SEU 1999).

If the disadvantages facing women who start childbearing early are purely the result of unintended timing, as many seemed to be, it can be argued that interventions to improve their reproductive control would eliminate these adverse consequences. If on the other hand the disadvantages reflect solely pre-existing disadvantages, a change in birth timing (if feasible) would at best make no difference to the economic outcomes for women whose early childbearing was postponed. If both sets of influences operate they are likely to interact and compound one another. Our evidence is consistent with that from smaller datasets which suggests that both directions of influence operate, and that early motherhood reflects prior disadvantages as well as consequent ones. One implication is to aim interventions at both generations early in the lifecourse, helping support women who do become mothers as well as helping others to delay motherhood, through improved alternative economic opportunities as well as improved contraception and information. The follow-up surveys will show whether the dwindling minority of women who became the popularly demonized 'teenage mothers' in the New Century, under fuller established New Labour Policies, have greater success at escaping from disadvantage than their predecessors in the 1990s.

Looking to the future

The first survey of the Millennium Cohort study is necessarily cross-sectional, but it documents the adverse circumstance of young mothers associated with disadvantages in their earlier lives, with current circumstances and with future prospects for themselves and their child. The prospects for children of earlier mothers will be affected by these differentiated economic circumstances. A foretaste is provided by differentials in their birth weight, and more dramatically in their chances of having been breastfed. Even if age at motherhood may have been a choice for the women, it was not for the children. The follow-up surveys should see whether this snapshot turns into an intergenerational cycle of disadvantage of which early motherhood is a marker.

BIBLIOGRAPHY

Allen, I. and Bourke Dowling, S. (1998), Teenage Mothers: Decisions and Outcomes, Policy Studies Institute, London

Blanden, J., Goodman, A., Gregg, P. and Machin, S. (in press), Changes in Intergenerational Mobility in Britain in Corak, M. (ed), Generational Income Mobility in North America and Europe, Cambridge University Press, Cambridge

Bradshaw, J and Mayhew, E (forthcoming) Poverty and Childbirth in Dex and Joshi Eds(MCS Sourcebook (title and publisher tbc)

Bynner, J. and Parsons, S. (1999), Young People Not in Employment Education or Training and Social Exclusion: Analysis of the 1970 Cohort Study, London: Social Evaluation Unit.

Bynner, J., Joshi, H., and Tsatsas, M. (2000), Obstacles and Opportunities on the Route to Adulthood, The Smith Institute, London

Chandola, T., Coleman, D, A. and Hiorns, R. W. (2002), Distinctive features of age-specific fertility profiles in the English-speaking world: Common patterns in Australia, Canada, New Zealand and the United States, 1970-98. Population Studies 53:317-329

DWP (2000/01), Households Below Average Income, An analysis of the income distribution from 1994/5 – 2000/01, DWP, Leeds

Ekert-Jaffé, O., Joshi, H., Lynch, K., Mougin, R. and Rendall, M. S. (2002), Fertility, Timing of Births, and Socio-economic Status in France and Britain: Social Policies and Occupational Polarisation. Population-E no.3:475-508

Ermisch, J. and Pevalin, D. (2003a), Who has a Child as a Teenager? ISER Working Paper 2003-30 University of Essex, Colchester

Ermisch, J. and Pevalin, D. (2003b), Does a Teen Birth Have Longer-term Impact on the Mother? Evidence for the 1970 British Cohort Study, Working Paper no. 2003-28, Institute of Social and Economic Research, University of Essex, Colchester

Feinstein, L. (2003), Inequality in the Early Cognitive Development of British Children in the 1970 Cohort, Economica (70) 277, 73-97

Ferri, E., Bynner, J. and Wadsworth, M. (2003), Changing Britain, Changing Lives: Three Generations at the Turn of the Century, Institute of Education, University of London, London

Futing Liao, T. (2003), Mental Health, Teenage Motherhood, and Age at First Birth among British Women in the 1990s , Working Paper 2003-33 , ISER, University of Essex, Colchester

Geronmius, A. and Korenman, S. (1992), The Socioeconomic Consequences of Teen

Childbearing Reconsidered, Quarterly Journal of Economics, vol. 107, pp. 1187-1214.

Gregg, P., Harkness, S. and Machin, S. (1999), Child Development and Family Income. Joseph Rowntree Foundation, York

Gustafsson, S. (2001), Optimal age at motherhood. Theoretical and empirical considerations on the postponement of maternity in Europe. Journal of Population Economics, 14, 2, 225-248.

Hawkes, D. (2003), Education, Earnings, Ability and Early Child Bearing: Evidence from a Sample of UK Twins, PhD Thesis, Queen Mary, University of London, London

Hewlett S. A. (2002), Baby Hunger, Atlantic Books, London

Hobcraft, J. (1998), Intergenerational and Life Course Transmission of Social Exclusions: CASE Paper 15, London School of Economics, London

Hobcraft, J. and Kiernan, K. E. (1999), Childhood Poverty, Early Motherhood and Adult Social Exclusions, CASE working Paper 28, London School of Economics, London

Joshi, H. and Wright, R. (2004), Starting Life in Scotland in the New Millennium: Population Replacement and the Reproduction of Disadvantage, The Allander Series, University of Strathclyde, Glasgow

Kiernan, K. E. (1992), The impact of family disruption in childhood on transitions made in young adult life. Population Studies 46, 213-234.

Kiernan, K. E. (1997), Becoming a Young Parent: A Longitudinal Study of Associated Factors British Journal of Sociology 48, 406-428.

Lesthaeghe, R. (2001), Postponement and recuperation: Recent fertility trends and forecasts in six Western European countries (2001-1) Inter University Papers in Demography, Vrije Universiteit Brussel, Brussels

Maynard, R. (ed), (1997), Kids Having Kids: Economic Costs and Social Consequences of Teen Pregnancy, The Urban Institute Press: Washington, DC

Pevalin, D. A. (2003), Outcomes in Childhood and Adulthood by Mother's Age at Birth: evidence from the 1970 British Cohort Study, Working Paper 2003-31, ISER, University of Essex, Colchester

Rendall, M. S. and Smallwood, S. (2003). Higher qualifications, first-birth timing, and further childbearing in England and Wales Population Trends 111:18-26.

Rendall, M. S., Ekert-Jaffé, O., Joshi, H., Lynch, K. and Mougin, R. (2004), Occupation and Employment Differentials in Age at First Birth in Britain and France (in submission).

Rendall, M. S., Joshi, H. E. and Lynch, K. (2003), Family origins of early mothers in Britain and France. Paper presented to the British Society for Population Studies conference.

Robson, K. L. and Berthoud, R. (2003), Early Motherhood and Disadvantage: a comparison between ethnic groups, Working Paper 2003-29 (October 2003), ISER, University of Essex, Colchester

Shepherd, P., Smith, K., Joshi, H. and Dex, S. (2003), The Millennium Cohort Study First Survey: Guide to the SPSS Data Set, Centre for Longitudinal Studies, Institute of Education, University of London, London

Smith, K. and Joshi, H. E. (2002), The Millennium Cohort Study, Population Trends, vol. 107, pp.30-34.

