

# **Socio-economic Inequality and Socio-emotional Relationship**

**Quality: Cause and effect?**

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## **Abstract**

What role do families' socio-emotional relationships play in reproducing socio-economic inequalities? In logistic regression analysis of the United Kingdom's Millennium Cohort Study of 19,000 children born in 2000, family formation appears as a significant social-class cleavage. Controlling for other relevant factors, including age, education and ethnicity, working-class mothers were 2.4 times more likely than middle-class mothers to have their first child as lone-parents rather than within marriage. Women without a higher education were twice as likely as those with a degree to be cohabiting, rather than married, at the birth of their first child.

Notwithstanding such unequal 'selection' into different family forms, logistic and ordinal regression finds children born in more fragile families were at higher risk of poor child development before school. Being born into a lone-parent family doubled the relative chances of poor reading ability at age five. The quality of the parents' relationship and the parent-child relationship were also independently associated with socio-emotional development at age five. An OLS model shows the effects were strongest when combined, with children experiencing both poor parental relationship quality and poor parenting quality at nine months having on average 0.18 lower child development scores before school. While small in magnitude relative to socio-economic factors, the effects of socio-emotional relationships did not vary significantly by social class. Both in preventing poor or problem child development, and in laying a foundation for social mobility, the fragility and quality of family relationships in early childhood do seem to matter.

# **I. Background and Literature Review**

## **Introduction**

The high proportions of “fragile families” in the United States (US) and in the United Kingdom (UK) have caught the attention of policymakers. Under President Obama, the US government has maintained federal “healthy marriage and responsible fatherhood” initiatives targeted at low-income unmarried parents. The UK’s Coalition Government recently introduced a measure of “family stability” to its social justice indicators and says it seeks to “champion marriage”, including through the tax and welfare system.

While once an exclusively conservative political agenda, recent research suggests that fragile family forms are exacerbating social inequalities in these nations, and contributing to increasingly ‘diverging destinies’ for children (McLanahan, 2004). Research has focused on the potential socio-economic impact of the trend, with family formation and instability playing a role in polarizing household incomes and perpetuating poverty (OECD, 2011). But the impact may also play out socio-emotionally, with family formation affecting relationship and parenting quality, and attachment insecurity. This paper asks: what role do socio-emotional relationships within new families play in reproducing socio-economic inequalities?

## **Context**

It is striking that the western nations with the most ‘fragile’ family structures – a definition which includes a range of families with dependent children where parents the

parents are not living together, have been separated, divorced or are unmarried - are also the most unequal. Compared with other rich nations, the US and UK have particularly high levels of family instability (Kiernan, McLanahan, Holmes, & Wright, 2011; OECD, 2011). In 2010, 41% of US and 45% of UK babies were born outside of marriage (Census Bureau 2011; Goodman & Greaves, 2010). These two nations also stand out amongst rich nations for their relatively high levels of income inequality and low levels of social or income mobility (Blanden, 2009; Corak, 2012; Jantti, 2009). For children in these countries, unequal life-chances emerge in early childhood, with wide disparities in development now evident before children start school (Washbrook & Waldfogel, 2010).

Families with children in the US and UK are not only more unequal and unstable, however – they also appear to be more “unequally unstable”. In the UK in 2000, 43% of low education mothers were single parents, while only 14% of those with a high level of education were (Smeeding & Sundtrom, 2004). In the US the pattern is similar: while 30% of low education mothers were single parents, less than 8% of those with a high education were (McLanahan S. , 2004). When it comes to cohabitation, the two “Anglo-Saxon” nations diverge somewhat: in terms of their socio-economic composition, cohabiting couples in the UK are more similar to married couples, while in the US they look more similar to single-parents in the US (Kiernan, McLanahan, Holmes, & Wright, 2011). But the overall trend in the US stands: despite growth in the proportion of children born outside marriage, amongst white, college-educated women there has been no change in the proportion of children born outside of marriage for thirty years (Wilcox, 2010). In the UK, it appears that the growth in unmarried family structures between 1980

and 2000 was disproportionately driven by births amongst lower socio-economic groups (Figure 1).

[Figure 1 here]

Compared to figures taken at any one point in time, figures on the risk of being in a single-parent family at some point during childhood suggest an even starker social divide. By age 15, 63% of children of mothers with low levels of education in the United States have experienced single motherhood – nearly double the rate (33%) of those children whose mother has a higher level of education (Bumpass & Lu, 2000). By comparison, in France, 28% of children with mothers with low education levels would have been in a single mother household by age 15, not much more than the 24% of those with mothers of high education levels who were (Bumpass & Lu, 2000; McLanahan, 2004).

Despite changes in family structures over time, Kiernan, McLanahan and colleagues find that at least for the first five years of a child's life in the US and the UK, "parents' marital status at birth is a reasonably good proxy for whether children will grow up in more or less stable or complex households" (Kiernan, McLanahan, Holmes, & Wright, 2011, p. 22). The question, therefore, is: are fragile family relationships a cause, or a consequence, of social inequalities?

## **Literature Review**

The disparities seen in outcomes between children from different family structures could simply reflect wider disadvantages; unmarried parents are typically younger, and have low education and income levels. Controlling for ‘selection’ into different family forms, a recent sophisticated multivariate regression model in the UK using the Millennium Cohort Study of children born in 2000, attempts to isolate the effect of marriage itself on child development; the counterfactual is a family and child that is alike in all aspects except for the parents are married (Goodman and Greaves 2010). It finds that the child development gaps between those born to cohabiting parents (both registered at a joint address and ‘living together as married’) and those to married parents, become statistically insignificant once a large number of co-varying factors are held constant (Goodman and Greaves 2010).

Goodman and Greaves’ methodology aims to answer the question: if a currently cohabiting couple were to marry, would this improve child development, all other things being equal? Their study finds convincingly that it would not. Yet, this does not mean that the growth in family fragility is entirely benign. When people form different family structures, other aspects of their family life tend not to be equal. Family structure affects income in particular (McLanahan & Sandefur, 1994). Parental relationship statuses are also unlikely to be random with respect to many other variables usually ‘controlled for’ in analysis; variables including relationship quality, parenting, father involvement, maternal mental health, and childcare arrangements. Separate research finds that all these factors play important roles in children’s development and relative life-chances (for a review, see Waldfogel, 2006).

US studies, with a comparable dataset (the ‘Fragile Families’ longitudinal study of children born between 1998 and 2000) and similar controls for key variables such as income and race/ethnicity, find cohabitation to be significantly associated with greater social, if not cognitive, problems for children at age five (McLanahan, 2011). This perhaps reflects the spectrum of partnerships that fall under ‘cohabitation’ (Teitler & Reichman, 2001), and that in Britain cohabiting parents are more similar to married parents, socio-demographically, than in America (Kiernan, McLanahan, Holmes, & Wright, 2011). Further, where married two-parent families are compared to lone-parent families rather than cohabiting parents, the association between family structure and child development remains when income and ethnicity are controlled for. All other things being equal, five year olds born into single-parent households in the U.S. were significantly more likely to have social and internalizing behavior problems (McLanahan, 2011 p. 131).

The inconsistencies between different regression models with comparable datasets in the US and UK could reflect different social, racial and policy circumstances in the two countries. In the US for example, as many as 72% of non-Hispanic black mothers are unmarried, in a context where one in two children with African-American fathers without a high-school diploma will have been incarcerated by the time they turn fifteen (Wildeman & Western, 2010).

However, the different conclusions as to whether family structure matters also raise a methodological challenge: how far in model estimates can we control for variables that are not random with respect to family structure? Single and married parent households have different levels of income, while the stability and quality of their

relationships and parenting may vary. Economic and emotional advantages and disadvantages could be cumulative and interacting, not simply additive (DiPrete & Eirich, 2006). Looking only at average effects can also limit what can be said about inequalities. The marginal impact of family relationships on child development could be greater for families from more disadvantaged socio-economic groups. Family relationships might also have a stronger role in reaching a threshold of 'good' child development than in affecting relative development at the middle or higher ends of the distribution.

### **Socio-economic Inequalities**

It is notable that the rise in income inequality – particularly rapid in the 1980s but sustained into the Twenty-First Century – roughly tracks the rise in single- and unmarried parent families. Economic analysis indicates that the growing split between double-earner and single-earner (or no-earner) households is one of many drivers behind high and growing income inequality between households (Gregg & Wandsworth, 2000; Lerman, 2002). Some of the effect is compositional: single-person households tend to have less income because they have only one potential earner (and care-giver), and two adults can live more cheaply together than apart. The pattern is pronounced because measures of household income and poverty are usually 'equivalized' to account for family size, including the number of adults.

Beyond the 'pure' household compositional effects however, single-parenting, divorce and separation, can exacerbate the income inequalities by wages and gender. Single-headed families with dependent children have a far higher risk of low-income and



poverty, and account for a high proportion of poor families. One research team in the US found that even controlling for race, family background, age, education and employment status, ‘women who had a child outside marriage were between 2 and 2.7 times more likely to be poor than other women’ (Lichter, Graefe, & Brown, 2003). Furthermore, single mothers, unable to share caring responsibilities with a resident partner, are also often more exposed to “motherhood” wage penalties, in terms of the types, hours and vulnerability of jobs they are able to access (Waldfogel, 1997).

