Healthy Baby, Healthy Marriage?
The Effect of Children's Health on Divorce

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ABSTRACT

This paper investigates whether the health of children affects the likelihood that their parents divorce. Using data from the 1988 National Health Interview Survey, the National Longitudinal Survey of Adolescent Health, and the 1970 British Birth Cohort Study, I find that low birth weight children are at a higher risk of experiencing parental divorce than children of normal birth weight in the US, but not in the UK. As children with divorced parents are significantly more likely to live in poverty, this finding suggests that children's health problems could be the cause rather than the result of children's economic status.

JEL Codes: I1, J12

Keywords: child health, family structure

INTRODUCTION

In this paper, I investigate whether the health of children affects the likelihood that their parents divorce. This topic is relevant to the debate over the direction of causality between health and economic status – commonly referred to as the 'gradient' because a positive relationship exists all along the income distribution (e.g. Adler et al., 1994; Smith, 1999). Medical researchers and epidemiologists argue that economic status influences health. Their theories claim that people of low economic status receive less and lower quality medical care, have riskier health behaviors, experience poor nutrition in utero which has far-reaching effects on adult health (Barker, 1997), or suffer from the psychosocial stress associated with low status jobs (Marmot, Shipley, Brunner, & Hemingway, 2001). On the other hand, economists generally argue that health impacts earnings by reducing educational attainment, labor market productivity, and accumulated labor market experience (Adams, Hurd, McFadden, Merrill, & Ribeiro, 2003; Case, Fertig, & Paxson, 2004). In addition, health costs can impact wealth (Wu, 2003; Smith, 1999). Contributing to this debate, Case, Lubotsky, and Paxson (2002) and Currie and Stabile (2003) argue that since children in developed countries do not generally earn income, their finding that the gradient exists among children implies that children's health must be the *result* of their economic status. Case, Lubotsky, and Paxson (2002) test whether the mothers of children in poor health are less likely to work (and find that they are not) as one possible avenue through which children can affect their economic status. However, I argue that there is another possibility: if the poor health of children promotes greater family dissolution, then children's health problems could be the *cause* of children's economic status.

Using two large, nationally representative data sets, I find that low birth weight children in the US are at a higher risk of experiencing their parents' divorce than children of normal birth weight. However, using a large survey of a British birth cohort, I find that low birth weight does not affect the hazard of parental divorce for British children. While this cross-country difference suggests that family structure is not a universal avenue through which health and economic status are related, this finding does imply that part of the gradient observed in children's health in the US may run from health to income.

These findings are of interest not only because they contribute to the gradient discussion, but also because they are relevant to a second debate – that over whether children's outcomes following a divorce are a consequence of divorce or merely an indicator of selection into divorce. If the parents of disabled children are more likely to divorce, then the fact that children of divorced parents are more likely to be in poor health (e.g. Angel & Angel, 1993; Mauldon, 1990) is at least in part due to selection. Moreover, in the current marriage promotion policy environment in the US, if child health were a determinant of parental divorce, providing support to these vulnerable families would likely be a politically popular policy intervention. Given that between four and eight percent of children in the US are disabled, a policy aimed at protecting these families from divorce could have a large impact on the overall divorce rate.

Prior research on this topic has found that parents of children in poor health are more likely to divorce (e.g. Mauldon (1992), Corman and Kaestner (1992), Joesch and Smith (1997), and Cooke, Bradshaw, Lawton, and Brewer (1986)).[1] However, as stated above, the direction of causality between children's health and parental divorce is difficult to disentangle given the plethora of evidence that family structure impacts the outcomes of children (see McLanahan (2002) for summary). In addition, there are many characteristics of families – so called 'third factors' – which may make them more likely to have a disabled child and a divorce. In particular, poorer families are more likely to experience divorce and are more likely to be in poor health. Alternatively, parents who are generally neglectful are also more likely to divorce and have a sick child.