Sobotka, T. (2004), Is lowest-low fertility in Europe explained by delayed childbearing? Population and Development Review, 30, 2: 195-220.

Social Exclusion Unit (1999), Teenage Pregnancy, TSO, London

Wellings, K., Wadsworth, J., Johnson, A. and Field, J. (1996), Teenage Sexuality, Fertility and Life Chances. Report for the Department of Health

YMCA (2004) Too much Too Young: Teenage Pregnancy and Young Motherhood. Oxford, YMCA (www.ywca.org.uk/youngmums)

TABLES

Table 1. Distribution of Mothers of Millennium Cohort by Age at the Birth of their First Child*

	Age at Motherhood (years)						Total (%)
	Up to 18 (%)	19 to 21 (%)	22 to 24 (%)	25 to 27 (%)	28 to 30 (%)	31 plus (%)	
As percentage of all mothers having first births							
Weighted row percents	9.3	13.9	11.1	15.1	21.0	29.5	100.0
Unweighted sample size	*860*	*1296*	*982*	*1131*	*1435*	*1925*	*7629*
As percentage of all survey mothers							
Weighted row percents	11.4	17.1	14.3	17.3	18.7	21.3	100.0
Unweighted sample size	*2544*	*3712*	*2944*	*3026*	*3038*	*3253*	*18517*

The sample is natural mothers; * the first child is the first live born child who ever lived with the mother where age at first birth known. Percentages in this and following tables are weighted by UK weights.

Table 2. Some features of family structure by age at motherhood

Family Structure	Age at motherhood						Total (%)
	Up to 18 (%)	19 to 21 (%)	22 to 24 (%)	25 to 27 (%)	28 to 30 (%)	31 plus (%)	
All mothers							
Natural mother only	39.0	25.5	13.6	6.9	4.8	4.3	13.8
Presence of half/step siblings in household	22.2	17.8	13.7	7.0	3.9	2.8	10.1
Married, first or later	23.8	39.4	57.0	73.0	79.6	78.5	61.7
Cohabiting	37.2	35.1	29.4	20.1	15.6	17.2	24.3
Grandparents of cohort child live in household	14.3	11.2	7.2	4.2	2.4	1.9	6.1
Maximum unweighted sample size	*2544*	*3712*	*2944*	*3026*	*3038*	*3253*	*18517*
Lone mothers relationship patterns where cohort child is first live born							
Divorced or separated from baby's father	28.1	35.6	41.7	46.2	50.9	43.2	37.0
Never lived with baby's father	71.9	64.4	58.3	53.8	49.1	56.8	63.0
Maximum unweighted sample size	*493*	*513*	*228*	*116*	*100*	*127*	*1577*
Lone mothers relationship patterns for all birth orders							
Divorced or separated from cohort baby's father	38.7	42.4	48.3	51.4	54.5	47.5	43.9
Never lived with cohort baby's father	61.3	57.6	51.7	48.6	45.5	52.5	56.1
Maximum unweighted sample size	*1064*	*1025*	*477*	*256*	*174*	*179*	*3175*

Table 3. Financial circumstances of MCS families by age at Motherhood

Financial circumstances	Age at motherhood						Total (%)
	Up to 18 (%)	19-21 (%)	22-24 (%)	25-27 (%)	28-30 (%)	31 + (%)	
Below 60% median income*	67.1	52.3	31.6	16.7	10.2	7.5	27.5
Receives one or more means tested benefits**	75.9	62.9	43.2	24.2	15.7	12.3	35.3
Mother's evaluation of family's current financial situation							
Experiencing financial difficulties	51.8	49.3	41.2	33.2	28.1	25.5	36.6
Employment							
Workless couple families	26.0	15.1	7.7	3.5	2.2	2.4	7.1
Workless lone parent families	86.5	78.7	74.6	64.1	55.1	42.4	75.4
Mother employed full time	4.0	6.1	10.2	12.9	18.3	21.9	13.3
Mother employed part time	16.7	24.7	35.4	41.5	43.4	41.4	35.2
Well-being							
Low life satisfaction (6 or less out of 10)	32.0	25.4	22.0	14.2	13.4	12.7	18.7
Malaise (3 or more out of 9)	30.9	27.5	26.0	21.7	19.0	19.8	23.4
Maximum unweighted sample size	*2544*	*3712*	*2944*	*3026*	*3038*	*3253*	*18517*

*Family income (of single parent or couple) has been equivalized using number of resident parents, and resident dependent children, uniform rate for those under 16, and additional adult rate for any over 16

**Receiving one or more of the following: Jobseekers Allowance, Income Support, Working Families Tax Credit or Disabled Persons Tax Credit

Table 4. Some contextual indicators of where MCS families live by age at Motherhood

Environment	Age at motherhood						Total (%)
	Up to 18 (%)	19-21 (%)	22-24 (%)	25-27 (%)	28-30 (%)	31 + (%)	
Local Authority tenant	43.6	31.6	18.1	7.6	4.6	3.2	15.8
Living in a flat	21.7	20.0	12.9	8.8	8.8	8.8	12.8
No access to a garden	18.9	16.6	10.1	7.1	5.7	5.1	9.8
Dissatisfied with area living in	21.3	14.4	10.2	7.8	6.5	5.6	10.1
Rubbish and litter is very common	22.4	14.8	9.3	6.3	5.4	5.7	9.7
Lives in a disadvantaged or ethnic area	61.3	56.7	47.6	34.2	26.2	23.5	39.3
Maximum unweighted sample size	*2544*	*3712*	*2944*	*3026*	*3038*	*3253*	*18517*

Table 5. Surprise Status of Cohort Pregnancy, Birthweight and Breastfeeding by Mothers' Age at First birth, and Birth Order of Cohort Child

	Age at Motherhood						Total (%)
	Up to 18 (%)	19 to 21 (%)	22 to 24 (%)	25 to 27 (%)	28 to 30 (%)	31 + (%)	
As percentage of mothers' having first births							
% who were surprised by cohort pregnancy	86.9	75.9	54.8	35.5	25.5	22.7	42.2
Average birth weight (kilos)	3.249	3.259	3.304	3.324	3.324	3.304	3.299
% who ever tried to breastfeed cohort baby	47.2	58.7	72.1	78.5	84.3	88.5	76.3
Unweighted sample size	*860*	*1296*	*982*	*1131*	*1435*	*1925*	*7629*
As percentage of mothers' having births of all orders							
% who were surprised by cohort pregnancy	73.1	62.0	47.7	34.5	27.3	23.3	41.8
Average birth weight (kilos)	3.282	3.311	3.369	3.423	3.399	3.373	3.365
% who ever tried to breastfeed cohort baby	46.8	56.8	66.3	73.8	82.8	87.5	71.3
Unweighted sample size	*2544*	*3712*	*2944*	*3026*	*3038*	*3253*	*18517*

