Pathways to Young Fatherhood in the United Kingdom

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Abstract

In recent years research has begun to examine the experiences of young fathers and this has provided good evidence that early fatherhood is selective of men of disadvantaged backgrounds. Young fathers are more likely to come from poorer families, to have had low educational achievements during childhood, and to have experienced family disruption (Kiernan 1997; Sigle-Rushton 2004; Sigle-Rushton 2005). However, the experience and timing of these adverse childhood experiences are likely to be important. Using data from a 1970 cohort of British men, this paper builds on previous work and uses structural equation modelling (SEM) to consider the timing of events explicitly - in early childhood, pre-adolescence and adolescence. Our findings suggest that, regardless of when they are measured, educational test scores are linked to early childbearing. In contrast, behavioural attributes have a greater effect on young fatherhood at older ages, particularly during adolescence. Our results also identify the pathways most strongly associated with early fatherhood. Socio-economic resources at birth and risk taking behaviours at age 16 have a significant effect on the onset of early fatherhood. In addition, childhood antecedents influence the outcome of interest through its indirect relationship with risk factors later on, especially academic performance.

1. Introduction

Previous research in industrialised countries has provided evidence of a strong link between early parenthood and childhood experiences. For example, young fathers are more likely to come from poorer families, to have experienced family disruption and to have low educational attainment (Kiernan 1997; Hobcraft 1998; Jaffee, Caspi et al. 2001; Sigle-Rushton 2004; Sigle-Rushton 2005). Although these antecedents to young parenthood are well documented, little is known about the importance of the timing of adverse events. It is possible that poor educational outcomes at younger ages may be less strongly related with early fatherhood than poor educational outcomes in adolescence when the transition to adulthood is being negotiated. Identifying stages in which individuals are more vulnerable to

adverse experiences can help in designing more efficient policies for tackling early fatherhood.

The aim of this paper is to examine further the link between childhood antecedents and early fatherhood. We are particularly interested in the extent to which links are stronger or weaker at different points in time. Using data from a cohort of British men born in 1970, we assess the development stages - early childhood, pre-adolescent, or adolescent years - in which children are vulnerable to adverse events; and examine the pathways through which different childhood characteristics influence early fatherhood. In the next section, we set the background of this research by reviewing the literature on early fatherhood and highlight why it is that issues of timing might be important. In Section 3, we provide information on the data, the variables and the methodology used in our analysis. In Section 4, we present our results, and the final section discusses the conclusions drawn from this study.

2. Background

Numerous studies have shown that childhood disadvantage is associated with a higher risk of early childbearing (Hobcraft 1998; Hobcraft and Kiernan 2001; Jaffee, Caspi et al. 2001; Ermisch and Pevalin 2003; Sigle-Rushton 2005), which is, in turn, associated with disadvantage later in life. Net of childhood antecedents, young fathers are more likely to lack economic resources, to have restricted employment opportunities, to have limited academic achievements, and to report poor mental health (Brien and J.Willis 1997; Maynard 1997; Hobcraft and Kiernan 2001; Sigle-Rushton 2004). What is more, research suggests that early fatherhood has a negative effect not only on fathers' future outcomes but also on those of their children.

Life course models focus on the pathways through which early experiences influence future outcomes. These models emphasize that disadvantageous conditions during childhood can have lasting effects on subsequent achievements. Moreover, experiencing persistent disadvantage may lead to a transmission of unfavourable conditions over the life course and across generations. Nevertheless, it is important to underline that early experiences do not *determine* future

outcomes, but they do increase or decrease the likelihood of having positive or negative repercussions later in life.

A developmental or life course perspective also underscores that the timing of events is likely to be important. Early experiences are of vital importance for the intellectual, emotional and physical development of the individual (Shonkoff and Philips 2000). Adverse experiences at young ages can have significant and enduring consequences in adolescence and adulthood, and disadvantage at this life stage may be especially detrimental (Duncan and Brooks-Gunn 1997; Hobcraft 1998; Hobcraft 2000; Hobcraft and Kiernan 2001; Hobcraft 2002; Feinstein 2003; Hobcraft 2003; Sigle-Rushton 2004). For example, empirical evidence suggests that socio-economic adversity experienced during early childhood has a more detrimental effect than if it was experienced at any subsequent stage of life (Haveman and Wolfe 1995; Duncan and Brooks-Gunn 1997; Bynner 1999; Shonkoff and Philips 2000; Hobcraft and Kiernan 2001).

What happens early is of vital importance, but what happens at older ages is also likely to matter because the individual is continuously influenced by the interaction of nature and nurture (Shonkoff and Philips 2000). Experiencing disadvantage during middle childhood can also undermine children's future attainments. Feinstein (1998) shows that academic and non-academic abilities at age 10 are associated with subsequent developmental success. Although this paper shows that the incidence of adverse experiences at age 10 is relevant for future outcomes, it does not assess whether middle childhood abilities are as powerful as attributes measured earlier or later in childhood.

On the other hand, adolescence is a critical developmental stage because it is a period during which important transitions to adulthood are taking place. Individuals move out of compulsory education and, into employment or further education, decisions which have long-term consequences. In addition, family and peer relationships are undergoing change, and for some, sexual activity is initiated. Experiences during this stage can reinforce or alter an individual's life trajectories.

A few previous studies have assessed the timing of events as they relate to subsequent outcomes using data from the NCDS and BCS70 British cohorts (Schoon 2002; Schoon, Bynner et al. 2002; Schoon, Sacker et al. 2003; Schoon 2006). These show that risk effects – socioeconomic adversity, academic attainment, psychological well-being – have a cumulative and enduring effect over time. Schoon (2006) argues that although early adversity has an unquestionable detrimental effect in future outcomes, the whole life course is important for shaping individual's development. That is, individual adjustment is a dynamic process.

Although previous research has examined the timing and intensity of childhood disadvantage, to date, none have examined early fatherhood as an outcome. Because young parenthood is one of the channels through which social exclusion is transmitted over time, this is an important omission. In what follows, we address this gap in the literature. Using a life course approach we examine pathways to young fatherhood. We estimate the cumulative effects of different childhood characteristics and trajectories, and identify those developmental stages in which children are most vulnerable to adverse events.

3. Methods, Data and Measurement of Variables:

3.1 Methods

We carried out our analysis in two stages. First, we estimated a series of logistic regressions in order to have an initial insight into the influence of risk factors on early fatherhood by age of the cohort member, and to identify the covariates to include in the second stage of our analysis. Next, we used structural equation modelling (SEM) to examine whether or not the timing of events is important, and to investigate the pathways associated with early fatherhood.

3.1.1 Logistic Regressions

We began by estimating a logistic regression that included information from the three waves of data collection. For this analysis, we constructed a set of dummy variables for each control variable. That is, we included indicators for whether the cohort member was classified into the most disadvantaged category or not (with a value of 1 and 0, correspondingly). Individuals with missing information were coded with zero, and a dummy variable for missing data was included for each of

the explanatory variables. This strategy allowed us to include as many cases as possible and to obtain some information regarding the cases with missing values.