In this paper I address the problems of reverse causality and potential 'third factors' by focusing on the health of the child at birth and by using alternative data sources which allow for a greater range of controls. The birth health of the child limits the opportunity for reverse causality in that the child does not suffer detrimental stress or neglect from a family disruption beyond what the

[1] Reichman, Corman, and Noonan (2004) find that having a child in poor health decreases the level of commitment in the parents' relationship, married or not.

mother can transfer in utero. Birth health is a particularly appropriate measure of health for this analysis because marriages are most fragile in the early childbearing years; the median duration of marriages that end in divorce was eight years in 1990 (Clarke, 1995). I focus on birth weight in particular because having a low birth weight baby has a large impact on the parents' lives. The delivery of a low birth weight baby is a traumatic event for the parents involving long hospital stays, procedures, and a fear of neonatal mortality. In addition, low birth weight is associated with a higher risk of childhood health problems, including cerebral palsy, high blood pressure, deafness, blindness, seizure disorders, congenital abnormalities, respiratory problems, lung disease, reduced cognitive ability, and behavior problems (Institute of Medicine, 1985; Paneth, 1995; McCormick, Brooks-Gunn, Workman-Daniels, Turner, & Peckham, 1992; and Brooks, Byrd, Weitzman, Auinger, & McBride, 2001).[2]

Additional contributions of this paper are that I allow the effect of a child's illness to vary across the child's life, and I use data from both the US and the UK which allows an examination of some mechanisms. I find that the effect of low birth weight on divorce is positive at birth in the US but goes to zero as time passes. I exploit the cross-country differences and reject the hypotheses that the lower rates of labor force participation among mothers in the UK contributes to the difference in effect. It is not clear whether universal health care in the UK is an important factor in the difference.

I begin in the next section by discussing how child health might impact the parents' marriage. I then introduce the three data sets I use and the ways in which each survey contribute to this analysis. Section presents the econometric framework for analyzing the effect of low birth weight on divorce. Section presents the results and provides a discussion of mechanisms that may underlie the relationship between low birth weight and parental divorce. I conclude in section .

[2]Only Joesch and Smith (1997) have used birth weight as a health measure; they find that a low birth weight child increases the risk of divorce among couples in the first two years of marriage using the 1988 NHIS-CH. The only birth health measure used by Mauldon (1992) is whether the birth was a Caesarean or a difficult delivery and she finds that this has a positive and significant effect on the probability of divorce using the 1981 NHIS-CH. Using the Fragile Families and Child Wellbeing Study, Reichman, Corman, and Noonan (2004) constructed a composite measure of health from whether the child was very low birth weight, has a physical disability at age 1, or had neither walked nor crawled by age 1.

HOW MIGHT CHILD HEALTH AFFECT DIVORCE?

This section presents a simple model to understand the implications that a sick child may have on his or her parents' marriage, but does not offer clear predictions. The following discussion is based on a theoretical model of divorce using a framework of utility maximization under uncertainty developed by Becker, Landes, and Michael (1977). This model assumes that, at any given moment in time, an individual chooses whether to get or stay married by comparing the expected utility within marriage to that outside of marriage.

I assume that the utility of each parent is a function of their private consumption, X, their public consumption, Y, and the presence of a child, K. The benefits of marriage come from public consumption (such as home-cooked meals and family vacations) and children. I assume each couple has one child and that private and public consumption encompasses the quantity and quality of both goods and leisure time. I further assume that the health of the child, H, affects the father's utility, but not the mother's utility given that a father is the parent most likely to leave the household after a divorce. Specifically, the utility of the wife, U_w, and the husband, U_h, are given by:

$$U_w(X_w, Y, K), \tag{1}$$

$$U_h(X_h, Y, \alpha(H)K), \tag{2}$$

where α is a scalar which weights how much the father is affected by the child's health. The utility derived from fatherhood may be higher ($\alpha(H) > 1$) if he has a more important role in the child's life than otherwise; it may be lower ($\alpha(H) < 1$) if he experiences guilt or disappointment.

The introduction of a sick child into the marriage is a shock that can have three effects: 1) it can reduce X_w and X_h whether married or not, and Y if married, 2) it can change the proportion of public consumption relative to private consumption, and 3) it can change the utility that the father derives from the child. In the first case, medical expenses, care-giving time, and the stress and worry which result because of the child's illness lower consumption. Although the sum of these costs do not vary by marital status, the share of the costs that each parent bears may differ by the custodial status of the parent after a divorce. That is, given that three-quarters of mothers are granted full custody, only 66% of ever-married mothers have a child support award, and only 41% of all awards have health care benefits included in the award (U.S. Bureau of the Census, 1995), the expected benefit of divorce for the husband and the expected cost for the wife are greater given a sick child. Thus, the attainable consumption set shifts in whether married or not, but the consumption of the mother shifts in to a greater extent after a divorce.