Table 6. Analysis of Age at Motherhood in terms of factors from childhood

Age at Motherhood in 8 groups of 3 year bands up to 37+ (agefstm)	**Ordered Probit All Mothers**		**Ordered Probit First Time Mothers**		**Ordered Probit First Time Mothers**	
Childhood Factors		**t**		**t**		**t**
Mother's parents ever separated or divorced (fpasebi)	-0.376	(17.35)***	-0.436	(13.45)***	-0.383	(12.21)***
Mother ever in care during childhood (incare)	-0.679	(6.92)***	-0.482	(3.95)***	-0.345	(2.88)***
Mother left school at minimum age (compsch)	-0.732	(26.65)***	-0.610	(16.20)***	-0.533	(14.18)***
Ethnic origin: reference category White						
Mixed (eth2)	-0.309	(3.30)***	-0.318	(2.23)**	-0.238	(1.68)*
Indian (eth3)	-0.277	(4.53)***	-0.246	(2.85)***	-0.127	(1.44)
Pakistani (eth4)	-0.572	(12.61)***	-0.694	(9.68)***	-0.490	(6.93)***
Bangladeshi (eth5)	-0.900	(19.48)***	-0.860	(12.94)***	-0.692	(6.56)***
Black Caribbean (eth6)	-0.202	(1.82)*	-0.010	(0.06)	0.136	(0.86)
Black African (eth7)	-0.132	(1.88)*	-0.003	(0.02)	0.255	(1.91)*
Other (eth8)	-0.033	(0.45)	0.073	(0.71)	0.201	(2.20)**
Current Factors						
Region: reference category England						
Movers (reg1)					-0.552	(11.34)***
Wales (reg11)					-0.141	(2.56)**
Scotland (reg12)					-0.037	(-0.63)
Northern Ireland (reg13)					-0.234	(4.00)***
Area Type: reference Advantaged						
Disadvantaged ward (area2)					-0.404	(7.66)***
Ethnic Ward (area3)					-0.426	(5.04)***
Observations	18463		7563		7563	
F	161.53	0.0000	94.68	0.0000	81.20	0.0000
Cut Points						
Cut 1	-1.826	(64.12)***	-1.851	(52.10)***	-2.124	(47.56)***
Cut 2	-1.112	(41.28)***	-1.190	(37.68)***	-1.426	(36.41)***
Cut 3	-0.678	(24.00)***	-0.826	(25.44)***	-1.037	(26.49)***
Cut 4	-0.194	(6.23)***	-0.441	(11.39)***	-0.587	(14.04)***
Cut 5	0.394	(12.07)***	0.187	(5.22)***	0.023	(0.57)
Cut 6	0.983	(33.97)***	0.770	(22.97)***	0.617	(16.19)***
Cut 7	1.603	(57.69)***	1.380	(38.97)***	1.227	(30.88)***

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Similar results are obtained if exclude those who gave birth at or before the compulsory school leaving age

Table 7. Analysis of the Presence of a Partner at Interview: all natural mothers with valid data

Partner Currently Present	**Probit**					
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**	
Reference category: up to 18 years		**t**		**t**		**t**
19 to 21 (agefst2)	0.364	(8.11)***	0.284	(6.18)***	0.205	(4.17)***
22 to 24 (agefst3)	0.821	(17.54)***	0.720	(14.99)***	0.583	(11.45)***
25 to 27 (agefst4)	1.214	(21.69)***	1.099	(18.24)***	0.898	(14.42)***
28 to 30 (agefst5)	1.409	(22.59)***	1.279	(20.22)***	1.074	(16.73)***
31 to 33 (agefst6)	1.531	(23.49)***	1.379	(20.27)***	1.166	(15.09)***
34 to 36 (agefst7)	1.393	(17.65)***	1.257	(15.67)***	1.070	(11.94)***
37 plus (agefst8)	1.204	(10.34)***	1.078	(8.62)***	0.894	(6.61)***
Childhood Factors						
Mother's parents ever separated or divorced (fpasebi)			-0.113	(3.34)***	-0.070	(1.96)*
Mother ever in care during childhood (incare)			-0.046	(0.44)	-0.031	(0.30)
Mother left school at minimum age (compsch)			-0.265	(8.73)***	-0.099	(2.91)***
Ethnic origin: reference category White						
Mixed (eth2)			-0.439	(2.78)***	-0.401	(2.37)***
Indian (eth3)			0.467	(3.58)***	0.703	(4.89)***
Pakistani (eth4)			0.432	(3.86)***	0.815	(6.57)***
Bangladeshi (eth5)			0.762	(7.53)***	1.109	(10.44)***
Black Caribbean (eth6)			-1.011	(8.48)***	-1.011	(8.06)***
Black African (eth7)			-0.989	(8.22)***	-0.894	(7.38)***
Other (eth8)			-0.114	(0.85)	0.127	(0.77)
Contemporary Factors						
Country: reference category England						
Wales (curreg10)					-0.107	(2.33)**
Scotland (curreg11)					-0.079	(1.68)*
Northern Ireland (curreg12)					-0.178	(3.26)***
Mother Employed when pregnant with cohort child (emppreg)					0.331	(10.70)***
Highest Qualification: reference None						
NVQ level 1 or equivalent (nvq1)					0.141	(2.39)**
NVQ level 2 or equivalent(nvq2)					0.364	(7.56)***
NVQ level 3 or equivalent(nvq3)					0.313	(4.65)***
NVQ level 4 or equivalent(nvq4)					0.560	(9.01)***
NVQ level 5 or equivalent (nvq5)					0.842	(6.76)***
Overseas and other unclassified (nvq6)					0.216	(2.20)**
Total number of children in family (totlivch)					0.222	(14.99)***
Long standing illness, mother (longill)					-0.052	(1.44)
Area Type: reference Advantaged						
Disadvantaged ward (area2)					-0.270	(7.02)***
Ethnic Ward (area3)					-0.433	(5.46)***
Constant	0.281	(8.02)***	0.579	(12.09)***	-0.193	(2.29)**
Observations	**17814**		**17814**		**17814**	
F	**155.11**	**0.0000**	**82.26**	**0.0000**	**54.60**	**0.0000**

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Partner includes partners reported as part time
Similar results are obtained if use those for whom the cohort member is their first birth