Though not shown here, we estimated this model using imputed values for missing data, generated using multiple imputation by chained equations (MICE[1]). However, the significance of the independent variables and the conclusions drawn from both approaches are very similar. Thus, we preferred using the model without imputed values.

3.1.2 Structural Equation Modelling

In the second stage of our analysis, we employed structural equation modelling (SEM) to model explicitly the incidence and timing of childhood events; to identify the development stages in which children are most vulnerable to adverse events; and to understand the pathways through which different childhood characteristics influence young fatherhood.

SEM models allow researchers to estimate simultaneously a series of interrelated dependent relationships. These models have two primary components: a measurement model and a structural model. The former consists of a factor analysis in which observed variables are explained by a smaller number of underlying latent constructs (or unobserved variables). The second component describes the relationships between the latent variables themselves and between the latent variables and the independent observed variables (Bollen 1989).

Models for categorical data are fitted using Asymptotic Distribution Free (ADF) methods such as Weighted Least Squares (WLS). These methods provide asymptotically efficient parameter estimates, but they have some practical limitations: the sample size needs to be large (at least 500 to 1,000 cases) (Hox and Bechger 2002), and a maximum of about 25 variables can be included (Bollen and Long 1993). The last constraint required us to be selective in our choice of explanatory variables.

1 This was carried out using the software Stata, which imputes missing values using an iterative multivariable regression technique.

An advantage of SEM models is that one can disaggregate the total effect of the explanatory variables into direct effects (those that go directly from one variable to another) and indirect effects (those between two variables that are mediated by at least one intervening variable) (Bollen 1989). This provides a better understanding of the relationships between variables. For example, in our study, we are able to assess whether the effect of educational attainments on early fatherhood is mainly due to its direct effect on the outcome variable or if the indirect effects (e.g. through behaviour and temperament) also have an important contribution to the overall effect of this variable.

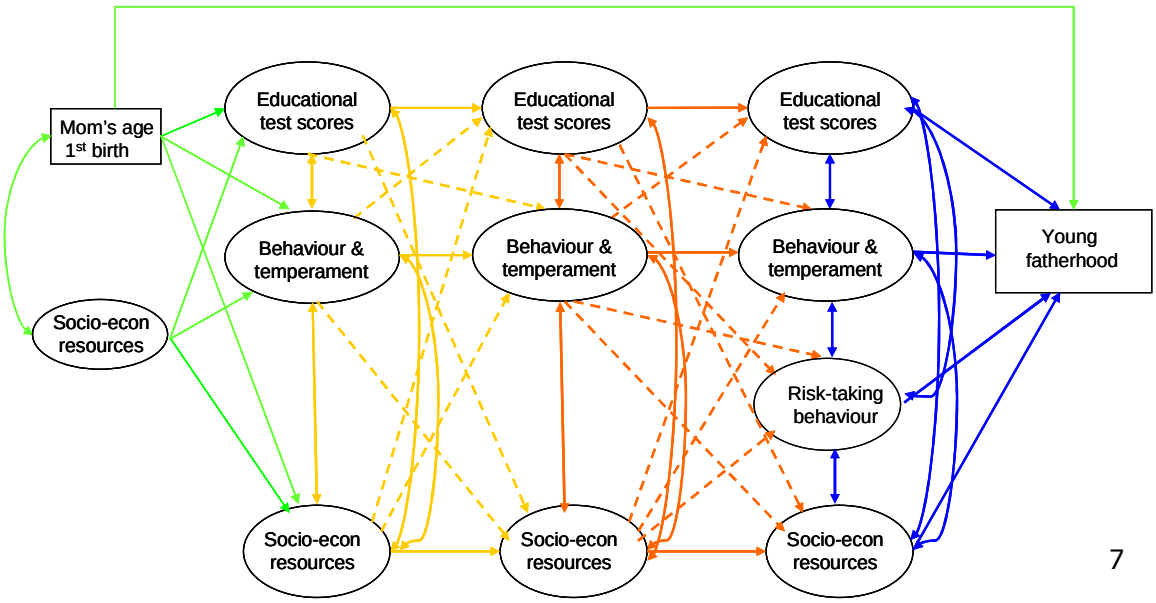
Using a life course approach and based upon results from the previous analytical stage, we specified a model in which the onset of early fatherhood is influenced by the interplay of a set of individual's experiences over time. That is, we defined that the risk of early childbearing is influenced by father's age at first birth, parent's socio-economic resources, educational test scores, behaviour and temperament, and personality traits. These latent variables were examined using the following observed measures:

- Parent's socio-economic resources:
    - at birth: social class and father's leaving school age;
    - at age 5: social class and housing tenure;
    - at age 10: social class, housing tenure and free school meals;
    - at age 16: social class, housing tenure and financial difficulties.
- Educational test scores:
    - at age 5: vocabulary test and copying designs test;
    - at age 10: reading test and mathematics test;
    - at age 16: vocabulary test and spelling test;
- Behaviour and temperament:
    - at ages 5, 10 and 16: aggression and restlessness[2];
- Risk-taking behaviour:
    - at age 16: contact with the police and truancy;

2 We did not include anxiety as a measure of behaviour and temperament because a first analysis indicated that the reliability and validity of this observed variable was somewhat low. Moreover, estimates from the logit model suggested it was not significantly associated with our outcome. Hence, we left it out from the analysis.

Figure 1 illustrates the hypothesised pathways to young fatherhood. First, we examine the influence of conditions prevailing at birth by looking at mother's age at first birth and parent's socio-economic resources. We assume that the former has an indirect effect on early childbearing through its influence on the experiences observed during early childhood (i.e. educational test scores, behavioural attributes, and socio-economic resources at age 5), and that it has a direct effect on the outcome of interest through a set of risk factors our model does not account for (e.g. family structure, parenting, mother's emotional well-being). In contrast, we hypothesise that socio-economic characteristics at birth have only an indirect effect on the timing of childbearing through its influence on the three latent variables studied at age 5. In addition, the model accounts for a possible correlation between mother's age at first birth and socio-economic resources at origin. Next, we assume that there is a relationship between the same measures over time, such that early experiences increase (or decrease) the likelihood of subsequent ones. For example, we propose that poor test scores at age 5 increase the likelihood of poor test scores at age 10, and, subsequently, poor test scores at age 10 influence those observed at age 16. Additionally, we hypothesise a cross-lagged effect between the different latent variables analysed (educational test scores, behaviour and temperament, risk-taking behaviour, and socio-economic resources) (see arrows with dotted lines in Figure 1). For instance, test scores at age 5 may have an effect on constructs examined at age 10, i.e., behavioural attributes and parent's socio-economic resources. Finally, we assess whether, at each age, there is a concurrent relationship between the latent variables analysed (see double arrows in Figure 1).

Figure 1. Theoretical Model of the Pathways to Young Fatherhood



Note: The latent variables are represented in ovals and observed variables are represented in rectangles. The arrows show the direction of the hypothesised paths. The dotted lines illustrate the cross-lagged effects. The double arrows represent the correlation between two variables.