Research also suggests, however, that the link between gender and income inequality and single-parenting may reflect preexisting causes of low-income amongst men. The skills and earnings of non-resident fathers tend to be much lower than average. And, while there has been comparatively little analysis of the issue in the UK, the absence of ‘marriageable men’ particularly in urban, racially-segregated and post-industrial neighborhoods is commonly cited as a leading cause of single-parenting in the US (Wilson 1987; Edin 2000). Ethnographic research with low-income, unmarried couples in America has found that many had aspirations to marry and thought that it was best to raise a family in marriage (Edin & England, 2002). But many mothers also said they wanted to make sure one or both of them had a secure and/or well paying enough job so they no longer had to depend on their own family or welfare for financial support. Four years after the birth of a child, few parents had married, but few had also met this economic ‘marriage bar’. Nonetheless, 78% of those couples that had met the economic bar in terms of how they described their economic situation had married, compared to only 19% of those who did not meet such a ‘bar’ (Edin & England, 2009). This suggests that the social problem is not that marriage does not make parents better off financially

(in most cases it does), but rather that some parents do not feel well off enough to get married.

Various research that has simulated marriages between existing single mothers and similar unattached men suggests that while it is no substitute for other strategies, “child poverty rates would drop substantially if [single] mothers were to marry” (Lerman, 2002; Sigle-Ruston & McLanahan, 2003; Thomas, A & Sawhill, 2005). Using older data, Lerman (1996) found that simulated marriages amongst single-married families reduced income inequality among children by 26%. A simulation of marriage patterns, on 1998 US data, found that while the effects were a third lower for African-American than for white couples, marriage reduced the number of poor children by over 65% and raised average per capita income by 43% (Thomas, A & Sawhill, 2005). No comparative simulations have been conducted recently in the UK. However, the link between child poverty and single-parenting there is also strong: over 60% of single-parent families are poor, whereas only 4% of two-parent families in which one works full-time and one works part-time are (Department for Work and Pensions (DWP), 2010).

Poverty is a strong predictor of poor child development in the early years (Evans, Brooks-Gunn, & Klebanov, 2011; Washbrook and Waldfogel, 2009), while high income-inequality has been linked to lower levels of income mobility across countries (Corak, 2012). Notwithstanding this, research finds that compared to low-income married families, children from single-parent families in the US are less likely to escape poverty and achieve a middle-class income bracket (defined here as 300% of the poverty line) in adulthood (Sawhill, Winship & Grannis, 2012). Moreover, one of the ways in which both relative low-income and poverty is thought to impede early child development is

through psychosocial and even physiological stress in families (Brooks-Gunn & Duncan, 1997; Evans, Brooks-Gunn, & Klebanov, 2011; Shonkoff & Garner, 2012).

### **Socio-emotional Inequalities**

The focus of most research on family structure has been on its role in economic security, but stable families, close parents, and committed fathers potentially offer more than additional income to a family. Social psychology, psychoanalytic and other disciplines have demonstrated that social-emotional security is important both for successful parenting and for adult partnerships. The central idea of attachment theory, for example, is that good socio-emotional development for children depends on their parents' warmth, sensitivity, consistency and availability (Grossman & Grossman, 2009; Bowlby, 1979).

A secure early parental attachment can be made to fathers as well as mothers (Holmes, 1993). However, an insecure parental attachment – affecting approximately a third of the population (Prior & Glaser, 2006) – has been found to predict better socio-emotional and cognitive and linguistic development (Belsky & Fearon, 2002). The effects of attachment on behavioral and psychological problems have been seen to last into adolescence, and indeed in adult partnerships (Thomspon, 2000; Grossmann & Waters, 2005). Attachment theory looks at child development in dynamics of family relationships as a whole, and suggests parents' partnership relationships will affect their own parenting. Studies find that parents' attachment style predicts their children's 75% of the time (Steele, Steele, & Fonagy, 1996).

Family instability could threaten secure attachment relationships for children. Recent analysis in the US context finds that while (on average) multiple relationship transitions had no significant effect on mother's literacy activities, they significantly increased maternal stress and harsh parenting (McLanahan S., 2011). Furthermore, the effects of unstable relationships were more pronounced when mothers only had a high-school education (McLanahan, 2011, p.126-7). Father involvement and care is likely to be affected too; in single-parent structures, fathers in the UK are still more likely to be the non-resident parent by a ratio of 9:1. While levels of father engagement in early children varies by social class, US studies find that it also varies by family structure: only half of unmarried fathers that were not living with their children saw them on a regular basis five years after birth (Carlson, McLanahan, and Brooks-Gunn, 2008).

Socio-emotional security also seems to play a role in adult partnerships and family formation. Problems of trust and fidelity were common issues for 'fragile families', and not receiving enough "emotional attention" from their partners was the number one complaint of low-income unmarried mothers (Edin & England, 2009).

The quality of socio-emotional relationships in families is important given children's social and emotional skills – including the capacity for emotional- and "self-regulation" – have been found to be a key factor in later socio-economic success. Social and emotional skills appear increasingly associated with later educational attainment (Heckman & Rubenstein, 2001) and have become more relatively more important in explaining the intergenerational persistence of income levels (Blanden, Gregg, & Macmillian, 2006). Poor non-cognitive skills in childhood have been linked to low educational attainment, a range of risky behaviours, and criminal activity in adolescence

– the link is particularly strong for males and those from low-income families (Carneiro, Crawford, & Goodman, 2011). Lower self-esteem and higher levels of behavioral problems at age 10 have also been associated with an increased risk of unemployment and lower earnings (Feinstein, 2000).

Poor early socio-emotional development is a particular concern for the UK, which, even compared to the US, has high rates of behavioral problems amongst low-income children. It is because of this that, while America's children start school with the largest disparities in vocabulary, English children start school more unequal when it comes to socio-emotional and behavioral development (Washbrook & Waldfogel, 2010).

Despite the importance of socio-emotional development, to date, no consistent relationship has been found between socio-economic factors and attachment security – one major way in which socio-emotional skills are thought to develop. A recent study in England found that parental warmth and sensitivity is significantly associated with parents' education, but not their income (Gutman, Brown, & Akerman, 2009). In the British Whitehall Study of adults, attachment style does not appear to be significantly related to either parental occupation or education (Bartley, Head, & Stansfeld, 2007). Yet, amongst men with low educational levels in a British sample, those with a secure attachment style were twice as likely to be in higher civil service grades than those with an anxious one (Bartley, Head, & Stansfeld, 2007). If socio-emotional attachments are a protective factor against relative socio-economic disadvantage, understanding what promotes, and what endangers, them seems important to social policy aiming to reduce inequality and promote social mobility.

## **II. Methodology, data and conceptual framework**

The causal role of socio-emotional relationships is hard to demonstrate, largely because ‘people cannot be randomly assigned to different partnerships and then assessed for their outcomes’ (McLanahan et al, 2010). Simple linear regression analysis of longitudinal data can show, on average, the strength of association of independent variables, and the effect of progressively adding more control variables. However, in a study of social inequality, this method can be limiting given disadvantages and advantages are cumulative and dynamic, rather than discrete and simply additive. The present study’s methodology evolves a ‘structural’ model of the relationship between “family structure” and the reproduction of inequality, into a more ‘relational’ one, that explores also the relative, and interacting, aspects of the family relationships that potentially drive inequality in child outcomes. Figure two illustrates this evolution, and the hypothesized pathways through which socio-economic inequalities are reproduced.

[Figure 2 here]

## *Hypotheses*

Looking at the psychology and child development literature together with prior sociological and economics research, it is hypothesized that:

- i. lower socio-economic status is associated with a higher risk of more “fragile” family formation;
- ii. poorer socio-emotional family relationships – i.e. parental relationship stability, quality and attachment security – when a child was nine months old are each associated with a higher risk of poor child outcomes at age five; and
- iii. the effect poorer socio-emotional relationships will be felt strongest for children in families with fewer socio-economic resources, and when both the parents’ partner, and parenting relationships are poor quality.

A different regression model is used to test each of these three hypotheses: a multinomial logistic model estimates what affects the relative chances of forming different family structures (model 1); a logistic and ordinal logistic model explores what affects the relative chances of having poor or lower child development at age five (model 2); and an OLS model with interactions estimates the interacting effects of socio-emotional and socio-economic factors on child development (model 3).

## **Data**

All models in the study use the first and third waves of the Millennium Cohort Study (MCS), a UK panel survey following the lives of almost 19,000 babies. These babies were born between September 2000 and August 2001 in England and Wales and

between November 2000 and January 2002 in Scotland and Northern Ireland. The MCS sample is clustered geographically and was disproportionately stratified to over-represent areas with higher proportions of ethnic minorities, and those with higher rates of child poverty. This provides sufficient sample size to allow for representative sub-group analysis of family dynamics amongst low-income families and between different ethnic groups. Descriptive data reported is weighted to account for this over-representation.