Table 8. Analysis of Partner employed: mothers with partner present at interview

Employment of Partner	**Probit**							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		**t**		**t**		**t**		**t**
19 to 21 (agefst2)	0.425	(7.47)***	0.375	(6.30)***	0.261	(3.87)***	0.264	(3.78)***
22 to 24 (agefst3)	0.832	(13.29)***	0.750	(11.30)***	0.578	(7.92)***	0.566	(7.56)***
25 to 27 (agefst4)	1.218	(19.20)***	1.086	(16.11)***	0.809	(10.57)***	0.774	(9.68)***
28 to 30 (agefst5)	1.270	(19.64)***	1.105	(15.85)***	0.741	(9.26)***	0.686	(8.27)***
31 to 33 (agefst6)	1.163	(17.39)***	0.972	(13.58)***	0.554	(6.57)***	0.492	(5.52)***
34 to 36 (agefst7)	1.263	(13.18)***	1.080	(10.95)***	0.713	(6.28)***	0.665	(5.63)***
37 plus (agefst8)	1.067	(9.23)***	0.879	(7.28)***	0.465	(3.31)***	0.438	(2.98)***
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			-0.018	(0.47)	-0.009	(0.21)	-0.011	(0.26)
Mother ever in care during childhood (incare)			-0.462	(3.69)***	-0.232	(1.72)*	-0.261	(1.85)*
Mother left school at minimum age (compsch)			-0.288	(7.38)***	-0.088	(1.76)*	-0.050	(1.00)
Ethnic origin: reference category White								
Mixed (eth2)			-0.325	(1.82)*	-0.085	(0.49)	-0.040	(0.23)
Indian (eth3)			-0.254	(2.40)**	0.022	(0.16)	-0.011	(0.08)
Pakistani (eth4)			-0.358	(3.37)***	0.264	(2.09)**	0.289	(2.17)**
Bangladeshi (eth5)			-0.367	(2.43)**	0.234	(1.23)	0.285	(1.42)
Black Caribbean (eth6)			-0.473	(2.85)***	-0.369	(2.06)**	-0.394	(2.45)**
Black African (eth7)			-0.640	(3.74)***	-0.317	(2.33)**	0.395	(2.83)***
Other (eth8)			-0.245	(2.47)**	0.232	(2.15)**	0.241	(2.11)**
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					-0.119	(2.03)**	-0.124	(2.04)**
Scotland (curreg11)					-0.122	(1.97)**	-0.129	(2.04)**
Northern Ireland (curreg12)					-0.140	(2.04)**	-0.126	(1.79)*
Employed when pregnant (emppreg)					0.573	(12.68)***	0.540	(11.64)***
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					0.339	(4.30)***	0.265	(3.26)***
NVQ level 2 or equivalent(nvq2)					0.483	(8.63)***	0.377	(6.71)***
NVQ level 3 or equivalent(nvq3)					0.339	(4.75)***	0.204	(2.84)***

NVQ level 4 or equivalent(nvq4)					0.531	(7.01)***	0.374	(4.62)***
NVQ level 5 or equivalent (nvq5)					0.335	(2.51)**	0.109	(0.72)
Overseas and other unclassified (nvq6)					0.082	(0.74)	-0.008	(0.07)
Total number of children in family (totlivch)					-0.005	(0.25)	0.006	(0.31)
Long standing illness, mother (longill)					-0.195	(4.77)***	-0.154	(3.74)***
Area Type: reference Advantaged								
Disadvantaged ward (area2)					-0.406	(8.61)***	-0.376	(7.62)***
Ethnic Ward (area3)					-0.534	(5.65)***	-0.468	(4.88)***
Partner's Highest Qualification: reference None								
NVQ level 1 or equivalent (nvqf1)							0.455	(5.58)***
NVQ level 2 or equivalent(nvqf2)							0.548	(9.70)***
NVQ level 3 or equivalent(nvqf3)							0.574	(8.59)***
NVQ level 4 or equivalent(nvqf4)							0.651	(9.60)***
NVQ level 5 or equivalent (nvqf5)							0.648	(4.56)***
Overseas and other unclassified (nvqf6)							0.205	(2.13)**
Long standing illness, partner (longillp)							-0.473	(10.98)***
Constant	0.494	(11.18)***	0.799	(14.02)***	0.418	(3.77)***	0.162	(1.38)
Observations	12784		12784		12784		12784	
F	114.90	0.0000	50.05	0.0000	32.38	0.0000	30.86	0.0000

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. Analysis of the probability of the mother being employed at interview: all mothers

Employment of Mother	**Probit**					
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**	
Reference category: up to 18 years		**t**		**t**		**t**
19 to 21 (agefst2)	0.329	(7.32)***	0.293	(6.57)***	0.174	(3.72)***
22 to 24 (agefst3)	0.712	(13.92)***	0.649	(12.75)***	0.414	(8.00)***
25 to 27 (agefst4)	0.961	(20.42)***	0.829	(16.72)***	0.485	(9.64)***
28 to 30 (agefst5)	1.128	(22.42)***	0.964	(17.86)***	0.535	(9.49)***
31 to 33 (agefst6)	1.159	(21.75)***	0.975	(17.29)***	0.516	(8.63)***
34 to 36 (agefst7)	1.202	(20.04)***	1.006	(15.66)***	0.557	(8.29)***
37 plus (agefst8)	1.290	(15.08)***	1.097	(12.32)***	0.629	(6.46)***
Childhood Factors						
Mother's parents ever separated or divorced (fpasebi)			-0.131	(4.87)***	-0.126	(4.55)***
Mother ever in care during childhood (incare)			-0.297	(3.09)***	-0.148	(1.53)
Mother left school at minimum age (compsch)			-0.245	(10.15)***	0.046	(1.56)
Ethnic origin: reference category White						
Mixed (eth2)			-0.381	(3.09)***	-0.255	(2.04)**
Indian (eth3)			-0.248	(2.91)***	-0.113	(1.17)
Pakistani (eth4)			-1.05	(13.40)***	-0.804	(8.81)***
Bangladeshi (eth5)			-1.007	(8.18)***	-0.739	(5.32)***
Black Caribbean (eth6)			0.155	(1.59)	0.427	(4.26)***
Black African (eth7)			-0.243	(1.72)*	0.141	(1.05)
Other (eth8)			-0.518	(5.44)***	-0.345	(3.29)***
Contemporary Factors						
Country: reference category England						
Wales (curreg10)					0.098	(2.57)***
Scotland (curreg11)					0.069	(1.89)*
Northern Ireland (curreg12)					0.214	(5.77)***
Highest Qualification: reference None						
NVQ level 1 or equivalent (nvq1)					0.395	(6.84)***
NVQ level 2 or equivalent(nvq2)					0.597	(13.24)***
NVQ level 3 or equivalent(nvq3)					0.746	(14.30)***
NVQ level 4 or equivalent(nvq4)					0.927	(18.25)***
NVQ level 5 or equivalent (nvq5)					0.996	(13.24)***
Overseas and other unclassified (nvq6)					0.170	(1.96)*
Total number of children in family (totlivch)					-0.157	(11.65)***
Long standing illness of mother (longill)					-0.172	(5.37)***
Partner present (partner)					0.536	(14.84)***
Area Type: reference Advantaged						
Disadvantaged ward (area2)					-0.029	(0.85)
Ethnic Ward (area3)					-0.259	(3.84)***
Constant	-0.749	(19.78)***	-0.44	(9.70)***	-1.088	(14.49)***
Observations	17818		17818		17818	
F	128.38	0.0000	87.24	0.0000	81.52	0.0000