For each of the childhood attributes, we used several statistical tests to assess goodness of fit and followed the recommended guidelines on the cut-off values for good fitting models. These include: the chi-square test (with a P >0.05), the Comparative Fit Index (CFI with a value >0.95), the Root Mean Square Error of Approximation (RMSEA <= 0.05), and the Weighted Root Mean Square Residual (WRMR with a value close to 1.0) (Muthén 1998-2004; Yu 2002). The chi-square test measures the discrepancy between the sample covariance matrix[3] and the predicted covariance matrix of the model. The other goodness of fit indicators adjust the chi-square test for the size of the sample, the number of variables, and its distribution, indicating approximate fit. They are recommended when the model does not follow a normal distribution or when the sample size is large (Bollen and Long 1993).

3.2 Data

This paper uses data of the 1970 British Cohort Study (BCS70), a longitudinal study of all children born in Great Britain in the first week of April 1970. The first round of data collection of the BCS70 study was carried out soon after birth and successive interviews were conducted at age 5, 10, 16, 26 and 30[4] (Ekinsmyth, Bynner et al. 1992; Plewis, Calderwood et al. 2004). The information collected at most surveys was gathered from face to face interviews with parents, school teachers, health visitors, and cohort members. The exception was the follow-up survey at age 26, which was carried out by post. For this reason, the quality of data of this sweep is poorer than the rest. Hence, for our outcome variable we use instead the information collected at age 30.

3 The sample covariance matrix is estimated from the empirical data and it is used to fit the model to the data and to test the model.
4 In 2004 there was an additional follow-up of the BCS70 cohort. These data have not been publicly released at the time of writing.

The total number of male cohort members interviewed at age 30 is 5,471, of whom 529 (9.7 percent) reported having had a child by age 22. We excluded 19 men who became fathers before the age of 17 because we wanted to ensure that the explanatory variables collected at age 16 precede the outcome variable. This restriction lead to a final working sample of 5,452 men, of whom 510 (9.4 percent) reported having become fathers by age 22.

3.2 Measurement of Variables

Outcome Variable

We define *young fatherhood*: as having had the first birth by age 22. Our estimates show that only 9.4 percent of the cohort members in our sample had a child by this age (see last row of Table 1 in the Appendix). This figure indicates that men who entered fatherhood in their early 20s do it so at a younger age than that of the norm. We use this cut-off point because it is likely that among the BCS70 cohort not only teenage fathers are a vulnerable group, but also those who became fathers by age 22. Moreover, the number of teenage fathers was too small (175 cases or 3.2 percent) and this could have posed problems in fitting of our models. Nevertheless, although not shown here, the strength of the predictors is reinforced for teenage fathers.

Explanatory Variables

We examined a wide range of explanatory variables that previous studies have identified as being significantly associated with young parenthood. These included variables from multiple domains: demographic characteristics, socio-economic background, academic performance, behavioural attributes and personality traits. The covariates included in our logistic regression model were grouped into indicator variables similar to those used by Sigle-Rushton (2005). For the first stage of the analysis, we included indicator variables for identifying those cases with *missing* information. On the other hand, for the SEM models, the explanatory variables were grouped hierarchically into categories, based upon the methods used by Hobcraft (1998). This categorisation is described in more detail below.

The demographic characteristics considered include the age of the respondent's mother when she had her first birth and family structure. We include mother's age at first birth to account for a possible intergenerational link of first birth timing, i.e. whether sons of young mothers are more likely to become young fathers. Several studies have found evidence of this intergenerational effect among females (Kiernan 1997; Barber 2001; Ermisch and Pevalin 2003; Woodward, Fergusson et al. 2006), but fewer have observed that this effect takes place also among males (Barber 2001; Jaffee, Caspi et al. 2001; Pears, Pierce et al. 2005). We identified those respondents whose mother had an early birth with an indicator of 1 if she had her first child before age *20.* We specified a different cut-off point than that of the cohort members because the timing of first birth occurs at a younger age among females; especially among an older generation (e.g. 26 percent had the first child during the teenage years). Family structure was measured, at each age, identifying those cohort members who were living with *both natural parents*, with *one parent* because of death or divorce, and with neither parent in a *foster family*. We also identified those with missing information on family structure.

A range of measures of socio-economic background were included in the first part of our analysis. These include mother's age at leaving school, father's social class, housing tenure, receipt of free school meals (at age 10) and financial hardship (at age 16). We identified those cohort members whose mother left school at or before the minimum age for completion of compulsory studies with an indicator of 1 if mother left school at age 15 or younger. The social class of the cohort member's father[5], collected at ages 0, 5, 10 and 16, is measured using the following occupational class categories: *semi-skilled and unskilled manual*, *skilled manual*, and *non-manual*. For the logistic regression model, we used a dummy variable that equals 1 if the father was working in a semi-skilled or skilled manual occupational class. We included two indicators of family poverty: receipt of free school meals (at age 10) and self-assessed financial difficulties (at age 16). Finally, we used information on housing tenure at each age, identifying those who lived in *local authority housing,* and *other* types of housing (including owner occupation,

5 It should be noted that this information belongs to the resident father figure – may not be the natural father or the same man at each age.

buying and private renting). An additional dummy variable identified those with missing information.

We controlled for academic performance by using results from achievement tests administered at ages 5, 10 and 16. At age 5, we used the information gathered from a vocabulary test and a copying designs test. At age 10, we used data from a reading test and a mathematics test. And, at age 16, we used information from a vocabulary test and a spelling test. Each test score was standardised to have a mean of zero and a variance of one. For each age, the two standardised scores were added and then categorised according to their quartile distribution[6]. Those in the lowest quartile were classified as achieving *low level* scores, those in the middle two quartiles as obtaining *middle level* scores, and those in the top quartile as having *high level* scores. For the logistic regression, the two top categories were defined as the reference group and set equal to 0. As with other covariates, this one also includes a dummy variable for *missing* information.

Measures of the cohort member's temperament and behaviour at each age were constructed using information collected from the cohort member's parent. Following Hobcraft (1998), at age 5, 10 and 16, we grouped 12 items into three behavioural measures: aggression, anxiety and restlessness. The first measure was constructed using parental reports on the extent to which their child: 1) frequently fights with other children, 2) is irritable, quick to fly off the handle, 3) often destroys own or others belongings, 4) is often disobedient, and 5) bullies other children. Anxiety was constructed based on reports that the cohort member: 1) often worries, 2) is miserable, unhappy, tearful, depressed, and 3) is fearful or afraid of new situations. Restlessness was constructed using reports that the child: 1) is squirmy or fidgety, 2) has twitches or mannerisms, 3) cannot settle down to anything, and 4) is very restless. Each item was coded 0 for items that did not describe the cohort member's behaviour, 1 if the item somewhat described her behaviour, and 2 if the item certainly described her behaviour[7].

6 The standardisation of the test scores as well as the partition of the distribution into quartiles was carried out using information only of the female cohort members.