The MCS has detailed information from both parental interviews and self-completed questionnaires on partnerships and parenting behavior in the first nine months of the child's life (the first wave). The data is also linked to the Foundation Stage Assessment Profiles, which are measures of child development of the same children at age five (in the third wave). As different teacher-based assessments were used in the Scotland, Wales and Northern Ireland, for consistency, these analysis apply only children born in England. This reduces the maximum possible sample size for the models using child outcomes to 7,400 (with all variables it reduces to 5,300). The data is weighted accordingly, including for non-responses.

The first wave of the MCS, when children were nine months old, contains measures of the key socio-emotional concepts investigated. Table 1 summarizes the key socio-emotional relationship concepts used in the present study, their measures or proxies available within the MCS, reliability and basis in previous literature. Pairwise correlations show that these four factors are relatively independent and so measure different aspects of family socio-emotional relationship quality.



**Box 1: Key socio-emotional relationship concepts, measures and literature**

<b>Concept</b>	<b>Measure</b>	<b>Reliability</b>	<b>Literature</b>
<b>Partner Relationship Stability</b>	Parental relationship status at the child's birth: married, cohabiting, single at birth, or separated and divorced.	89% of parents who were married at the birth of the child remained stably married for the next five years, compared to 69% of cohabiting parents and 40% of single parents.	Taken from Kiernan, McLanahan, Holmes, & Wright, 2011: Table 6.
<b>Partner Relationship Quality</b>	A scale of mother's self-completion answers on seven dimensions, such as feeling 'my partner is sensitive to my needs'.	As a standardized scale, this measure has a Cronbach's alpha of 0.78. Limited to resident fathers/ partners.	Based on Grims, a modified version of the Golombok Rust Inventory of Marital State based on seven items of relationship quality (Rust et al., 1990).
<b>Parent-child Attachment Security</b>	A dummy variable for insecure attachment was created from six self-completion questions on maternal feelings about the baby.	20% of mothers report at least one rejecting or insensitive feeling towards their child, a proxy for insecure attachment behaviours. The Cronbach's alpha of the scale is 0.40.	Th MCS takes six questions from the 19-question Condon Maternal Attachment Questionnaire (Condon & Coordinate, 1998).
<b>Parent-child Relationship Quality</b>	A dummy variable based on self-reports on four questions of attitudes to parenting reflecting warmth and consistency.	As a standardized scale, this measure has a Cronbach's alpha of 0.63. As a dummy variable, an unweighted 37% of parents self-report a parenting approach that is either 'cold' or inconsistent.	Uses five questions devised by the MCS research team. Similar dimensions were used by Lexmond and Reeves (2009).

### *Child Development*

The main outcome of interest is child development at age five, when children in England start school. This is measured by the Foundation Stage Profile Assessments, a nationally standardized measure at age five, which are linked to the MCS. The scores are based on thirteen nine-point scales within six areas of learning. Children's cognitive development is measured using the British Ability Scales (BAS) whereas children's socio-emotional development is gauged by parental responses to the Strengths and Difficulties Questionnaire (SDQ).

Child development scores are positively skewed, with a 'long tail' of low outcomes. Children in the bottom quintile of scores are of particular concern given the score predict later educational attainment. In the logistic (Model 1) analysis, the quintiles of child development are used. In the linear (Model 2) analysis, because linear regression assumes a normal distribution, standardized Z-scores are used. Furthermore, while other scores were correlated by more than 0.9 to total scores at age five, children's reading and personal social and emotional scores were correlated with total scores by 0.69. For this reason, as well a particular concern with socio-emotional development, in these dimensions of child development are disaggregated and modeled as separate outcomes.

### *Socio-economic status*

The key measure of socio-economic status is social class, based on occupational skill-levels. This is preferable to income and related (e.g. poverty) measures, because income and poverty levels (especially given they are equalized to account for family size) are both highly endogenous to family structure, and subject to greater fluctuation, particularly for families with

infants and young children. Furthermore, social class-based measures are thought to better reflect continuities in economic status between generations than do those based on income (Goldthrope, 2012).

The measure for social class within the MCS is taken from the UK's National Statistics' Socio-Economic Classification (NS-SEC 2000). The variable for social class is coded as a dummy variable, comparing working-class occupations: low supervisory, semi-routine and routine occupations, with middle class ones: managerial and professional, intermediate and self-employed occupations. On this measure, 57% of the sample are in middle-class occupations, and 43% are in working-class occupations. Mothers' class is used, but was highly correlated with fathers' social class.

In addition to occupation-based social class, measures are included for mother's education, as a categorical variable in four groups, based on national UK qualification levels attained: no qualifications, 5 GCSEs A\*-Cs, A levels, and higher education.

### ***Controls***

Mothers' age and ethnicity are the other major demographic controls. Mothers' age is coded into four age bands: under 25, 26-30, 31-36 and over 36. The models use a series of dummy variables relative to mothers aged between 31 and 36 years, reflecting later childbearing ages in recent cohorts. For ethnicity, multiple dummy categorical variables are given, compared to a base of white ethnicity. Wald and Partial F-tests show statistically significant differences on key variables between the different ethnic groups, education and age groups. Early child development varies between boys and girls and whether the child had sibilings, so controls were included for this.

Maternal and post-natal depression has been associated with both parenting quality and later child development in the MCS (Kiernan & Mensah, 2009). To control for whether the effect of socio-emotional relationships work through maternal depression, the models include a measure of maternal depression, as reported by the mother. It should be noted, however that this maternal depression measure was correlated with mothers' reported maternal attachment behaviours and relationship quality.

While it is the mother's attachment and parenting attitudes that are measured (a choice based practically on the measures consistently available within the MCS), fathers are of course other important influences on early child development. To assess the level of father involvement, when the baby is nine months, a mean is calculated from fathers' self reports of how often they care for the child on their own, change the baby's nappy and get up in the night for the baby.

Childcare too is thought to influence child development and mediate the effects of parenting and family context on children. The measure for childcare is based on the usual number of hours the child was in childcare in a week at nine months old. The variable was grouped as a dummy variable, distinguishing between those in childcare for 15 or fewer hours, or more than 15 hours. This reflects both the UK government's universal childcare entitlement for children aged three and four, and for disadvantaged children aged two, which pays for 15 hours of childcare, and the literature on the effects of length of time spent in childcare in infancy on child development.

## **Descriptive findings**

In the Millennium Cohort Study's UK sample in 2000, 61 percent of children were born to married parents, 25 percent to cohabiting parents and 15 percent to parents who were not living together at the time of the birth. Fewer than 2 percent were separated or divorced. However, as chart 2 shows, there are significant variations by social class: 71% of new parents in middle-class (managerial and professional) occupations were married, compared to fewer than half (47%) of those in working-class (semi-routine and routine) occupations. While fewer than 8% of middle-class mothers were lone parents at the birth of their child, the figure is 22% for working class mothers. Reported relationship quality also varies by social class; the thirteen percentage-point gap in the proportion of mothers reporting good relationship quality with their partner is statistically significant.

Parents' relationship stability over the first five years of a child's life varied significantly by their relationship status at that child's birth. Of parents who were married at the birth of the child, 89% remained stably married for the first five years of the child's life. By contrast, 31% of those cohabiting at birth had new partners, become lone-parents or had other periods of instability (a further 25% of those cohabiting at birth got married). For those parents single at birth, 40% remained stably so, and 8.5% had married by the time their child was age five. The other approximate half of lone-parent families had experienced instability, with a third having had new or multiple partners (Kiernan & Mensah, 2010).

As might be expected, middle-class mothers reported more warm and consistent parenting than do working class mothers. Notably, however, attachment security does not vary significantly by social class: 20% of middle-class mothers indicated an insecure attachment, as did 21% of working class mothers. This weak relationship between attachment style and social

class is consistent with that found amongst adults (Bartley, Head & Stansfeld, 2006). However, on our proxy measure, maternal attachment was somewhat “u-shaped” with regards family income; slightly (but statistically significantly) more likely in both the lowest and highest income quintiles.

[Figure 3 here]

### **III. Models and Results**

#### **Model 1: The socio-economic drivers of family formation**

As socio-economic factors might influence the chances of forming different family relationships, controlling for all such “selection effects” might obscure significant drivers behind the reproduction of inequality between generations. Before looking at the potential effects, Model 1 seeks to estimate the relative chances of parents from different socio-economic backgrounds forming different family structures. It uses multinomial logistic regression to estimate what affects new mothers chances of forming each of cohabiting, separated and divorced, or lone-parent families, relative to their chances of forming married families. As the focus is on new family formation, and family structures are fluid and complex over time, the sample is restricted to first-born children, about 40% of the MCS sample.

In addition to socio-economic status measures, Model 1 includes a measure of employment status based on whether the father was in work (if resident) and, separately, whether the mother had either worked at all during pregnancy or been on leave from work. This accounts for potential changes in employment status after the child’s birth, which might be endogenous to family structure, as well as maternity leave and other policy. Together with key demographic controls detailed below, Model 1 includes a variable for whether the mother’s own parents had divorced or separated, and whether mothers identified as being of any religion. Both may have shaped attitudes and expectations toward marriage and partnerships.