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Including partner's nvq and long standing illness does not affect the results significantly for the mother's employment decisions

Table 10. Families Claiming Means tested benefits[+] at Interview (PROBIT): all mothers with valid data

Claming benefits	**Probit**							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		**t**		**t**		**t**		**t**
19 to 21 (agefst2)	-0.394	(8.36)***	-0.290	(5.97)***	0.017	(0.28)	-0.003	(0.05)
22 to 24 (agefst3)	-0.921	(17.08)***	-0.764	(14.06)***	-0.231	(3.74)***	-0.239	(3.86)***
25 to 27 (agefst4)	-1.506	(28.79)***	-1.279	(22.82)***	-0.592	(8.68)***	-0.570	(8.33)***
28 to 30 (agefst5)	-1.791	(36.99)***	-1.531	(30.11)***	-0.758	(12.43)***	-0.706	(11.55)***
31 to 33 (agefst6)	-1.967	(31.25)***	-1.681	(26.54)***	-0.897	(12.42)***	-0.825	(11.16)***
34 to 36 (agefst7)	-1.947	(24.45)***	-1.658	(20.57)***	-0.897	(9.34)***	-0.848	(8.60)***
37 plus (agefst8)	-1.943	(19.10)***	-1.659	(15.92)***	-0.930	(7.32)***	-0.873	(6.69)***
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			0.149	(4.96)***	0.126	(4.02)***	0.123	(3.86)***
Mother ever in care during childhood (incare)			0.652	(5.47)***	0.537	(3.93)***	0.546	(3.98)***
Mother left school at minimum age (compsch)			0.461	(15.28)***	0.202	(5.86)***	0.165	(4.66)***
Ethnic origin: reference category White								
Mixed (eth2)			0.222	(1.72)*	-0.110	(0.86)	-0.093	(0.71)
Indian (eth3)			-0.060	(0.54)	-0.165	(1.31)	-0.106	(0.83)
Pakistani (eth4)			0.527	(4.98)***	0.256	(2.35)**	0.308	(2.87)***
Bangladeshi (eth5)			0.274	(2.04)**	0.069	(0.59)	0.104	(0.82)
Black Caribbean (eth6)			0.534	(3.83)***	-0.100	(0.82)	-0.103	(0.84)
Black African (eth7)			0.760	(4.50)***	0.089	(0.55)	0.170	(1.01)
Other (eth8)			0.032	(0.32)	-0.284	(2.73)***	-0.243	(2.33)**
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					0.175	(3.47)***	0.190	(3.69)***
Scotland (curreg11)					0.067	(1.24)	0.082	(1.51)
Northern Ireland (curreg12)					0.191	(3.48)***	0.181	(3.44)***
Employed when pregnant (emppreg)					-0.288	(8.55)***	-0.291	(8.46)***
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					0.081	(1.28)	0.080	(1.26)
NVQ level 2 or equivalent(nvq2)					-0.193	(3.46)***	-0.173	(3.08)***
NVQ level 3 or equivalent(nvq3)					-0.220	(3.66)***	-0.168	(2.72)***

NVQ level 4 or equivalent(nvq4)					-0.421	(6.96)***	-0.313	(5.01)***
NVQ level 5 or equivalent (nvq5)					-0.781	(7.26)***	-0.525	(4.53)***
Overseas and other unclassified (nvq6)					-0.097	(0.95)	-0.071	(0.69)
Total number of children in family (totlivch)					0.021	(1.41)	0.025	(1.70)*
Long standing illness, mother (longill)					0.113	(2.66)***	0.096	(2.22)**
Partner present (partner)					-0.360	(5.73)***		
Partner employed (partem)					-1.222	(24.28)***	-1.169	(22.52)***
Area Type: reference Advantaged								
Disadvantaged ward (area2)					0.298	(6.15)***	0.273	(5.74)***
Ethnic Ward (area3)					0.323	(3.59)***	0.287	(3.21)***
Partner's Highest Qualification: reference None/no partner								
NVQ level 1 or equivalent (nvqf1)							0.138	(2.02)**
NVQ level 2 or equivalent(nvqf2)							-0.113	(2.13)**
NVQ level 3 or equivalent(nvqf3)							-0.185	(3.40)***
NVQ level 4 or equivalent(nvqf4)							-0.428	(7.27)***
NVQ level 5 or equivalent (nvqf5)							-0.796	(7.90)***
Overseas and other unclassified (nvqf6)							-0.175	(1.89)*
Long standing illness, partner (longillp)							0.173	(4.39)***
Constant	0.770	(17.77)***	0.273	(5.14)	1.363	(13.41)***	1.341	(13.26)***
Observations	**15819**		**15819**		**15819**		**15819**	
F	**297.92**	**0.0000**	**138.92**	**0.0000**	**117.40**	**0.0000**	**105.40**	**0.0000**

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
+Jobseekers Allowance, Income Support, Working Families Tax Credit or Disabled Persons Tax Credit

Table 11. Families living on less than 60% of median income (PROBIT): all mothers with valid data

less than 60% of median income	Probit							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		t		t		t		t
19 to 21 (agefst2)	-0.408	(8.21)***	-0.331	(6.58)***	-0.026	(0.43)	-0.035	(0.57)
22 to 24 (agefst3)	-0.948	(19.07)***	-0.830	(16.63)***	-0.258	(4.61)***	-0.258	(4.65)***
25 to 27 (agefst4)	-1.461	(25.35)***	-1.269	(21.29)***	-0.471	(6.51)***	-0.452	(6.27)***
28 to 30 (agefst5)	-1.775	(32.99)***	-1.547	(27.57)***	-0.625	(9.90)***	-0.576	(9.18)***
31 to 33 (agefst6)	-1.986	(28.58)***	-1.727	(24.94)***	-0.804	(9.19)***	-0.744	(8.57)***
34 to 36 (agefst7)	-1.941	(22.86)***	-1.677	(19.69)***	-0.781	(7.85)***	-0.738	(7.48)***
37 plus (agefst8)	-1.823	(16.59)***	-1.557	(13.79)***	-0.658	(4.51)***	-0.618	(4.08)***
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			0.105	(3.45)**	0.093	(2.61)***	0.089	(2.47)**
Mother ever in care during childhood (incare)			0.337	(3.15)***	-0.081	(0.60)	-0.088	(0.64)
Mother left school at minimum age (compsch)			0.481	(15.70)***	0.145	(3.49)***	0.115	(2.76)***
Ethnic origin: reference category White								
Mixed (eth2)			0.431	(3.21)***	0.108	(0.80)	0.109	(0.79)
Indian (eth3)			0.363	(2.84)***	0.348	(2.13)**	0.395	(2.37)**
Pakistani (eth4)			0.971	(9.31)***	0.714	(6.01)***	0.725	(6.15)***
Bangladeshi (eth5)			0.962	(5.92)***	0.709	(4.12)***	0.706	(4.37)***
Black Caribbean (eth6)			0.487	(2.95)***	-0.147	(0.94)	-0.157	(1.00)
Black African (eth7)			1.006	(6.31)***	0.329	(2.58)***	0.378	(3.03)***
Other (eth8)			0.434	(3.76)***	0.212	(1.46)	0.246	(1.65)*
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					0.084	(1.61)	0.095	(1.79)*
Scotland (curreg11)					0.161	(3.05)***	0.176	(3.33)***
Northern Ireland (curreg12)					0.292	(4.83)***	0.285	(4.82)***
Employed when pregnant (emppreg)					-0.493	(13.40)***	-0.491	(13.21)***
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					0.048	(0.72)	0.060	(0.92)
NVQ level 2 or equivalent(nvq2)					-0.196	(3.34)***	-0.168	(2.88)***
NVQ level 3 or equivalent(nvq3)					-0.303	(4.79)***	-0.253	(4.07)***