7 At ages 5 and 16, behavioural items were measured using a scale that ranged from 0 to 2, with 0 as doesn't apply, 1 as somewhat applies, and 2 as certainly applies. At age 10, however, the behavioural scores were assessed using a different scale, ranging from 0 to 100. This scale was converted into 3 categories to make it as similar as possible as the scale used at other waves (certainly applies (67-100), somewhat applies (33-66), and doesn't apply (0-32)).

At each age, we added the scores of all items within each behavioural measurement and classified the total sum into three categories: low, medium and high. For aggression and restlessness, we coded the sum into the following groups: *low* (sum of 0 or 1), *medium* (sum of 2 or 3), and *high* (sum 4 or more). The coding for the anxiety measure differed from the previous one because it included fewer items. The coding used for grouping the anxiety items was: *low* (sum of 0), *medium* (sum of 1 or 2), and *high* (sum 3 or more). For the logistic model, the group with the highest scores for each of these measures was given a value of 1 and 0 otherwise. Additionally, the three measures included a dummy variable for *missing* information.

Furthermore, we controlled for the cohort member's emotional well-being using measures of self-esteem, locus of control and malaise. Self-esteem was measured at ages 10 and 16 using the Lawrence self-esteem questionnaire (LAWSEQ) designed by Lawrence (1981). Higher score indicate higher levels of self-esteem. We standardised this variable so that it had a mean of zero and variance of one. We then created an identifier that was set equal to one for those cohort members whose scores placed them in the bottom quartile of the distribution of scores. Locus of control was measured at ages 10 and 16 using the CAROLOC score. Again we identified those with bottom quartile scores. The last psychological attribute, malaise, was measured only at age 16. The cohort members were administered a 24 item list of symptoms, the Malaise Inventory, designed by Rutter *et al* (1970) to identify individuals with a heightened risk of depression. Similarly to other studies, we classified men into two groups: those with *high risk* of depression (those with scores of 7 or more), and those with *low risk* of depression (those with scores lower than 7). For each of the three measures, we also identified those with missing information.

Two measures of risk-taking behaviour were included in our analysis: contact with the police and truancy. The information of these variables was collected at age 16 only. The first measure was constructed using the cohort member's answer on whether he had ever been arrested or taken to a police station since he was 11 years old. The group with a positive answer was given a value of 1 and 0 otherwise. The second measure was assessed using teacher's reports on whether the cohort member had ever played truant (since spring term 1986). Likewise,

positive answers were given a value of 1 and negative ones a value of 0. Both risk-taking behavioural measures include dummy variables for identifying those cases with missing information.

Finally, we included a measure of mother's malaise in our logistic regression analysis since other studies have shown that mother's mental health has an important influence on children's outcomes (Case, Lubotsky et al. 2001; Stein, Barnhart et al. 2003; Burgess, Propper et al. 2004). Rutter's Malaise Inventory was administered to the cohort member's father at all childhood waves. At each age, we identified those fathers at *high risk* of depression (those with at least 7 positive answers), at *low risk* of depression (those with scores lower than 7), and those with missing information.

Missing data

We control for the selectivity associated with missing data by including in our logistic regression indicators of missingness for each of the explanatory variables. This approach allowed us to identify the extent to which individuals without information differ from those with information and from those classified in the reference category. Additionally, for fitting our structural equation models, we handled missing information using the method available in Mplus, i.e. maximum likelihood estimation under the assumption of data missing at random (Muthén and Muthén 1998-2005).

4. Results

4.1 Logistic Regressions

Table 1 displays the results from our logistic regression model including variables from the three developmental stages of interest. This table presents odd ratios, standard errors and the level of significance of each parameter. In this paper, the odds ratios represent the change in odds of becoming fathers by age 22 in relation to those of cohort members in the reference category. These findings indicate which variables (and which time periods) are significantly associated with young fatherhood.

Results from this model show that among the demographic characteristics considered only mother's age at first birth is significant. Our model reveals that, net of other risk factors, men whose mother had a child before the age of 20 have greater odds of becoming a young father to those of the reference category, odds of 1.23. Young mothers are more likely to have limited capabilities which may have negative consequences on their children's outcomes. Estimates from our logistic model indicate that, holding all other covariates at their average value, men of young mothers have increased chances of becoming young fathers that men of older mothers (with predicted probabilities of 15.4 percent and 7.6 percent, respectively).

On the contrary, the parameter estimates of family structure are dropped from the model. Initially, this result seemed quite unexpected because other studies have shown that young people brought up in one parent families experience higher odds of young parenthood than those brought up with both natural parents (Kiernan 1992; Hobcraft 1998). However, research looking at more recent cohorts has observed that the association of family experiences is not significant in the presence of other background characteristics (Ermisch and Pevalin 2003; Sigle-Rushton 2004).

Next, we notice that, among the socio-economic characteristics included in this model, those assessing the situation at younger ages are statistically significant. Figures in Table 1 show that parental resources at birth and at age 5 have an important role on predicting young fatherhood. On the other hand, at age 10 only housing tenure is significant, and at age 16 none of the measures analysed is significantly associated with our outcome variable. Hence, these results suggest that the association of socio-economic resources with early fatherhood diminishes with age.

Results for academic performance show that this background variable has a persistent and significant influence on becoming a father at an early age. It is worth noting that, among the child antecedents analysed, educational performance has the greatest influence on young parenthood, a result observed in earlier cohorts (Kiernan and Diamond 1983; Kiernan 1997). The odds ratios indicate that, while growing up, men with low academic performance have higher

odds of becoming young fathers than men with better educational test scores (odds of 2.09 at age 16). Moreover, the odd ratios increase with age, with a t-test for equality of coefficients pointing out that test scores at age 16 are significantly different from scores at earlier ages.

In contrast, behaviour and temperament are significant only at age 5. What's more, self-esteem and locus of control are not significant predictors either. These results are quite different from those observed in a previous analysis looking at the female sample. Estimates for the female cohort members suggest that the influence of these variables is more relevant with increasing age. On the other hand, the factors that appear to be significant predictors of young fatherhood at age 16 are those associated with risk-taking behaviour, contact with police and truancy (with odds of 1.76 and 1.88, respectively). This suggests that young men who are engage into more risky behaviours are also more likely of becoming young fathers.

4.2 SEM models

Up to now, we have identified the childhood antecedents which are significantly associated with early fatherhood and have attempted to distinguish the stages at which they have a greater effect. However, to better understand the influence of these predictors on our outcome variable, we need to model explicitly the pathways to off-time fatherhood.

Results from our structural equation models are presented as follows: Table 2 shows the parameter estimates of the measurement model; Table 3 displays the findings of the structural component of the model; Figure 2 presents the path diagrams that describe the effect decomposition of our best fit model; and Table 4 shows the estimates of the direct, indirect and total effects of the latent variables included in the model.

The fist two columns of Tables 2 and 3 display the unstandardised and standardised parameters estimates[8]; columns under the heading *Est./S.E.* provide the value of the parameter estimate divided by its standard error (i.e. a critical

8 These coefficients are standardised using the variances of the continuous latent variables and the variances of the outcome variable Muthén, L. K. and B. O. Muthén (1998-2005). Mplus User's Guide. Los Angeles, CA, Muthén & Muthén..

ratio[9]). The results presented here correspond to the models fitted using Mplus' maximum likelihood method for missing data.