The multinomial logistic regression equations for Model 1, including U to denote unexplained variance are:

$$\begin{aligned} \text{Log}[Y = 2 (\text{Cohabiting})/Y = 1(\text{Married})] \\ = \alpha + \beta_1(\text{class}) + \beta_2 (\text{education}) + \beta_3 (\text{fatherunemployed}) \\ + \beta_4(\text{motheremployment}) + \beta_5(\text{parentseparated}) + \beta_6(\text{religion}) \\ + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) + U \end{aligned}$$

$$\begin{aligned} \text{Log}[Y = 3 (\text{Separated or Divorced})/Y = 1(\text{Married})] \\ = \alpha + \beta_1(\text{class}) + \beta_2 (\text{education}) + \beta_3 (\text{fatherunemployed}) \\ + \beta_4(\text{motheremployment}) + \beta_5(\text{parentseparated}) + \beta_6(\text{religion}) \\ + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) + U \end{aligned}$$

$$\begin{aligned} \text{Log}[Y = 4 (\text{Lone Parent})/Y = 1(\text{Married})] \\ = \alpha + \beta_1(\text{class}) + \beta_2 (\text{education}) + \beta_3 (\text{fatherunemployed}) \\ + \beta_4(\text{motheremployment}) + \beta_5(\text{parentseparated}) + \beta_6(\text{religion}) \\ + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) + U \end{aligned}$$

[Table 1 here]

### ***Interpretation of Model 1***

The results of Model 1 (table 1) indicate that socio-economic factors are strongly associated with family formation. Relative to middle-class mothers, working class mothers were nearly two and a half (2.45) times more likely to be lone parents, rather than married, when their children were born. The model also indicates that those who form lone-parent families effectively ‘from birth’ are already more vulnerable in the labor market. Net of other variables, when the father was currently unemployed, first-time mothers were 2.5 times more likely to be single-parents than to be married.

While the class effect is strongest for the relative risk of lone-parenting, with education having no significant effect on the chances of forming lone-parent households net of



occupation and employment status and age. Mothers without a higher education were twice as likely to be cohabiting, rather than married, at the birth of their first child.

Ethnicity appears to be associated with differential family formation, independent of socio-economic status. Net of other factors, Black Caribbean mothers were fourteen times more likely to be living alone, rather than married, at the birth of their child than were white mothers. Those that were of 'no religion', compared to any religion, were more than 2.5 times as likely to be cohabiting, rather than married, when they had children, net of other factors including ethnicity. Net of all other factors, those women whose parents had divorced or separated during their own childhood were 1.5 times more likely to have had their first child in a cohabiting rather than married partnership. This points to potential intergenerational effects of family and partnership relationships.

Young mothers having their first child under 25 had a substantially higher risk of being lone-parents rather than married. However, compared to mothers aged between 31 and 36, first-time mothers over 36 were also three times more likely to have a child as a lone-parent rather than as a married couple.

The logistic regression model was also run for the full sample, with the presence of siblings as a control variable. The presence of siblings was included as a control, and this halved the chances of mothers being in a cohabiting or a lone-parent family structure. This highlights the fluidity of family relationships and suggests that a significant number of mothers, having had a first child in a cohabiting or non-cohabiting relationship, subsequently marry or cohabit, even if not with their first child's father.

## Model 2: The socio-emotional drivers of child development

Model 1 shows a significant socio-economic divide in family formation, but is this benign in its effects on children? Parental partnerships are likely to affect a family's emotional relationships, as well as economic resources. "Over-controlling" for such factors risks missing key causal pathways: one would not control for income when comparing the effects of parental employment versus unemployment on children's development. Model 2 uses logistic regression to estimate the association between socio-emotional family factors at a 'baseline' of nine months with the odds of poor child development at age five. The fourth iteration of this model is an ordinal logistic regression, which compares the odds of being in any higher quintile of child outcomes, compared to any lower quintile. This model aims to capture not just absolute disadvantage in early childhood, but the relative inequalities in child development across the spectrum.

As discussed, social class and education are used as measures of socio-economic status, rather than income, given household income is more endogenous to family partnerships. Income and related poverty measures are prone to fluctuation and error, particularly in the early years as earnings interact with maternity leaves, benefits and tax-credits.

The logistic regression equations for model two, including U to denote unexplained variance are:

$$\begin{aligned} \text{Logit } P(\text{bottom25\%Total} = 1) = & \\ & \alpha + \beta_1(\text{relationship status}) + \beta_2(\text{relationship quality}) + \beta_3(\text{parenting quality}) \\ & + \beta_4(\text{attachment}) + \beta_5(\text{class}) + \beta_6(\text{education}) + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) \\ & + \beta_9(\text{siblings}) + \beta_{10}(\text{sex}) + \beta_{11}(\text{depression}) + \beta_{12}(\text{father involvement}) \\ & + \beta_{13}(\text{childcare}) + U \end{aligned}$$

$$\begin{aligned} \text{Logit } P(\text{bottom25\%PSE} = 1) = & \\ & \alpha + \beta_1(\text{relationship status}) + \beta_2(\text{relationship quality}) + \beta_3(\text{parenting quality}) \\ & + \beta_4(\text{attachment}) + \beta_5(\text{class}) + \beta_6(\text{education}) + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) \\ & + \beta_9(\text{siblings}) + \beta_{10}(\text{sex}) + \beta_{11}(\text{depression}) + \beta_{12}(\text{father involvement}) \\ & + \beta_{13}(\text{childcare}) + U \end{aligned}$$

$$\begin{aligned}
\text{Logit } P(\text{bottom25\%Reading} = 1) = & \\
& \alpha + \beta_1(\text{relationship status}) + \beta_2(\text{relationship quality}) + \beta_3(\text{parenting quality}) \\
& + \beta_4(\text{attachment}) + \beta_5(\text{class}) + \beta_6(\text{education}) + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) \\
& + \beta_9(\text{siblings}) + \beta_{10}(\text{sex}) + \beta_{11}(\text{depression}) + \beta_{12}(\text{father involvement}) \\
& + \beta_{13}(\text{childcare}) + U
\end{aligned}$$

[Table 2 here]

### ***Interpretation of Model 2***

Compared to those with married parents, children born into a lone-parent family had 2.6 times the odds of being in the bottom quintile of child development at age five. Also, being born into a lone-parent, rather than a married family, nearly halves the odds of being in any higher quartile of child development. This effect is net of relationship and parenting quality as well as socio-economic and demographic factors. It appears this effect works not through socio-emotional development but primarily through reading development.

Children whose parents were cohabiting at birth rather than married had slightly higher odds of poor socio-emotional and reading development at age five. The association with overall child development was statistically significant at the 95% but not at the 99% confidence level. The two percent of children whose parents were separated or divorced when they were born, had substantially decreased odds of being in any higher quartile of child development at age five.

In addition to the level of family fragility children are born into, parents' relationship quality was associated with increased odds of poor child development. Compared to children whose mothers reported good relationship quality when they were nine months old, those children whose mothers reported poor relationship quality had 1.4 times the odds of being in

the bottom quartile of child development. This effect does appear to work through poorer socio-emotional development. Parental warmth and consistency was also associated with poor socio-emotional development, but net of all other factors had no statistically significant effect on overall child development. Likewise on a limited self-report measure and net of all other factors, “insecure” attachment was not independently associated with poorer child development.

The logistic analysis shows that while family relationships are associated with development in early childhood, the effect of lone-parenting compounds the effects of socio-economic factors. Having very low levels of education and social class were strong predictors of poor child development. The strongest effects on child development, net of both socio-emotional and economic factors, are by ethnicity. Children of Pakistani, Bangladeshi, Black African and Black Caribbean ethnicities in this UK sample all had much higher odds of being in the bottom 25% of child outcomes at age five. Compared to mothers aged between 31 and 36 when their child was born, children of both older and younger mothers also had a higher risk of poor child development.

### ***Further analyses***

To explore these findings further, a predicted probabilities analysis was conducted on the ordinal logistic model. While the ordinal model gives the average effect of the chances of being in any of the higher quartiles of child development compared to any of the lower quartiles, predicted probabilities show how the effect varies for each quartile. Net of socio-economic and other factors, the socio-emotional family context makes a marginal difference at the top as well as bottom end of child development. Having a working-class mother reduced

the chance of being in the top quartile of child development by 10%, whereas being born into a 'lone-parent' family reduced the chances by 11%. Cohabiting parents reduced the chances of being in the top quartile of child development by less than 4%. While small in magnitude, this effect is greater than that of parenting approach (with a measure of poor parenting reducing the predicted probability by less than 1%). Having a mother with no qualifications, compared to one with a degree, reduced the chances of being in the top quartile by 15%.