NVQ level 4 or equivalent(nvq4)					-0.509	(7.89)***	-0.416	(6.38)***
NVQ level 5 or equivalent (nvq5)					-0.839	(5.43)***	-0.609	(3.76)***
Overseas and other unclassified (nvq6)					0.094	(1.00)	0.114	(1.20)
Total number of children in family (totlivch)					0.152	(7.86)***	0.156	(8.04)***
Long standing illness, mother (longill)					0.068	(1.76)*	0.055	(1.43)
Partner present (partner)					-0.120	(3.27)***	-0.076	(0.99)
Partner employed (partem)					-1.425	(28.99)***	-1.367	(26.53)***
Area Type: reference Advantaged								
Disadvantaged ward (area2)					0.0.218	(4.49)***	0.194	(4.01)***
Ethnic Ward (area3)					0.279	(2.34)***	0.232	(1.97)**
Partner's Highest Qualification: reference None/ No Partner								
NVQ level 1 or equivalent (nvqf1)							0.022	(0.24)
NVQ level 2 or equivalent(nvqf2)							-0.198	(3.70)***
NVQ level 3 or equivalent(nvqf3)							-0.280	(4.12)***
NVQ level 4 or equivalent(nvqf4)							-0.411	(6.79)***
NVQ level 5 or equivalent (nvqf5)							-0.787	(5.93)***
Overseas and other unclassified (nvqf6)							-0.081	(0.79)
Long standing illness, partner (longillp)							0.111	(2.30)**
Constant	0.461	(11.05)***	-0.046	(0.96)	0.866	(7.99)***	0.848	(7.97)***
Observations	**14723**		**14723**		**14723**		**14723**	
F	**252.61**	**0.0000**	**122.12**	**0.0000**	**97.47**	**0.0000**	**84.11**	**0.0000**

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Table 12. Probability of higher Net Family Income Group: all mothers with valid data

Family Adjusted Income	**Ordered Probit**							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		t		t		t		t
19 to 21 (agefst2)	0.421	(9.88)***	0.329	(7.62)***	0.049	(1.05)	0.065	(1.43)
22 to 24 (agefst3)	0.921	(20.38)***	0.779	(16.93)***	0.227	(4.87)***	0.240	(5.16)***
25 to 27 (agefst4)	1.450	(31.37)***	1.237	(25.00)***	0.524	(9.81)***	0.504	(9.46)***
28 to 30 (agefst5)	1.842	(44.26)***	1.595	(36.69)***	0.796	(17.18)***	0.738	(16.06)***
31 to 33 (agefst6)	2.122	(35.59)***	1.846	(33.47)***	1.041	(17.89)***	0.969	(16.99)***
34 to 36 (agefst7)	2.149	(32.61)***	1.875	(29.96)***	1.075	(16.96)***	1.025	(16.08)***
37 plus (agefst8)	2.120	(23.67)***	1.864	(20.99)***	1.074	(10.70)***	1.000	(10.03)***
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			-0.094	(3.86)***	-0.068	(2.61)***	-0.060	(2.33)**
Mother ever in care during childhood (incare)			-0.259	(2.61)***	-0.038	(0.38)	-0.052	(0.53)
Mother left school at minimum age (compsch)			-0.514	(17.99)***	-0.188	(5.81)***	-0.138	(4.40)***
Ethnic origin: reference category White								
Mixed (eth2)			-0.175	(1.09)	0.010	(0.67)	-0.064	(0.43)
Indian (eth3)			-0.218	(2.12)**	-0.188	(1.62)	-0.260	(2.35)**
Pakistani (eth4)			-0.755	(6.85)***	-0.517	(4.68)***	-0.551	(5.01)***
Bangladeshi (eth5)			-0.754	(4.34)***	-0.553	(3.03)***	-0.559	(3.22)***
Black Caribbean (eth6)			-0.518	(3.67)***	0.076	(0.62)	-0.091	(0.73)
Black African (eth7)			-0.878	(4.37)***	-0.322	(2.24)**	-0.420	(3.20)***
Other (eth8)			-0.424	(4.15)***	-0.262	(2.01)**	-0.309	(2.33)***
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					-0.135	(3.55)***	-0.152	(4.15)***
Scotland (curreg11)					-0.103	(1.95)*	-0.119	(2.36)**
Northern Ireland (curreg12)					-0.231	(4.60)***	-0.211	(4.63)***
Employed when pregnant (emppreg)					0.280	(7.92)***	0.293	(8.21)***
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					0.036	(0.61)	0.027	(0.47)
NVQ level 2 or equivalent(nvq2)					0.279	(5.55)***	0.253	(5.25)***

NVQ level 3 or equivalent(nvq3)					0.393	(7.43)***	0.336	(6.65)***
NVQ level 4 or equivalent(nvq4)					0.702	(13.98)***	0.563	(11.52)***
NVQ level 5 or equivalent (nvq5)					1.159	(14.69)***	0.852	(10.37)***
Overseas and other unclassified (nvq6)					0.023	(0.27)	-0.020	(0.23)
Total number of children in family (totlivch)					-0.096	(7.37)***	-0.106	(7.95)***
Long standing illness, mother (longill)					-0.100	(3.65)***	-0.087	(3.24)***
Partner present (partner)					0.354	(5.94)***	0.215	(3.25)***
Partner employed (partem)					1.293	(26.46)***	1.232	(25.23)***
Area Type: reference Advantaged								
Disadvantaged ward (area2)					-0.270	(7.69)***	-0.236	(7.06)***
Ethnic Ward (area3)					-0.294	(2.57)***	-0.241	(2.15)**
Partner's Highest Qualification: reference None/no partner								
NVQ level 1 or equivalent (nvqf1)							-0.002	(0.03)
NVQ level 2 or equivalent(nvqf2)							0.152	(3.36)***
NVQ level 3 or equivalent(nvqf3)							0.255	(5.73)***
NVQ level 4 or equivalent(nvqf4)							0.560	(11.44)***
NVQ level 5 or equivalent (nvqf5)							0.907	(12.66)***
Overseas and other unclassified (nvqf6)							0.190	(2.27)**
Long standing illness, partner (longillp)							-0.110	(3.65)***
Observations	**14723**		**14723**		**14723**		**14723**	
F	**392.16**	**0.0000**	**182.04**	**0.0000**	**135.81**	**0.0000**	**125.76**	**0.0000**