Our aim was to fit a model to explain the pathways displayed in Figure 1. However, the goodness of fit measures indicated that this initial model did not fit our data well. The output suggested that the socio-economic latent variables cannot be used simultaneously in the model. We redefined this latent variable using different specifications (e.g. only housing tenure, only social class, both), but these latent constructs continued to pose problems. Thus, we specified a second model eliminating the latent variables for socio-economic resources at ages 5, 10 and 16. This model specification assumes social class at birth has an indirect effect on early fatherhood through educational test scores and behavioural attributes at age 5, and through risk-taking behaviour at age 16. This revised model (shown below) provided a better fit.

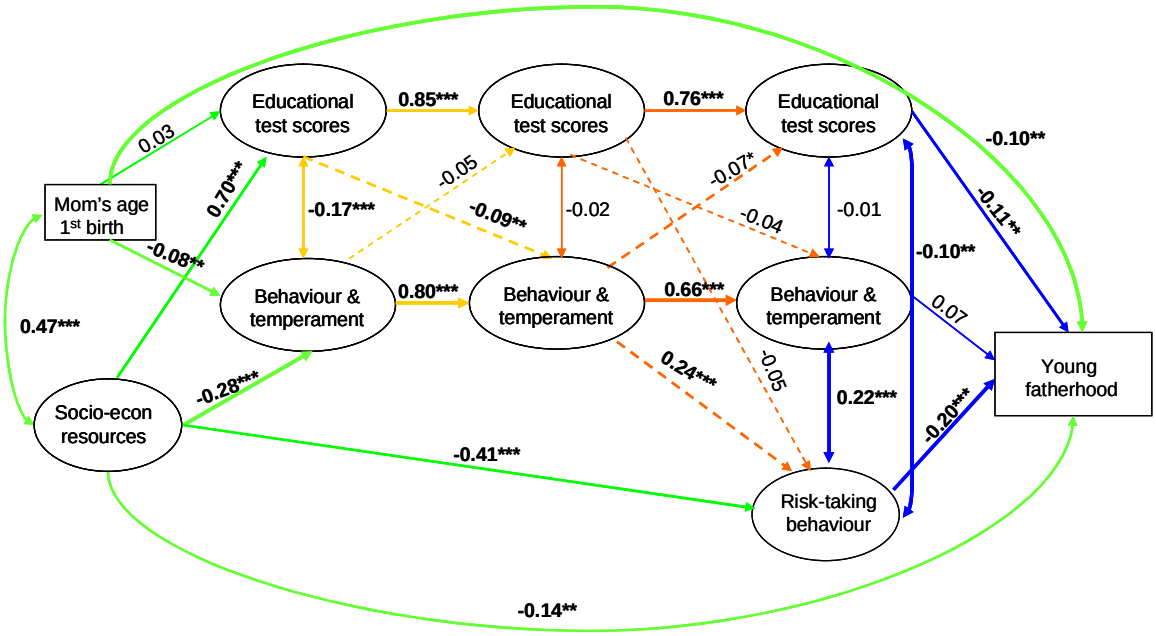
We explain in detail the results obtained from our second model. We begin by describing the estimates for the measurement model, presented in Table 2. This output is used to verify that the observed variables indeed measure the latent construct. The first column displays the standardised parameters (or factor loadings), which describe the reliability of the relation between the observed variables and the latent constructs. It can be seen that the measures exhibit a strong and significant relationships with their latent constructs (factor loadings ranging between 0.55 and 0.88, and with $p<0.001$). It is worth noting that the parameter estimates for test and behaviour show a change in value with age, suggesting that these factors are better indicators of their corresponding constructs with increasing age.

We now discuss the structural part of the model. Figure 2 shows that all paths follow the expected direction, i.e. the parameters have the expected sign. For example, our results show that coming from a family with higher socio-economic resources increases the likelihood of obtaining higher educational test scores (positive effect), decreases the probability of having behavioural problems

9This critical ratio is a significance test, which follows an approximately normal distribution. Hence, to asses the significance of a parameter, one compares the value of this ratio with the conventional cut-off points for statistical significance (e.g. for an alpha value of 0.05, ratios greater (or smaller) than 1.96 (-1.96) are significant).

(negative effect), and reduces the chances of risk-taking behaviour at age 16 (negative effect).

Figure 2. Parameter Estimates of Pathways to Young Fatherhood using Model 2



Note: All coefficients are standardised
Statistical significance: * p<0.05; ** p<0.01; *** p<0.001
Goodness of fit: Chi-square/df = 5.0; RMSEA=0.03; CFI=0.98; TLI=0.98

The parameter estimates[10] describing the relationship between subsequent risk factors indicate a continuous and strong association over time, slightly stronger between ages 5 and 10 than between ages 10 and 16. Educational test scores at an early age are strongly associated with schooling outcomes in middle childhood (0.85 SD), and these, in turn, are strongly associated with educational attainments at age 16 (0.76 SD). The same is true for measures of behaviour and temperament, though the difference between parameters is somewhat bigger (0.80 SD between ages 5 and 10, and 0.66 SD between ages 10 and 16). This indicates that there is a stronger continuity of behaviour and temperament at an early age.

10 The standardised parameter estimates for the structural component can be interpreted as the mean response in standard deviation units (SD) of the dependent variable for a one standard deviation change of the explanatory variable, holding constant other variables in the model Bollen, K. A. (1989). Structural equations with latent variables. New York, Wiley..

The paths describing the cross-lagged associations suggest that the influence of the latent variables analysed differs by developmental stage. The cross-lagged relationships between test scores and other constructs indicate greater time-lagged effects for educational performance at an earlier age. The parameters are significant between ages 5 and 10, such that higher educational test scores at age 5 decreases the chances that behavioural problems will be encountered at age 10 (-0.09 SD). In contrast, the cross-lagged effects between test scores at age 10 and other constructs at age 16 are of smaller size (-0.05 SD and -0.04 SD for the paths with behaviour and temperament and risk-taking behaviour, respectively) and non significant.

On the other hand, the cross-lagged relationships between behavioural attributes and other constructs display a different pattern. It seems that their time-lagged effect if any is greater at older developmental stages. Figure 2 shows that experience of behavioural problems at ages 5 and 10 reduces the probability of obtaining higher schooling qualifications at ages 10 and 16 (-0.05 SD and -0.07 SD, respectively). However, these time-lagged effects are small and significant only between ages 10 and 16. In addition, during preadolescence and adolescence, behaviour and temperament has a modest but significant association with risk-taking behaviour. Behavioural problems at age 10 increases the likelihood of experiencing risk-taking behaviour at age 16 (with a value of 0.24 SD). Furthermore, at age 16 the mutual influence of these variables is significant (correlation of 0.22 SD). Hence, the influence of variables associated with behavioural issues seems to be more relevant at older ages.