Second, in response to a sick child, the family may specialize such that there is a higher ratio of public to private consumption. For example, Powers (2001) finds that mothers of disabled children often cut back on market work to provide more care at home for the child. In effect, the mother invests in marital-specific capital by foregoing some labor market experience, which would benefit her after a divorce, in order to provide a service to the household which would be expensive and of lower quality if obtained through the market. Many aspects of this specialization in home production are difficult to coordinate if the parents live in separate households and thus the bundle that the household has if married is greater than the sum of the two households if divorced.

Finally, the utility that the father derives from the child may be higher or lower given a sick child. If it is higher, it is more likely that marriage will be preferred to divorce given a sick child; if it is lower, it is more likely that divorce will be preferred. To illustrate, Figures 1 and 2 present the set of indirect utilities possible given marriage (S_0), the point chosen if married (M_0), and the point attainable if not married (D_0) at the time of the birth ($t = 0$). Because I assume that parents are married at birth, there is public consumption which ensures that M_0 is preferred to D_0 by both parents. In both figures, private and public consumption falls following the birth of a sick child ($t = 1$) if the couple is married (M_1 is inside S_0). If the couple divorces, public consumption is lost and private consumption falls less for the husband and more for the wife than if married (D_1 is to the left of M_1).

Figure 1 depicts the situation where $\alpha(H) > 1$, and thus some of the utility lost because of the reduction is consumption is made up by the gain in utility from having a sick child for the father, whether married or not. Figure 2 depicts the situation where $\alpha(H) < 1$, and the father's utility is doubly hurt by the lower level of consumption and the lower level of utility derived from the child, whether married or not. Thus, there are two differences across the figures: 1) S_1 shifts in more for the father if $\alpha(H) < 1$, and 2) the husband's indirect utility at D_1 is lower if $\alpha(H) < 1$. To illustrate the point that divorce is more likely if $\alpha(H) < 1$, I have drawn these figures such that marriage (M_1) is preferred to divorce (D_1) in Figure 1, and divorce is preferred to married in Figure 2, although this need not be the case.

In sum, the relative benefit of marriage expected at the time of marriage will likely be different when a child with poor health is in the picture. Although the incentives of each parent to divorce and the equilibrium distribution within the household will be altered by the presence of a sick child, it is not clear whether the resulting incentive to divorce will be higher or lower. Moreover, because the decision to stay married is a dynamic one that is re-evaluated continuously, the relative benefit of marriage given a sick child changes over time.

DATA

Three Data Sources

In this analysis, I use data from three sources: the 1988 Child Health Supplement to the National Health Interview Survey (NHIS-CH), the National Longitudinal Study of Adolescent Health (Add Health), and the 1970 British Birth Cohort Survey (BCS). The National Health Interview Survey is a cross-sectional survey that collects annual data on the health status and chronic and acute medical conditions of a large nationally representative sample of American adults and children. The sample for the 1988 NHIS-CH consists of one child drawn from each 1988 NHIS household with children. The respondents for these children were asked a wide variety of questions regarding the retrospective history and current status of the child's health. Of the approximately 17,000 children in the nationally representative sample, I use a sub-sample of over 12,000 children whose parents were married at birth.[3]

Add Health is a longitudinal survey of a nationally representative sample of adolescents in grades

[3] I dropped 4,000 children because their parents were never married or divorced before the child's birth, or because the marriage or divorce history of the parents is unknown. I dropped 1,000 children because the child's age was unknown or the respondent was not a parent.

seven through twelve in the 1994-1995 school year. Approximately 12,000 students were randomly selected from a sample of 132 participating schools for in-home interviews, where adolescents were asked detailed health questions. The survey also conducted interviews with a parent, most often the mother, on her relationship history and the adolescent's health. I also use the first of two follow-up interviews with the adolescent conducted less than two years after the baseline interview. I use the approximately 9,500 children from the nationally representative sample who were born to married parents.