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Equivalised Incomes grouped in four groups £0-£150, £150-£300, £300-£450 & £450+; Income adjusted for family composition on McClements equivalence scale
Cut points available on request

Table 13. Analysis of Mother's Satisfaction with her Life So Far

Mother's Life Satisfaction: rated 7 or more on a scale of 1-10	**Probit**							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		**t**		**t**		**t**		**t**
19 to 21 (agefst2)	0.178	(4.05)***	0.138	(3.15)***	0.060	(1.35)	0.056	(1.28)
22 to 24 (agefst3)	0.278	(6.51)***	0.215	(4.85)***	0.032	(0.70)	0.003	(0.06)
25 to 27 (agefst4)	0.599	(12.80)***	0.503	(10.39)***	0.246	(4.85)***	0.185	(3.63)***
28 to 30 (agefst5)	0.640	(14.00)***	0.527	(11.01)***	0.217	(4.12)***	0.125	(2.36)**
31 to 33 (agefst6)	0.710	(12.67)***	0.581	(10.07)***	0.255	(4.02)***	0.144	(2.23)**
34 to 36 (agefst7)	0.592	(9.33)***	0.464	(6.90)***	0.151	(2.10)**	0.037	(0.52)
37 plus (agefst8)	0.629	(7.12)***	0.500	(5.38)***	0.185	(1.88)*	0.070	(0.72)
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			-0.121	(3.77)**	-0.100	(2.96)***	-0.095	(2.76)***
Mother ever in care during childhood (incare)			-0.400	(3.78)**	-0.339	(3.15)***	-0.330	(3.03)***
Mother left school at minimum age (compsch)			-0.144	(4.93)***	-0.005	(0.15)	0.010	(0.28)
Ethnic origin: reference category White								
Mixed (eth2)			-0.167	(1.23)	-0.118	(0.85)	-0.107	(0.79)
Indian (eth3)			-0.439	(5.25)***	-0.461	(5.28)***	-0.443	(5.10)***
Pakistani (eth4)			-0.194	(2.42)**	-0.154	(1.63)	-0.107	(1.10)
Bangladeshi (eth5)			-0.136	(0.82)	-0.128	(0.66)	-0.079	(0.40)
Black Caribbean (eth6)			-0.330	(2.72)***	-0.141	(1.14)	-0.130	(1.04)
Black African (eth7)			-0.402	(3.30)***	-0.203	(1.90)*	-0.169	(1.61)
Other (eth8)			-0.249	(2.05)**	-0.211	(1.70)*	-0.196	(1.61)
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					0.042	(0.91)	0.056	(1.21)
Scotland (curreg11)					0.064	(1.78)*	0.077	(2.18)**
Northern Ireland (curreg12)					-0.017	(0.33)	0.003	(0.06)
Employed when pregnant (emppreg)					0.108	(3.75)***	0.071	(2.45)***
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					-0.023	(0.45)	-0.026	(0.50)

NVQ level 2 or equivalent(nvq2)					0.080	(1.59)	0.054	(1.04)
NVQ level 3 or equivalent(nvq3)					0.087	(1.47)	0.049	(0.81)
NVQ level 4 or equivalent(nvq4)					0.243	(4.24)***	0.169	(2.87)***
NVQ level 5 or equivalent (nvq5)					0.295	(2.96)***	0.187	(1.84)*
Overseas and other unclassified (nvq6)					0.056	(0.54)	0.060	(0.58)
Total number of children in family (totlivch)					-0.050	(3.50)***	-0.042	(3.00)***
Long standing illness, mother (longill)					-0.360	(12.11)***	-0.347	(11.75)***
Partner present (partner)					0.536	(14.43)***	0.424	(10.51)***
Area Type: reference Advantaged								
Disadvantaged ward (area2)					-0.025	(0.89)	0.006	(0.21)
Ethnic Ward (area3)					-0.026	(0.50)	0.012	(0.24)
Equivalised Grouped Household Income: reference 0-£150								
£150-£300 (mcinc2)							0.156	(3.83)**
£300-£450 (mcinc3)							0.319	(5.93)***
£450+ (mcinc4)							0.433	(7.11)***
Constant	0.477	(15.11)***	0.697	(15.66)	0.377	(4.33)***	0.336	(3.86)***
Observations	16381		16381		16381		16381	
F	57.62	0.0000	33.38	0.0000	38.36	0.0000	36.40	0.0000

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Table 14. Analysis of Mother's Malaise

Mother's Malaise: reports adverse symptom on at least 3 out 9 questions	**Probit**							
Age at motherhood	**Model (1)**		**Model (2)**		**Model (3)**		**Model (4)**	
Reference category: up to 18 years		**t**		**t**		**t**		**t**
19 to 21 (agefst2)	-0.068	(1.50)	-0.036	(0.77)	0.005	(0.11)	0.004	(0.09)
22 to 24 (agefst3)	-0.127	(2.60)***	-0.068	(1.36)	0.017	(0.33)	0.027	(0.53)
25 to 27 (agefst4)	-0.286	(6.15)***	-0.182	(3.72)***	-0.058	(1.11)	-0.029	(0.56)
28 to 30 (agefst5)	-0.388	(8.81)***	-0.266	(5.80)***	-0.114	(2.18)**	-0.065	(1.27)
31 to 33 (agefst6)	-0.411	(7.94)***	-0.275	(5.25)***	-0.109	(1.83)*	-0.046	(0.75)
34 to 36 (agefst7)	-0.242	(3.79)***	-0.101	(1.50)	0.064	(0.86)	0.130	(1.70)*
37 plus (agefst8)	-0.263	(2.85)***	-0.118	(1.23)	0.050	(0.49)	0.115	(1.15)
Childhood Factors								
Mother's parents ever separated or divorced (fpasebi)			0.140	(4.69)***	0.138	(4.49)***	0.134	(4.34)***
Mother ever in care during childhood (incare)			0.353	(3.61)**	0.314	(3.22)***	0.308	(3.18)***
Mother left school at minimum age (compsch)			0.143	(4.92)***	0.064	(1.88)*	0.053	(1.58)
Ethnic origin: reference category White								
Mixed (eth2)			0.094	(0.75)	0.071	(0.54)	0.071	(0.55)
Indian (eth3)			0.444	(4.44)***	0.450	(4.09)***	0.443	(3.97)***
Pakistani (eth4)			0.473	(7.13)***	0.418	(6.07)***	0.397	(5.72)***
Bangladeshi (eth5)			0.230	(2.03)**	0.215	(1.74)*	0.194	(1.53)
Black Caribbean (eth6)			0.233	(2.07)**	0.183	(1.51)	0.178	(1.45)
Black African (eth7)			0.002	(0.02)	-0.092	(0.94)	-0.112	(1.18)
Other (eth8)			0.149	(1.55)	0.098	(0.99)	0.087	(0.89)
Contemporary Factors								
Country: reference category England								
Wales (curreg10)					0.061	(1.67)*	0.055	(1.50)
Scotland (curreg11)					0.021	(0.62)	0.016	(0.45)
Northern Ireland (curreg12)					0.029	(0.69)	0.019	(0.45)
Employed when pregnant (emppreg)					-0.063	(1.94)*	-0.047	(1.40)
Highest Qualification: reference None								
NVQ level 1 or equivalent (nvq1)					-0.024	(0.50)	-0.026	(0.53)
NVQ level 2 or equivalent(nvq2)					-0.063	(1.60)	-0.053	(1.32)