Results also show that socio-economic resources at birth is significantly associated with experiences at age 5, with a greater effect on educational test scores (0.70 SD) than with behavioural attributes (-0.28 SD). Furthermore, the path linking socio-economic resources at origin with risk-taking behaviour at age 16 shows a strong effect of this variable over time (with a value of -0.41 SD). Likewise, estimates in Table 4 corroborate that the total effect of socio-economic resources on early fatherhood is significant (-0.36 SD). The main indirect paths through which it affects the outcome variable are risk-taking behaviour at age 16 and academic performance at ages 5, 10 and 16. In addition, its direct path is also

significant (with an SD value of -0.14). Altogether, these results indicate a non-trivial role of parent's socio-economic resources over time.

Additionally, our estimates provide some evidence of the intergenerational effect of early childbearing. Unlike socio-economic resources, mother's age at first birth has a small impact on experiences at age 5, and this takes place mainly on the child's behavioural attributes (-0.08 SD compared with 0.03 SD of educational test scores). This suggests that children of young mothers have increase probability of experiencing behavioural problems at age 5, but that their educational performance is not associated by this background variable. Table 4 shows that the total effect of mother's age at first birth is, though small, statistically significant (-0.10 SD). The main path through which this child antecedent affects young fatherhood is through its direct influence (-0.10 SD). This may be so because mother's age at first birth might influence early childbearing through a set of mechanisms not assessed by our model (e.g. lone motherhood, multiple parental relationships, parenting skills, among others) but through which mother's age at first birth impacts young fatherhood. Another possibility is that the direct effect is due to the fact that early transition into parenthood is a traditional path among children born to young mothers.

We observe that high levels of academic performance decrease moderately, but significantly, the likelihood of having a child at a young age. Table 4 shows that the total effect of educational test scores on young fatherhood is significant at all ages. The total effect seems to be slightly bigger with increasing age (-0.11, -0.12, -0.14 SD for ages 5, 10 and 16, correspondingly); yet, it is unlikely that these differences are statistically significant. Additionally, we observe that the main pathways through which educational attainment at ages 5 and 10 affect early fatherhood is through its continuity on later academic achievements. Hence, these findings confirm that academic performance has a continuous and significant role on predicting young fatherhood.

Table 4 shows that the total effect of behaviour and temperament on early childbearing is relatively small. Moreover, it is worth noting that the total effect of this variable is much smaller than that of other constructs in the model. In the previous section, we had also observed that the contribution of behaviour and

temperament was limited. A possible reason is that at older ages characteristics associated with risk-taking behaviours play an important role (with values of 0.32 SD at age 16), hence decreasing the effect of behavioural attributes. We tested this hypothesis by removing measures of risk-taking behaviours from the model. However, the total effect of behaviour and temperament barely changes (see Table A.2. in Appendix). It is also possible that this pattern is due to the amount of missing data on behavioural scores at age 16.

We cannot assess the timing of risk-taking behaviours because measures for this dimension were collected only at age 16. However, our SEM model shows that the impact of this construct on young fatherhood is significant. The size of the total effect of this variable (0.32 SD) is close to that of socio-economic resources at origin. This result suggests that young men who are more prone to risk-taking behaviours, such as playing truant or being arrested by the police, have increased chances of becoming young parents. Teenagers who are more inclined to taking chances may be more likely to have unprotected sex.

Our findings suggest that what happens early is of great importance; however, what happens during preadolescence and adolescence is also relevant for predicting young fatherhood.

5. Discussion

Consistent with previous studies the main predictors of early fatherhood identified in this paper include mother's age at first birth, socio-economic resources, educational test scores, and a set of behavioural characteristics. Our findings also provided some evidence that the timing at which these childhood antecedents occur (or are measured) is important. We observed that covariates associated with academic performance have a continuous influence on our outcome variable. However, measures of behaviour have a greater impact on young fatherhood at older ages, particularly during adolescence.

This study finds evidence of a lasting effect of early socio-economic disadvantage on young fatherhood, a result in agreement with previous studies that have shown a continuous effect of socio-economic adversity on future outcomes (Hobcraft 1998;

Schoon 2002; Schoon, Sacker et al. 2003; Sigle-Rushton 2004). Estimates from a logistic regression model suggested that socio-economic disadvantage had a somewhat stronger association with young parenthood during early childhood and preadolescence.

Unfortunately, the SEM models did not allow us to examine explicitly the timing of socio-economic disadvantage because the covariates used for measuring this latent construct seem to be highly correlated over time. Despite this limitation, this approach provided some useful information regarding the trajectories through which socio-economic resources at origin affects young fatherhood. These findings suggest that socio-economic resources at birth initiates pathways to disadvantage. The main pathway through which it affects the outcome of interest is via the mediating effect of risk-taking behaviours at age 16. It also affects early childbearing through the mediating effect of educational test scores and behavioural attributes, but these paths are of much smaller size. The strong continuities of educational scores and behavioural attributes suggest that the developmental outcomes of children born into a family with limited capabilities, as assessed by our constructs, are more likely to be compromised.

This assessment has shown that mother's age at first birth has a small but significant influence on early childbearing. Estimates from our logistic model indicate that, net of other effects, men of young mothers have increased chances of becoming young fathers that men of older mothers (with predicted probabilities of 15.4 percent and 7.6 percent, respectively). Additionally, we observe that the influence of this background variable takes place mainly through its direct path.

This paper confirms that educational test scores play a crucial role in predicting early childbearing, as observed previously by Kiernan (1997), Hobcraft (1998) and Sigle-Rushton (2004). Our analysis shows that academic outcomes have a continuous and significant influence on becoming a young father, and that its impact is of similar magnitude across time. The SEM models suggested that academic performance at one point in time has a strong link with the level of achievement at a later point. Additionally, we observed that the time-lagged effects of educational attainments on subsequent behavioural outcomes are significant between ages 5 and 10 only, and that the concurrent association

between these variables is greatest at age 5. It might be that the previous paths are not significant at later ages because the percentage of children reported as being highly aggressive or restless was quite low (see table A.1 in Appendix). Parents may find their children more aggressive or more restless when they are younger. Another possibility is that with increasing age educational capacities have consolidated, hence they are independent of the behavioural attributes analysed. By counterpart, at older ages, the paths through which educational test scores influence early fatherhood are through risk-taking behaviours at age 16. That is, higher qualifications are related with decreased truancy and contact with the police. Therefore, these attributes also play an important role as predictors of early fatherhood.

The findings from this study also showed that behavioural attributes are somewhat related with early childbearing. Nevertheless, this effect is of much smaller size than that of educational test scores. In adolescence, measures associated with risk-taking behaviours become more relevant. Our results resonate with those of Collishaw *et al* (2004) and Woodward *et al* (2006), who also observed that adolescents with conduct problems are more likely to have a child at an early age. This is of particular relevance when devising strategies for tackling early parenthood because recent evidence has shown a substantial increase in adolescent conduct problems (Collishaw, Maughan et al. 2004).