As a sensitivity analysis, given the strong association found between lone-parenting and poor child development, the full logistic model was also run controlling for poverty in addition to parental education and class. This aimed to test whether the higher risk of low-income for lone-parent families was the main mechanism through which child development was affected. Including the UK's official measure of poverty (less than 60% of median household income "equivalized" for household size) in the model increased the association between being born into a lone-parent family and later child development. The control for poverty found that children born into lone-parent families had four times the odds of being in the bottom 25% of poor child outcomes at age 5. This suggests that while poverty is strongly correlated with lone-parenting, children born into lone-parent families, but who are not poor, are also at risk of poorer child development.

### **Model 3: The interaction of socio-emotional and socio-economic family factors in child development**

One of the limitations of the logistic regression in Model 2 is that looking at the effects of individual variables obscures the potential interactions between different factors in a family. As hypothesized (hypothesis iii), the marginal effect of socio-emotional relationships on child development might be more important for children depending on their families' socio-economic resources. Secondly, the effects of the family socio-emotional environment as a whole may be different to the individual effects of parents' relationship quality, parenting quality (warmth and consistency) and attachment. Model 3 tests these using interactions of variables within an Ordinary Least Squares (OLS) regression.

Model 3 uses linear regression because interpreting interactions within logistic models is complex. Unlike the logistic and ordinal logistic regressions in model two, which compared odds of being in quintiles of child development, the linear model therefore takes a continuous measure of child development at age five.

The linear regression was run with the same independent and control variables as the logistic regressions in Model 2. However, three interactions were also included. The effect of having a single or separated parent and working class mother (interaction a), was used with both a measure of any poor socio-emotional development and a working class background (interaction b, table 3); and a measure of poor socio-emotional relationships across parenting, relationship quality and attachment (interaction c; table 4).

The OLS linear prediction equations for model three, for each of total, personal social and emotional, and reading dimensions of early child development, with U to denote unexplained variance, are:

$$Y (\text{Child Development}) = \alpha + \beta_1(\text{relationship status}) + \beta_2 (\text{relationship quality}) + \beta_3 (\text{parenting quality}) + \beta_4(\text{attachment}) + \beta_5(\text{class}) + \beta_6(\text{education}) + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) + \beta_9(\text{siblings}) + \beta_{10}(\text{sex}) + \beta_{11}(\text{depression}) + \beta_{12}(\text{father involvement}) + \beta_{13}(\text{childcare}) + U$$

$$Y (\text{Child Development}) = \alpha + \beta_1(\text{relationship status}) + \beta_2 (\text{relationship quality}) + \beta_3 (\text{parenting quality}) + \beta_4(\text{attachment}) + \beta_5(\text{class}) + \beta_6(\text{education}) + \beta_7(\text{ethnicity}) + \beta_8(\text{age}) + \beta_9(\text{siblings}) + \beta_{10}(\text{sex}) + \beta_{11}(\text{depression}) + \beta_{12}(\text{father involvement}) + \beta_{13}(\text{childcare}) + \beta_{14}(\text{Singleparent} * \text{workingclass}) + \beta_{15}(\text{Any Sociomotional} * \text{workingclass}) + U$$

$$Y (\text{Child Development}) = \alpha + \beta_1(\text{relationship status}) + \beta_2 (\text{combined socioemotional}) + \beta_3(\text{class}) + \beta_4(\text{education}) + \beta_5(\text{ethnicity}) + \beta_6(\text{age}) + \beta_7(\text{siblings}) + \beta_8(\text{sex}) + \beta_9(\text{depression}) + \beta_{10}(\text{father involvement}) + \beta_{11}(\text{childcare}) + U$$

$$Y (\text{Child Development}) = \alpha + \beta_1(\text{relationship status}) + \beta_2 (\text{combined socioemotional}) + \beta_3(\text{class}) + \beta_4(\text{education}) + \beta_5(\text{ethnicity}) + \beta_6(\text{age}) + \beta_7(\text{siblings}) + \beta_8(\text{sex}) + \beta_9(\text{depression}) + \beta_{10}(\text{father involvement}) + \beta_{11}(\text{childcare}) + \beta_{12}(\text{Singleparent} * \text{workingclass}) + \beta_{13}(\text{Combined Sociomotional} * \text{workingclass}) + U$$

[Table 3 & 4 here]

### ***Interpretation of model 3***

The first thing to note from Model 3 (tables 3 and 4) is that none of the interaction effects are statistically significant at the 99% confidence level. Neither the effects of family structure nor partner or parenting relationship quality vary significantly by social class. This may reflect the fact that the interaction effects pertain to relatively small samples: fewer than 10% of families in the sample were single-parent and working-class, and even fewer reported poor parenting and parental relationships *and* indicated insecure attachment. However, the

direction of the interaction effects indicates that, if anything, socio-emotional relationship quality matters more for children in middle-class families than for those in working-class families. This is contrary to the hypothesis (iii) that the marginal effect of socio-emotional relationships would be greater for more socio-economically disadvantaged children.

Model 3 does show (table 5) that the *combined* effect of a poor family relationship context at nine months (interaction c) is to reduce by 0.18 child development scores before school. This effect does not appear to vary significantly by social-class. The linear model also shows (table 4) that effect of attachment behaviors on a continuous measure of socio-emotional child development at nine-months, while small (0.08), was significant at the 99% confidence level.

Both with and without the inclusion of interactions, the linear coefficients tell us more about the effects of family relationships on average child development. The linear coefficients show that compared to having married parents at birth, having a lone parent was associated with a 0.43 reduction in reading development scores at age five. This was even greater than the effect (0.39) of the mother having no qualifications. However, in general, the effects of socio-emotional family factors and poorer child development associations are small in magnitude relative to other socio-economic and other demographic factors. For example, being born to cohabiting parents was associated with a 0.10 reduction in personal, social and emotional scores at age five, whereas having a working-class mother was associated with a reduction of 0.23.



## **IV: DISCUSSION AND CONCLUSION**

### **Limitations**

By looking at the role of socio-emotional relationships, and by using social class and education rather than more endogenous income-based measures of socio-economic status, this analysis has sought to enrich our understanding of the pathways through which inequalities emerge as families form and young children develop. The analysis does not overcome the inevitable endogeneity between the different aspects of family life, but it does explore the interplay between economic and emotional factors, recognizing social inequality as a potential cause and effect of the rise in “family fragility”.

The model design therefore looks at the relative roles of socio-emotional and socio-economic family factors in family formation and early child development. It does not claim to be an exhaustive account of all the possible drivers of child development. Some variables are omitted from our models, such as health factors and health behaviors such as low birth weight, disability, and breastfeeding, which could also be contributing to disparities in child development. Indeed, the R-squared (and pseudo R-Squared in the logistic models) show that altogether the model variables at nine months explain no more than approximately 12% of the variation in child development scores at age five.

A major limitation of this analysis is its reliance on self-reported measures, given the absence of observation-based measures of key ‘socio-emotional’ concepts in the MCS. Self-reports can reflect different expectations and norms, which themselves vary in important ways by social class and education. Attachment and parenting quality (warmth and consistency) each rely on scaled indicators from less than six questions put to the mother at nine months.

The attachment measure, looking at maternal sensitivity and attachment behavior, should be taken as at best a proxy. Its Cronbach's alpha, a measure of internal reliability, is low at 0.4. The MCS's measure of attachment (as noted in box 1) is based on the Condon Maternal Attachment Questionnaire. Although the full 19-question questionnaire taken 20-25 weeks after the birth has a Cronbach's alpha of 0.66, on the 'absence of hostility' dimension, from which the MCS's six questions are taken, the Cronbach's alpha (0.44) is very similar to that in the MCS (Van Bussell et al., 2010). Attachment style is more reliably measured through observation of a child's interaction with the mother and strangers (what is called the "strange situation") when children are aged between 12 and 15 months (Grossman & Grossman, 2009). Such observational measures of attachment style are also closer to theoretical conceptions of attachment.

In addition to the use of a dataset with observational measures of parent-child interaction, this research could be developed in two ways. Firstly, a dynamic model could measure key factors like relationship stability or attachments more reliably over the five years, and could see if and how changes in such socio-emotional factors are associated with child development. This would also better control for unobserved and time-invariant factors associated with a family that may be confounding the present analysis. Secondly, repeating the analysis for the US, using the largely comparable Fragile Families and Child Wellbeing Survey, could explore cross-national differences, and the potentially mediating roles of, for example, differences in ethnic compositions and histories, social policy, and labor market contexts.

## **Conclusion**

This study develops the research into the role of family ‘structure’ in three ways: it highlights the role of parental and parent-child relationship quality; it looks at the interplay of socio-economic and socio-emotional factors as new families form; and it looks at relative as well as average effects on early child development. Notwithstanding the limitations discussed above, we can draw three key conclusions.

First, controlling for class, education and other key demographic factors, more fragile family forms are associated with poorer child development at age five. Being born into a lone-parent family structure is a particular risk factor for poor child development at age five, largely because of its association with slower reading development. Sensitivity analysis suggests that, while lone-parenting brings a heightened risk of poverty above and beyond mothers’ education and class, poverty alone does not explain the association with poorer child development.