NVQ level 3 or equivalent(nvq3)					-0.117	(2.32)**	-0.101	(1.96)*
NVQ level 4 or equivalent(nvq4)					-0.148	(2.95)***	-0.108	(2.03)**
NVQ level 5 or equivalent (nvq5)					-0.176	(2.10)**	-0.110	(1.25)
Overseas and other unclassified (nvq6)					0.102	(1.22)	0.098	(1.18)
Total number of children in family (totlivch)					0.028	(2.14)**	0.022	(1.70)*
Partner present (partner)					-0.131	(3.48)***	-0.082	(1.99)**
Area Type: reference Advantaged								
Disadvantaged ward (area2)					0.115	(3.54)***	0.097	(2.99)***
Ethnic Ward (area3)					-0.002	(0.03)	-0.022	(0.35)
Equivalised Grouped Household Income: reference 0-£150								
£150-£300 (mcinc2)							-0.037	(1.06)
£300-£450 (mcinc3)							-0.146	(2.99)***
£450+ (mcinc4)							-0.236	(3.81)***
Constant	-0.488	(14.24)***	-0.713	(15.89)***	-0.634	(8.17)***	-0.613	(8.01)***
Observations	16401		16401		16401		16401	
F	17.70	0.0000	16.27	0.0000	12.48	0.0000	12.01	0.0000

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Description of Regression Variables

		Weighted %
Dependent Variables		
Partner Present at Interview – cohort child 9 months (partner)		86.34
Employed Partner Present (partemp)		77.35
Mother Employed at interview (empnm)		51.81
Receiving Means Tested Benefits (onbenes)		34.89
Below 60% of National Median Household Income (incpoor)		26.88
Equivalized Family Net Income		
	£0-£150 (mcinc1)	22.23
	£151-£300 (mcinc2)	30.13
	£301-£450 (mcinc3)	27.04
	£451 plus (mcinc4)	20.60
Life Satisfaction (lifsati2)		81.26
Malaise (malaise2)		23.97
Age at Motherhood Dummies		
Age at motherhood up to 18 (agefst1)		11.38
Age at motherhood 19-21 (agefst2)		16.91
Age at motherhood 22-24 (agefst3)		14.09
Age at motherhood 25-27 (agefst4)		17.34
Age at motherhood 28-30 (agefst5)		18.83
Age at motherhood 31-33 (agefst6)		12.62
Age at motherhood 34-36 (agefst7)		6.29
Age at motherhood 37 plus (agefst8)		2.54
Childhood Factors		
Mother's parents ever separated or divorced (fpasebi)		27.88
Mother ever in care during childhood (incare)		1.45
Mother's ethnic origin: White (eth1)		90.20
Mother's ethnic origin: Mixed (eth2)		0.93
Mother's ethnic origin: Indian (eth3)		1.76
Mother's ethnic origin: Pakistani (eth4)		2.51
Mother's ethnic origin: Bangladeshi (eth5)		0.75
Mother's ethnic origin: Black Caribbean (eth6)		1.05
Mother's ethnic origin: Black African (eth7)		1.32
Mother's ethnic origin: Other (eth8)		1.48
Mother left school at minimum age (compsch)		46.16
Contemporary Factors		
Movers (reg1)		13.00
England (reg2-10)		74.27
Wales (reg11)		4.53
Scotland (reg12)		8.20
Northern Ireland (reg13)		3.15
England (curreg1-9)		81.73
Wales (curreg10)		5.29
Scotland (curreg11)		9.46
Northern Ireland (curreg12)		3.52
Mother employed when pregnant with cohort child (emppreg)		68.61
Mother's Highest Qualification: NVQ level 1 or equivalent (nvq1)		8.16
Mother's Highest Qualification: NVQ level 2 or equivalent (nvq2)		30.02
Mother's Highest Qualification: NVQ level 3 or equivalent (nvq3)		14.32

Mother's Highest Qualification: NVQ level 4 or equivalent (nvq4)	30.22
Mother's Highest Qualification: NVQ level 5 or equivalent (nvq5)	3.80
Mother's Highest Qualification: Overseas and other unclassified (nvq6)	2.15
Mother's Highest Qualification: None (nvq7)	11.33
Father's Highest Qualification: NVQ level 1 or equivalent (nvqf1)	5.64
Father's Highest Qualification: NVQ level 2 or equivalent (nvqf2)	22.96
Father's Highest Qualification: NVQ level 3 or equivalent (nvqf3)	13.25
Father's Highest Qualification: NVQ level 4 or equivalent (nvqf4)	27.08
Father's Highest Qualification: NVQ level 5 or equivalent (nvqf5)	5.36
Father's Highest Qualification: Overseas and other unclassified (nvqf6)	2.27
Father's Highest Qualification: None (nvqf7)	8.30
Mother's longstanding illness (longill)	21.51
Father's longstanding illness (longillp)	17.55
Area type: Advantaged Ward (area1) Non-ethnic in top three quarters of child poverty, index 1998	61.49
Area type: Disadvantaged Ward (area2) Non-ethnic in bottom quartile of child poverty index 1998	34.31
Area type: Ethnic Ward (area3) > 30% population Black or Asian at 1991census	4.20
	Weighted mean and standard deviation
Total number of children in family (totlivch)	1.89 (1.61)
Observations	17822

Note: These are calculated for all observations that appear in at least one of the regressions in strand 2

Centre for Longitudinal Studies
Bedford Group for Lifecourse and Statistical Studies
Institute of Education
20 Bedford Way
London WC1H 0AL
Tel: 020 7612 6900
Fax: 020 7612 6880
Email cls@cls.ioe.ac.uk
Web http://www.cls.ioe.ac.uk