Although our findings shed light on the trajectories to young fatherhood, there are a number of channels through which our latent constructs might influence an early transition into parenthood that our model does not account for (e.g. genetic factors, sexual behaviour, peer relations, family functioning, parental interest, neighbourhood effects, among others). For example, it is probable that academic success is associated with attributes closely linked with better quality relationships, which in turn may reduce the chances of an early pregnancy. Additionally, behavioural problems may be linked with other risk taking behaviours in adolescence (e.g. unprotected sex, multiple sex partners), which subsequently influence the risk of early parenthood, as observed by Woodward and Fergusson (1999). Future research should aim to disentangle in more detail the complex interplay of these factors. Although this task is faced with some data

and methodological constraints, these pathways merit further analysis (e.g. influence of socio-economic resources and parental interest).

It is worth remembering that men from the BCS70 cohort grew up in very different circumstances than current young people. Although the context is crucial on influencing individual's outcomes, we argue that our results should provide a good understanding of the present pathways to young fatherhood in Britain. The reasons for this are that birth rates among teenagers have not changed much since the mid 70s, and that the lack of opportunities of men in our sample may be similar, or even greater, to that of younger cohorts (Ferri, Bynner et al. 2003).

In sum, our results suggest that experiences during early childhood play a crucial role in predicting young fatherhood because what happens at age 5 is strongly associated with subsequent events. This highlights the importance of interventions in early childhood aimed at promoting child development. Early investments with a special focus on disadvantaged children (e.g. those who are reared by a young mother) may yield favourable impacts in childhood and adolescence (e.g. higher levels of schooling and positive social behaviour), which in turn could reduce the risk of early fatherhood. Nevertheless, this model also shows that experiences at pre-adolescence and adolescence continue to play an important role in determining early fatherhood. What's more, behavioural attributes and personality traits during adolescence are more strongly associated with young fatherhood than the same measures at younger ages. Hence, interventions at these developmental stages should also be part of the activities aimed at tackling early fatherhood.

This paper contributes evidence on the timing and the pathways associated with young fatherhood. This is of particular importance because young parenthood is associated with subsequent disadvantage and is one of the channels through which social exclusion is transmitted to the next generation. Moreover, although the UK government has set goals and implemented policies to tackle early parenthood, the continuing high rates of early conceptions indicate there is still much to be done to reduce young parenthood in Britain.

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Table 1.
Logistic Regression for Early Fatherhood (<23 years old)
BCS 1970

	Odds Ratio	Std. Err.	z	P-val
Demographic characteristics				
Mother's age at 1st birth (<20 years)	1.23	0.14	1.9	*
Socio-economic resources				
Mother's education				
Mother left school at age 15	1.66	0.22	3.8	***
Father's social class at birth				
Semiskilled or manual occupation	1.28	0.16	2.0	*
Missing social class	1.38	0.27	1.7	+
Housing tenure				
Local Authority, age 5	1.21	0.14	1.6	*
Local Authority, age 10	1.56	0.25	2.8	**
Local Authority, age 16	1.21	0.19	1.2	
Missing housing info, age 16	1.68	0.36	2.4	*
Free school meals (at age 10)	1.15	0.16	1.0	
Financial difficulties (at age 16)	1.23	0.21	1.3	
Educational test scores				
Test score 1st quartile, age 5	1.36	0.17	2.5	*
Missing test score, age 5	1.47	0.29	1.9	+
Test score 1st quartile, age 10	1.43	0.17	3.1	**
Test score 1st quartile, age 16	2.09	0.44	3.5	**
Behavioural measures				
Behaviour scores high, age 5	1.22	0.14	1.7	+
Behaviour scores high, age 10	1.09	0.14	0.7	
Behaviour scores high, age 16	0.63	0.16	-1.9	+
Cohort member's self esteem				
Self esteem 1st quartile, age 10	1.13	0.14	1.0	
Self esteem 1st quartile, age 16	1.14	0.28	0.5	
Missing self esteem, age 16	1.37	0.26	1.7	+
Cohort member's locus of control				
Locus of control 1st quartile, age 10	1.14	0.15	1.0	
Locus of control 1st quartile, age 16	1.05	0.25	0.2	
Risk-taking behaviour				
Contact with the police, age 16	1.76	0.18	5.5	***
Truant, at age 16	1.88	0.22	5.4	***
Mother's malaise score				
Malaise score >7, age 5	0.99	0.13	-0.1	
Malaise score >7, age 10	1.04	0.16	0.2	
Malaise score >7, age 16	1.07	0.22	0.4	
Sample size	*5452*			
Pseudo_R2	10.94			
Likelihood ratio	-1508.47			
% Fathers by age 22	9.35			

Notes: Statistical significance: + p<0.10; * p<0.05; ** p<0.01; *** p<0.001
Reference categories: Mom's age 1st birth>=20; Mom's leaving school age>15; Father's soc.class: non-manual; Housing tenure: owner or renting; Test scores:2nd - 4th quartiles; Behavioural scores:medium and low; Locus of control: 2nd - 2th quartiles; Malaise scores <=7
Other covariates in the model: family structure and missing values.

Table 2.
Measurement model
Pathways to Early Fatherhood using Structural Equation Models

	Model 2			
	Unstandardised	**Standardised**	**Est./S.E.**	**p-value**
Mother's age at first birth	1.00	1.00	0.0	-
Socio-economic resources at birth				
Father's social class	1.00	0.68	0.0	-
Mother's leaving school age	0.84	0.57	22.5	***
Behaviour AGE 5 BY				
Aggression	1.00	0.74	0.0	-
Restlessness	0.88	0.65	25.6	***
Education AGE 5 BY				
Vocabulary test	1.00	0.60	0.0	-
Copy design test	0.92	0.55	23.4	***
Behaviour AGE 10 BY				
Aggression	1.00	0.78	0.0	-
Restlessness	0.86	0.68	28.1	***
Education AGE 10 BY				
Reading test	1.00	0.88	0.0	-
Maths test	0.97	0.86	49.6	***
Behaviour AGE 16 BY				
Aggression	1.00	0.86	0.0	-
Restlessness	0.94	0.80	19.5	***
Education AGE 16 BY				
Vocabulary test	1.00	0.86	0.0	-
Spelling test	0.91	0.78	26.8	***
Risk-taking behaviour AGE 16 BY				
Contact with police	1.00	0.69	0.0	-
Truancy	0.93	0.64	18.4	***
Sample size	*5424*			

Note: Statistical significance: * p<0.05; ** p<0.01; *** p<0.001

Table 3.
Structural model
Pathways to Early Fatherhood using Structural Equation Models