Secondly, controlling both for family structure and socio-economic factors, lower quality relationships between parents, and between parents and children, are associated with poorer early socio-emotional development. The negative effects on child development appear strongest when both the relationships between parents and between parents and children are poor. Both in preventing poor development and as a foundation for social mobility in early childhood, good quality family relationships do seem to matter.

The role of socio-emotional factors is small relative to the effects of class and education and ethnicity, which all remain strong predictors of early child development. Nonetheless, the effects of socio-emotional family factors do not vary significantly by social class. Parents appear important not just as children’s first providers and teachers, but also as children’s first caregivers and relationships. This is hopeful, because, certainly compared with a family’s

relative position in an occupational structure, the quality of a family's relationships may be more amenable to policy intervention.

The third conclusion we can draw, however, is that family formation is a point of major social cleavage. Previous analyses have estimated the importance of family forms whilst controlling for all 'selection' into different family forms, but the extent of such 'selection' by socio-economic status could be seen to represent an inequality in itself. Families' socio-emotional relationships are contributing to socio-economic inequalities, but they also reflect them.

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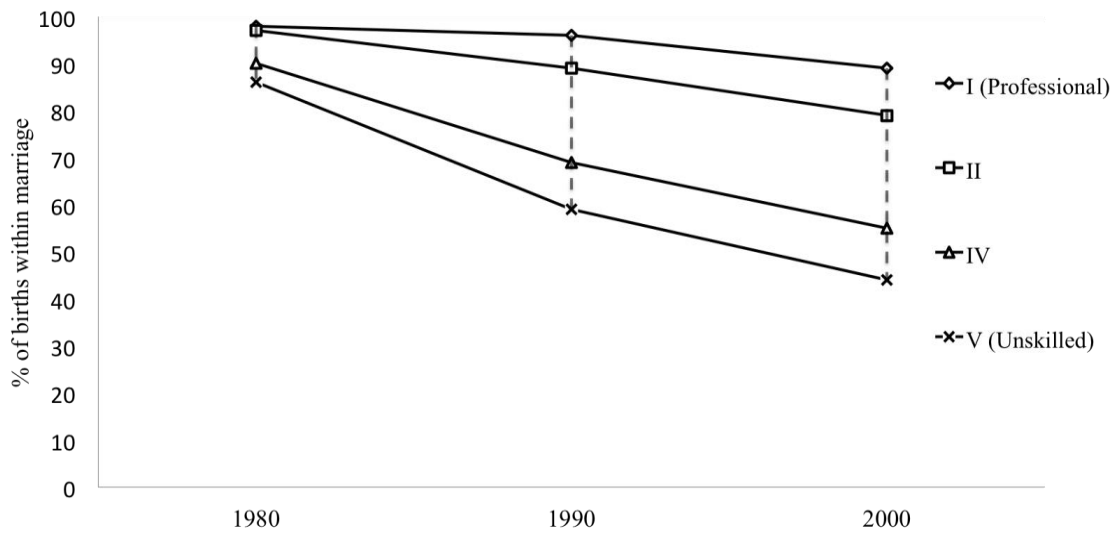
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## FIGURES

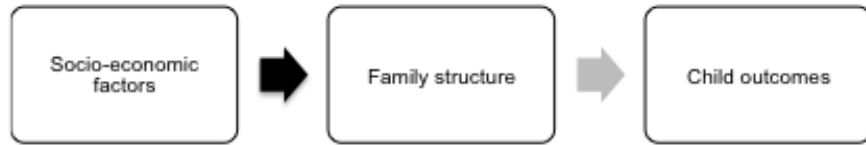
Figure 1: Births within marriage by father's social class 1980-2000 (UK)



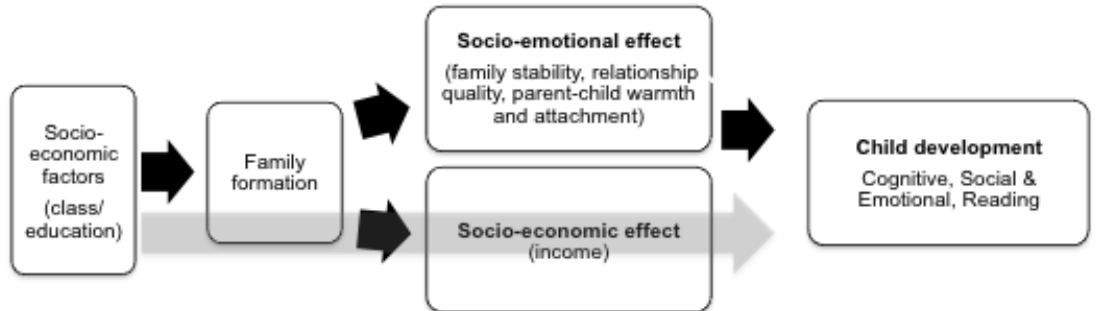
Source: Author calculations based on UK Office for National Statistics (ONS) data

Figure 2: Inequalities in early childhood development: a relational model (hypothesized pathways)

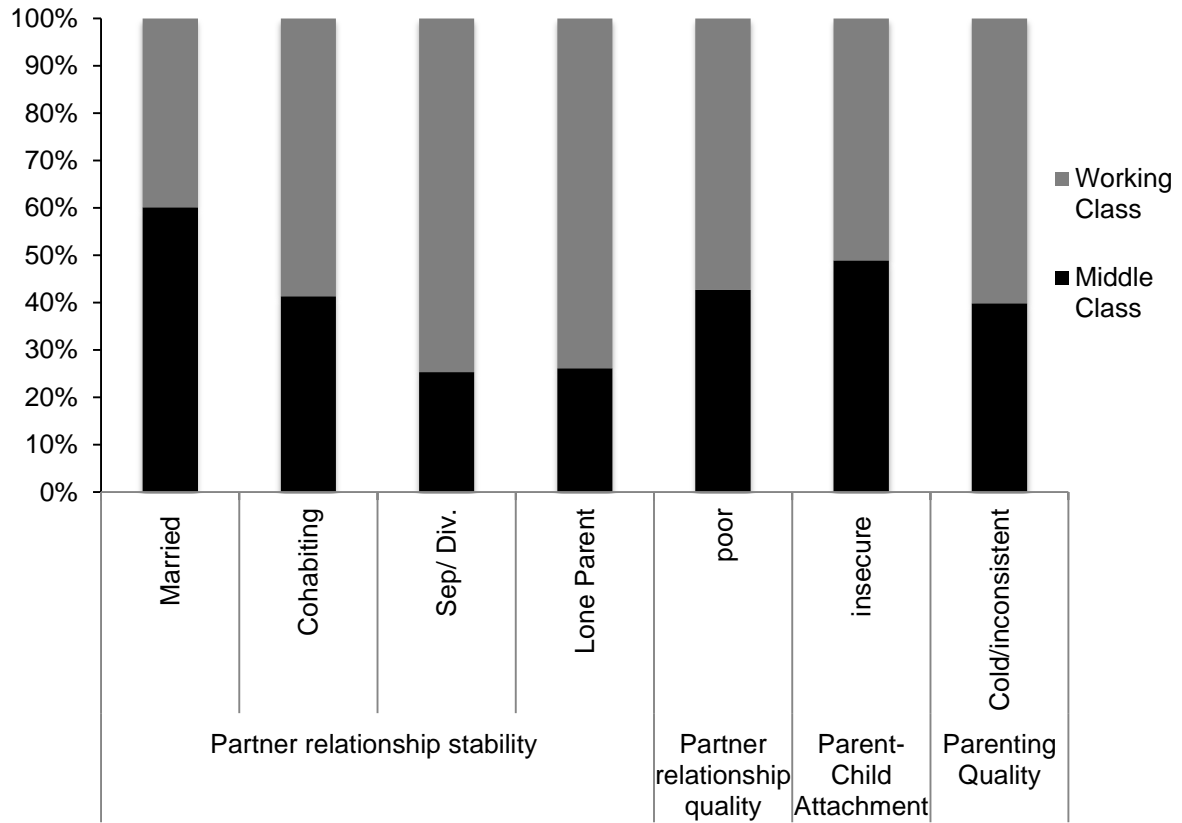
**Structural Model**



**Relational Model**



**Figure 3: Socio-emotional family factors by social class (child aged nine months)**



## TABLES

**Table 1: Drivers of Partner relationship status at the birth of first child (UK), Relative Risk Ratios (base: married)**