	Model 2			
	Unstandardised	Standardised	Est./S.E.	p-value
Behaviour AGE 5 ON				
Mother's age at first birth	-0.06	-0.08	-2.7	**
Socio-economic resources at birth	-0.30	-0.28	-7.6	***
Education AGE 5 ON				
Mother's age at first birth	0.02	0.03	1.0	
Socio-economic resources at birth	0.62	0.70	14.9	***
Behaviour AGE 10 ON				
Behaviour AGE 5	0.85	0.80	19.6	***
Education AGE 5	-0.12	-0.09	-2.8	**
Education AGE 10 ON				
Education AGE 5	1.03	0.85	20.6	***
Behaviour AGE 5	-0.06	-0.05	-1.4	
Behaviour AGE 16 ON				
Behaviour AGE 10	0.72	0.66	17.5	***
Education AGE 10	-0.03	-0.04	-1.0	
Education AGE 16 ON				
Education AGE 10	0.74	0.76	25.8	***
Behaviour AGE 10	-0.08	-0.07	-1.9	*
Risk-taking behaviour AGE 16 ON				
Education AGE 10	-0.04	-0.05	-1.2	
Behaviour AGE 10	0.21	0.24	7.6	***
Socio-economic resources AGE 0	-0.41	-0.41	-8.5	***
Early fatherhood ON				
Mother's age at first birth	-0.10	-0.10	-2.7	**
Behaviour AGE 16	0.07	0.07	0.6	
Education AGE 16	-0.17	-0.14	-2.7	**
Risk-taking behaviour AGE 16	0.46	0.32	5.4	***
Socio-economic resources AGE 0	-0.21	-0.14	-2.0	*
Correlations				
Mother's age at first birth WITH				
Socio-economic resources at birth	0.32	0.47	23.4	***
Behaviour AGE 5 WITH				
Education AGE 5	-0.07	-0.17	-5.1	***
Behaviour AGE 10 WITH				
Education AGE 10	-0.02	-0.02	-0.9	
Behaviour AGE 16 WITH				
Education AGE 16	-0.01	0.00	-0.2	
Risk-taking behaviour AGE 16	0.13	0.22	6.5	***
Education AGE 16 WITH				
Risk-taking behaviour AGE 16	-0.06	-0.10	-2.7	**
Sample size	*5424*			
Chi-squared/Degrees of freedom	5.03			
P-value for Chi-squared	0.00			
RMSEA	0.03			
CFI	0.98			
TLI	0.98			
WRMR	1.05			

Note: Statistical significance: * p<0.05; ** p<0.01; *** p<0.001

Table 4.
Direct, Indirect and Total Effects of Pathways to Early Fatherhood
Estimates for Model 2

	Std P.E.	Est./S.E.	P-val
Mother's age at first birth			
Specific indirect			
BEH5 - BEH10 - RTB16	-0.01	-2.2	*
Total indirect	*-0.01*	*-1.5*	
Total direct	*-0.10*	*-2.7*	**
Total effect	**-0.10**	**-2.8**	**
Socio-economic resources at BIRTH			
Specific indirect			
RTB16	-0.13	-4.8	***
BEH5 - BEH10 - ABS16	-0.02	-4.1	***
EDU5 - BEH10 - ABS16	-0.01	-2.4	*
EDU5 - EDU10 - EDU16	-0.06	-2.7	**
Total indirect	*-0.22*	*-6.2*	***
Total direct	*-0.14*	*-2.0*	*
Total effect	**-0.36**	**-7.6**	***

	Std P.E.	Est./S.E.	P-val
Education AGE 5			
Specific indirect			
EDU10 - EDU16	-0.09	-2.7	**
BEH10 - RTB16	-0.01	-2.4	**
Total indirect	*-0.11*	*-3.2*	***
Total direct	-	-	-
Total effect	**-0.11**	**-3.2**	***
Education AGE 10			
Specific indirect			
EDU16	-0.11	-2.7	**
Total indirect	*-0.12*	*-3.0*	**
Total direct	-	-	-
Total effect	**-0.12**	**-3.0**	**
Education AGE 16			
Total indirect	-	-	-
Total direct	*-0.14*	*-2.7*	**
Total effect	**-0.14**	**-2.7**	**

	Std P.E.	Est./S.E.	P-val
Behaviour AGE 5			
Specific indirect			
BEH10 - RTB16	0.06	4.4	***
Total indirect	*0.05*	*2.1*	*
Total direct	-	-	-
Total effect	**0.05**	**2.1**	*
Behaviour AGE 10			
Specific indirect			
RTB16	0.08	4.5	***
Total indirect	*0.07*	*2.5*	*
Total direct	-	-	-
Total effect	**0.07**	*2.5*	*
Behaviour AGE 16			
Total indirect	-	-	-
Total direct	*0.07*	*0.6*	
Total effect	**0.07**	**0.6**	

	Std P.E.	Est./S.E.	P-val
Risk-takingbehaviour AGE 16			
Total indirect	-		
Total direct	*0.46*	*5.4*	***
Total effect	**0.46**	**5.4**	***

Note: Statistical significance: * p<0.05; ** p<0.01; *** p<0.001
EDU= Educational test scores; BEH= Behavioural attitudes, RTB= Risk-taking behaviour, SER=Socio-economic resources

Table A.1
Distribution of Explanatory Variables
Males BCS 1970 interviewed at age 30

	Age 5 (%)	Age 10 (%)	Age 16 (%)
Mother's age at first birth			
< 20 years	23.5	23.7	22.8
20-22 years	33.8	33.7	33.6
>=23 years	42.8	43.0	43.6
Family structure			
Both natural parents	92.3	85.9	82.5
In foster care	1.4	1.5	1.9
Mother's education			
Mother left school > age 15	35.2	35.2	37.0
Father's social class			
Semi and unskilled manual	16.4	14.9	11.3
Skilled manual	45.8	43.5	39.9
Non-manual	37.7	41.7	48.9
Housing tenure			
Local Authority	29.7	29.6	20.0
Other	11.2	6.5	3.7
Owner Occupier/Being Bought	59.1	63.9	76.3
Free school meals			
Yes	-	12.1	-
Financial difficulties			
Yes	-	-	10.8
Agression			
Low (Agg sum = 0 | 1)	35.6	63.1	72.7
Medium (Agg sum = 2 | 3)	39.5	22.1	19.7
High (Agg sum >=4)	25.0	14.7	7.7
Anxiety			
Low (Anx sum = 0)	42.7	54.1	63.3
Medium (Anx sum = 1 | 2)	45.7	27.2	28.4
High (Anx sum >= 3)	11.6	18.7	8.2
Restlessness			
Low (Res sum = 0 | 1)	42.2	55.3	86.3
Medium (Res sum = 2 | 3)	38.4	23.0	11.5
High (Res sum >=4)	19.4	21.8	2.2
Educational scores			
Vocabulary[5] /Reading[10] / Vocabulary[16]			
Low	24.0	23.6	24.2
Middle	50.4	49.4	51.3
High	25.6	27.0	24.5
Copy designs[5] /Maths[10] / Spelling[16]			
Low	29.4	23.8	26.7
Middle	45.7	50.3	51.0
High	25.0	25.9	22.4
Cohort member's			
Malaise score >= 7	-	-	13.3
Low self esteem (1st quartile)	-	28.3	25.9
Low locus of control (1st quartile)	-	26.0	24.6
Contact with police	-	-	28.5
Truant	-	-	55.4
Mother's malaise score			
Malaise score >= 7	22.4	17.4	11.0
Sample size[1]	*4466*	*5039*	*4147*
% Fathers by age 22	***9.35***		

Note 1: Sample size exlcudes cases with first birth before 17.