VARIABLES	Cohabiting	Separated/ divorced	Lone Parent
<b>Mother working class (vs. middle)</b>	1.250*** (0.0938)	0.277* (0.199)	2.457*** (0.407)
<b>Mother's education (base: degree)</b>			
<b>No qualifications</b>	2.057*** (0.190)	167.4*** (264.1)	1.098 (0.231)
<b>5 GCSEs A*-C</b>	1.730*** (0.143)	1.03e-06*** (1.02e-06)	1.130 (0.235)
<b>A Levels</b>	1.463*** (0.186)	3.97e-07*** (5.38e-07)	1.540* (0.396)
<b>Father unemployed</b>	1.485*** (0.197)	4.355 (5.956)	2.502*** (0.507)
<b>Mother not in work (while pregnant)</b>	0.996 (0.135)	51.00*** (49.11)	1.711*** (0.344)
<b>Parents Divorced/ Separated</b>	1.525*** (0.110)	1.06e-07*** (8.78e-08)	1.639*** (0.250)
<b>No religion</b>	2.507*** (0.168)	5.22e-08*** (5.19e-08)	2.542*** (0.373)
<b>Ethnicity (base: white)</b>	0.986	8.87e-08***	2.370**
<b>Mixed</b>	0.185 0.0196***	(1.61e-07) 1.10e-08***	(0.907) 0.704
<b>Indian</b>	0.0117	(1.37e-08)	(0.247)
<b>Pakistani/ Bangladeshi</b>	0.00210*** 2.165*	4.88e-09*** (4.68e-09)	2.67e-09*** (5.53e-10)
<b>Black Caribbean</b>	(0.900)	4.90e-08*** (5.62e-08)	14.50*** (9.963)
<b>Black African</b>	2.061* (0.894)	2.69e-06*** (2.55e-06)	8.052*** (6.198)
<b>Age group (base: 31-36)</b>	5.757***	0.0319*	26.48***
<b>Under 25</b>	(0.584) 1.229**	(0.0644) 0.0722***	(7.115) 1.273
<b>25-30</b>	(0.0988)	(0.0732)	(0.362)
<b>36+</b>	1.136 (0.177) 0.114***	2.13e-08*** (2.44e-08)	3.081*** (1.266)
<b>Constant</b>	(0.00998)	(0.000330)	(0.00109)
<b>Observations</b>	7,164	7,164	7,164

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2: The effects of socio-emotional and socio-economic factors at nine months on child development scores at age five (England), Odds Ratios**

VARIABLES (reported at 9 months)	Bottom 25% Total	Bottom 25% Socio-emotional	Bottom 25% Reading	Ordinal: Any higher vs. any lower child development quartile
<b>Cohabiting at birth</b>	1.264** (0.122)	1.286*** (0.118)	1.301*** (0.119)	0.832*** (0.0534)
<b>Separated/divorced</b>	(Omitted)	(Omitted)	(Omitted)	8.72e-06*** (8.81e-06)
<b>Lone Parent at birth</b>	2.603*** (0.698)	1.442 (0.394)	2.041*** (0.529)	0.524*** (0.123)
<b>Partner relationship quality (poor)</b>	1.400*** (0.121)	1.374*** (0.114)	1.120 (0.0910)	0.865** (0.0502)
<b>Parenting Quality (poor)</b>	1.201* (0.115)	1.314*** (0.122)	1.125 (0.0994)	0.931 (0.0556)
<b>Attachment (insecure)</b>	1.068 (0.107)	1.064 (0.104)	1.071 (0.101)	0.885* (0.0577)
<b>Mother Working Class</b>	1.937*** (0.185)	1.408*** (0.128)	1.744*** (0.152)	0.583*** (0.0393)
<b>Mother's education (base: degree)</b>				
<b>No qualifications</b>	2.273*** (0.282)	2.398*** (0.282)	2.328*** (0.256)	0.442*** (0.0358)
<b>5 GCSEs A*-C</b>	1.576*** (0.184)	1.833*** (0.199)	1.370*** (0.144)	0.617*** (0.0424)
<b>A Levels</b>	1.228 (0.220)	1.361* (0.227)	1.436** (0.219)	0.696*** (0.0703)
<b>Ethnicity (base: white)</b>				
<b>Mixed</b>	1.558* (0.358)	1.380 (0.325)	1.950*** (0.381)	0.697** (0.114)
<b>Indian</b>	1.050 (0.273)	0.982 (0.235)	0.882 (0.237)	1.445** (0.262)
<b>Pakistani/ Bangladeshi</b>	3.428*** (0.870)	2.913*** (0.750)	2.471*** (0.592)	0.373*** (0.0837)
<b>Black Caribbean</b>	2.957*** (0.901)	1.193 (0.396)	1.687 (0.607)	0.931 (0.373)
<b>Black African</b>	1.258 (0.624)	1.158 (0.511)	1.155 (0.570)	1.700 (0.923)
<b>Other ethnicity</b>	2.623** (1.011)	3.597*** (1.197)	2.612*** (0.940)	0.374*** (0.122)
<b>Age group (base: 31-36)</b>				
<b>Under 25</b>	1.546*** (0.217)	1.274* (0.171)	1.495*** (0.189)	0.758*** (0.0740)
<b>25-30</b>	1.164 (0.119)	1.098 (0.105)	1.137 (0.106)	1.008 (0.0642)
<b>36+</b>	1.725*** (0.247)	1.758*** (0.242)	1.353** (0.188)	0.647*** (0.0618)
<b>Siblings</b>	1.465*** (0.127)	1.187** (0.100)	1.344*** (0.107)	0.750*** (0.0427)

<b>Female child</b>	0.523*** (0.0446)	0.533*** (0.0433)	0.653*** (0.0505)	1.706*** (0.0921)
<b>Mother reports depression</b>	0.999 (0.135)	0.928 (0.123)	1.074 (0.137)	1.068 (0.107)
<b>Father Involvement (low)</b>	0.890 (0.0890)	0.898 (0.0861)	0.935 (0.0860)	1.093 (0.0684)
<b>Childcare (&gt; 15 hours)</b>	1.156 (0.105)	1.202** (0.104)	0.851* (0.0728)	0.969 (0.0560)
Constant	0.110*** (0.0203)	0.141*** (0.0257)	0.159*** (0.0276)	
cut1				
Constant				0.145*** (0.0172)
cut2				
Constant				0.572*** (0.0667)
cut3				
Constant				2.061*** (0.242)
Observations	5,245	5,245	5,245	5,246

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1





**Table 3: The effects of socio-economic and socio-emotional family factors at nine months on child development at age five (England), linear coefficients**

VARIABLES (reported at 9 months)	Overall Child Development Score		Personal, Social and Emotional Development		Reading	
	No interactions	With interactions	No interactions	With interactions	No interactions	With interactions
<b>Cohabiting at birth</b>	-0.0823*** (0.0269)	-0.0829*** (0.0269)	-0.107*** (0.0292)	-0.107*** (0.0291)	-0.0854*** (0.0289)	-0.0853*** (0.0289)
<b>Separated/divorced</b>	-0.467*** (0.0632)	-0.455** (0.224)	-2.259*** (0.0683)	-2.366*** (0.213)	0.246*** (0.0625)	0.147 (0.233)
<b>Lone Parent at birth</b>	-0.261** (0.108)	-0.245* (0.126)	-0.181* (0.103)	-0.218 (0.149)	-0.432*** (0.111)	-0.474*** (0.131)
<b>Partner relationship quality (poor)</b>	-0.0627** (0.0248)	-0.0764*** (0.0247)	-0.0642** (0.0264)	-0.0816*** (0.0264)	-0.0382 (0.0259)	-0.0449* (0.0263)
<b>Parenting Quality (poor)</b>	-0.0193 (0.0256)	-0.0433* (0.0256)	0.0178 (0.0273)	-0.0129 (0.0278)	-0.0656** (0.0267)	-0.0774*** (0.0275)
<b>Attachment (insecure)</b>	-0.0518* (0.0288)	-0.0559* (0.0288)	-0.0867*** (0.0301)	-0.0921*** (0.0300)	-0.0196 (0.0295)	-0.0218 (0.0296)
<b>Mother Working Class</b>	-0.287*** (0.0306)	-0.459*** (0.0980)	-0.231*** (0.0312)	-0.457*** (0.0974)	-0.261*** (0.0312)	-0.351*** (0.0860)
<b>Mother's education (base: degree)</b>						
<b>No qualifications</b>	-0.349*** (0.0338)	-0.346*** (0.0337)	-0.298*** (0.0359)	-0.294*** (0.0358)	-0.392*** (0.0348)	-0.390*** (0.0347)
<b>5 GCSEs A*-C</b>	-0.190*** (0.0287)	-0.188*** (0.0286)	-0.135*** (0.0298)	-0.133*** (0.0298)	-0.194*** (0.0301)	-0.194*** (0.0301)
<b>A Levels</b>	-0.158*** (0.0429)	-0.153*** (0.0426)	-0.122*** (0.0454)	-0.115** (0.0451)	-0.164*** (0.0438)	-0.162*** (0.0437)
<b>Ethnicity (base: white)</b>						
<b>Mixed</b>	-0.249*** (0.0964)	-0.248*** (0.0945)	-0.156 (0.0952)	-0.155* (0.0929)	-0.240*** (0.0924)	-0.239*** (0.0915)
<b>Indian</b>	0.0524 (0.0713)	0.0508 (0.0715)	0.209*** (0.0725)	0.208*** (0.0729)	0.0990 (0.0686)	0.0991 (0.0687)
<b>Pakistani/ Bangladeshi</b>	-0.483*** (0.120)	-0.489*** (0.120)	-0.401*** (0.127)	-0.407*** (0.127)	-0.471*** (0.116)	-0.473*** (0.116)

	<b>Black Caribbean</b>	-0.0611 (0.150)	-0.0675 (0.150)	0.103 (0.148)	0.0984 (0.147)	-0.0274 (0.155)	-0.0275 (0.154)
	<b>Black African</b>	0.204 (0.179)	0.200 (0.180)	0.225 (0.168)	0.219 (0.170)	0.216 (0.153)	0.213 (0.153)
	<b>Other ethnicity</b>	-0.553*** (0.190)	-0.542*** (0.190)	-0.741*** (0.191)	-0.730*** (0.190)	-0.516*** (0.169)	-0.513*** (0.167)
<b>Age group (base: 31-36)</b>							
	<b>under 25</b>	-0.112*** (0.0425)	-0.115*** (0.0424)	-0.0912** (0.0446)	-0.0952** (0.0445)	-0.123*** (0.0436)	-0.125*** (0.0435)
	<b>25-30</b>	-0.00948 (0.0268)	-0.00670 (0.0270)	-0.0214 (0.0279)	-0.0178 (0.0279)	-0.00579 (0.0280)	-0.00438 (0.0280)
	<b>36+</b>	-0.187*** (0.0444)	-0.187*** (0.0443)	-0.179*** (0.0458)	-0.179*** (0.0457)	-0.179*** (0.0444)	-0.179*** (0.0444)
<b>Siblings</b>		-0.142*** (0.0247)	-0.142*** (0.0247)	-0.0685*** (0.0256)	-0.0676*** (0.0256)	-0.176*** (0.0249)	-0.176*** (0.0249)
<b>Female child</b>		0.219*** (0.0229)	0.217*** (0.0228)	0.258*** (0.0240)	0.256*** (0.0240)	0.198*** (0.0239)	0.197*** (0.0239)
<b>Mother reports depression</b>		-0.0265 (0.0455)	-0.0255 (0.0453)	-0.0493 (0.0475)	-0.0482 (0.0474)	0.000749 (0.0457)	0.00112 (0.0457)
<b>Father Involvement (low)</b>		0.0129 (0.0274)	0.0118 (0.0274)	0.0350 (0.0289)	0.0333 (0.0289)	0.00790 (0.0283)	0.00706 (0.0283)
<b>Childcare (&gt; 15 hours)</b>		-0.0216 (0.0237)	-0.0202 (0.0237)	-0.0512** (0.0252)	-0.0490* (0.0252)	0.0158 (0.0253)	0.0168 (0.0254)
<b>Interaction (a) Single Parent &amp; Working Class</b>			-0.0154 (0.219)		0.103 (0.205)		0.0987 (0.228)
<b>Interaction (b) Any Poor Socio-emotional &amp; Working Class</b>			0.196* (0.101)		0.255** (0.1000)		0.100 (0.0891)
<b>Constant</b>		0.418*** (0.0495)	0.440*** (0.0495)	0.212*** (0.0528)	0.241*** (0.0531)	0.471*** (0.0525)	0.482*** (0.0530)
<b>Observations</b>		5,246	5,246	5,246	5,246	5,246	5,246
<b>R-squared</b>		0.121	0.123	0.096	0.098	0.120	0.121

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: Combined effect of poor socio-emotional family relationships at nine months on child development at age 5 (England), linear coefficients**

VARIABLES (reported at 9 months)	Overall Child Development Score		Personal, Social and Emotional Development		Reading	
	No interactions	With interactions	No interactions	With interactions	No interactions	With interactions
<b>Cohabiting at birth</b>	-0.0850*** (0.0267)	-0.0841*** (0.0267)	-0.110*** (0.0290)	-0.108*** (0.0290)	-0.0923*** (0.0287)	-0.0906*** (0.0287)
<b>Separated/divorced</b>	-0.388*** (0.0721)	-0.494** (0.196)	-2.194*** (0.0764)	-2.377*** (0.196)	0.337*** (0.0713)	0.0916 (0.205)
<b>Lone Parent at birth</b>	-0.218** (0.0917)	-0.273** (0.110)	-0.188** (0.0863)	-0.284** (0.135)	-0.336*** (0.0984)	-0.499*** (0.116)
<b>Poor socio-emotional relationships (combined)</b>	-0.183*** (0.0493)	-0.193*** (0.0568)	-0.183*** (0.0504)	-0.197*** (0.0626)	-0.181*** (0.0512)	-0.173*** (0.0607)
<b>Mother Working Class</b>	-0.289*** (0.0301)	-0.293*** (0.0311)	-0.229*** (0.0307)	-0.236*** (0.0321)	-0.264*** (0.0309)	-0.268*** (0.0319)
<b>Mother's education (base: degree)</b>						
<b>No qualifications</b>	-0.350*** (0.0336)	-0.349*** (0.0335)	-0.296*** (0.0356)	-0.294*** (0.0355)	-0.394*** (0.0345)	-0.393*** (0.0344)
<b>5 GCSEs A*-C</b>	-0.188*** (0.0284)	-0.188*** (0.0284)	-0.133*** (0.0295)	-0.132*** (0.0295)	-0.193*** (0.0299)	-0.193*** (0.0300)
<b>A Levels</b>	-0.160*** (0.0420)	-0.160*** (0.0420)	-0.133*** (0.0449)	-0.133*** (0.0448)	-0.175*** (0.0432)	-0.176*** (0.0432)
<b>Ethnicity (base: white)</b>						
<b>Mixed</b>	-0.235** (0.0948)	-0.235** (0.0945)	-0.161* (0.0932)	-0.159* (0.0929)	-0.200** (0.0930)	-0.199** (0.0924)
<b>Indian</b>	0.0484 (0.0720)	0.0500 (0.0720)	0.205*** (0.0725)	0.208*** (0.0726)	0.0954 (0.0697)	0.0993 (0.0697)
<b>Pakistani/ Bangladeshi</b>	-0.486*** (0.120)	-0.485*** (0.120)	-0.407*** (0.127)	-0.405*** (0.127)	-0.467*** (0.115)	-0.464*** (0.115)

<b>Black Caribbean</b>	-0.133	-0.129	-0.00385	0.00234	-0.0984	-0.0897
	(0.143)	(0.142)	(0.142)	(0.140)	(0.155)	(0.153)
<b>Black African</b>	0.125	0.126	0.120	0.121	0.157	0.155
	(0.183)	(0.183)	(0.179)	(0.179)	(0.164)	(0.164)
<b>Other ethnicity</b>	-0.569***	-0.569***	-0.750***	-0.750***	-0.523***	-0.526***
	(0.188)	(0.188)	(0.192)	(0.191)	(0.164)	(0.162)
<b>Age group (base: 31-36)</b>						
<b>Under 25</b>	-0.108**	-0.110***	-0.0872*	-0.0895**	-0.118***	-0.122***
	(0.0425)	(0.0425)	(0.0446)	(0.0445)	(0.0434)	(0.0433)
<b>25-30</b>	-0.0149	-0.0147	-0.0277	-0.0274	-0.0135	-0.0137
	(0.0268)	(0.0268)	(0.0279)	(0.0280)	(0.0279)	(0.0279)
<b>36+</b>	-0.181***	-0.180***	-0.172***	-0.171***	-0.173***	-0.172***
	(0.0443)	(0.0443)	(0.0457)	(0.0457)	(0.0443)	(0.0442)
<b>Siblings</b>	-0.145***	-0.145***	-0.0706***	-0.0700***	-0.181***	-0.181***
	(0.0247)	(0.0247)	(0.0256)	(0.0256)	(0.0249)	(0.0249)
<b>Female child</b>	0.217***	0.217***	0.261***	0.261***	0.195***	0.195***
	(0.0227)	(0.0227)	(0.0238)	(0.0239)	(0.0237)	(0.0237)
<b>Mother reports depression</b>	-0.0265	-0.0268	-0.0587	-0.0593	0.0183	0.0163
	(0.0439)	(0.0440)	(0.0461)	(0.0463)	(0.0441)	(0.0442)
<b>Father Involvement (low)</b>	0.00533	0.00491	0.0267	0.0260	0.00610	0.00541
	(0.0275)	(0.0275)	(0.0288)	(0.0288)	(0.0284)	(0.0284)
<b>Childcare (&gt; 15 hours)</b>	-0.0238	-0.0235	-0.0530**	-0.0524**	0.0130	0.0140
	(0.0235)	(0.0235)	(0.0251)	(0.0251)	(0.0252)	(0.0252)
<b>Interaction (a) Single Parent/Separated &amp; Working Class</b>		0.0922		0.161		0.269
		(0.170)		(0.172)		(0.183)
<b>Interaction (c) Combined Poor socio-emotional &amp; working class</b>		0.0277		0.0418		-0.0239
		(0.109)		(0.106)		(0.110)
<b>Constant</b>	0.393***	0.393***	0.198***	0.198***	0.428***	0.428***
	(0.0466)	(0.0466)	(0.0490)	(0.0490)	(0.0487)	(0.0487)
Observations	5,320	5,320	5,320	5,320	5,320	5,320
R-squared	0.121	0.122	0.096	0.096	0.120	0.121

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.