The 1970 BCS is a longitudinal survey of all children born in Britain in one week in April 1970. Thus far, the survey has been conducted at six points in time – at birth, and at ages 5, 10, 16, 26, and 29. Each wave includes extensive health questions, including a medical examination at ages 10 and 16, and detailed questions on family structure. Of the over 17,000 children in this cohort, nearly 16,000 were born to married parents.

I use the NHIS-CH in this analysis for comparability to the literature. Both Corman and Kaestner (1992) and Joesch and Smith (1997) use this sample; Mauldon (1992) uses the 1981 NHIS-CH. By conducting the analysis with this data, I am able to distinguish differences across surveys from differences across empirical strategies. However, the NHIS-CH survey has several limitations which make other data sources better suited to this analysis.

First, the NHIS-CH involves a wide range of birth cohorts which makes it difficult to disentangle cohort and age effects using traditional methods. In particular, Mauldon (1992) finds that the effect of having a disabled child on divorce is greater when the child is older (between six and nine years old) and argues that parents wait until the child begins school before divorcing. Because the NHIS-CH is cross-sectional, an alternative interpretation of this finding is that the older cohort experienced a larger effect than the younger cohort. The NHIS-CH and Add Health samples are similar in terms of birth cohorts; the NHIS-CH children were born between 1970 and 1988 where the Add Health children were born between 1974 and 1983. In contrast, the BCS follows only one cohort; those children born in 1970. As a result, age effects are necessarily distinct with the British data.

Second, both Add Health and NHIS-CH censor divorces that occur between the (last) interview and age 18 for those children younger than 18 at the end of the survey. The econometric method used in this analysis (discussed in the next section) does not cause this type of censoring to bias the estimates but nonetheless the censoring reduces precision. Since children in the BCS are followed into adulthood, I observe all divorces experienced before age 18 except for those lost to attrition.[4]

Third, the NHIS-CH requires respondents to recall events that happened up to 17 years earlier and the length of recall varies substantially because of the wide range of interview ages. The Add Health survey has a narrower range of interview ages – between the ages of 12 and 20 for the first interview – but, as a result, the average length of recall is longer. Because the BCS followed its sample from birth into adulthood, the BCS respondent need remember back a few years at the most, which reduces both the level and variation of measurement error.

Finally, the NHIS-CH allows only a limited set of controls since it asks about very few characteristics of the household before the onset of the child's illness or the divorce. These controls are important since characteristics which are related to both child health and divorce – so called 'third factors' – make arguing causality somewhat unconvincing. In particular, poverty and stress are correlated with divorce and poor health. While the NHIS-CH collects household income at the time of the interview, current income is related to the child's health history and to the parents' current marital status, and thus is endogenous. Similarly, a mother who is immature or neglectful before having a sick child or a divorce, or a mother with poor health herself, may be more likely to have a sick child and a divorce. However, the NHIS-CH mostly asks about current characteristics of the mother, which, as above, may have changed because of the illness or divorce.[5] In contrast, Add Health collects information on the biological father's education from the adolescent even if

[4] Table A1 shows descriptive statistics for selected variables collected shortly after the birth of the cohort member. These statistics indicate that there was a substantial amount of attrition, particularly from the age 10 interview to the age 16 interview. However, many cohort members previously lost to attrition were found for the age 29 interview. The proportion of children in the low birth weight categories do not change across time. In addition, the fraction of mothers in the lowest and highest education categories and the distribution of fathers by social status at the child's birth also do not change over time as the sample gets smaller.

[5] The exceptions are questions about prenatal smoking and doctor visits asked of a small subset of mothers.

the father is non-resident at the time of the interview. Even better, the BCS collects the father's education, the social status of the household at birth, the prenatal behavior of the mother, and the health of the parents of the child before a divorce.

In addition to the fact that the structure of the BCS is better suited to this analysis than the other two sources, using the BCS also provides a non-US perspective. The cross-country comparison is an opportunity to explore some potential mechanisms which may underlie the relationship between child health and divorce. Similarly, including Add Health in the analysis provides a within-country comparison which sheds light on the representativeness of the NHIS-CH findings.

Divorce

I restrict each sample to all children born to married parents. If a divorce occurs, the age of the child at the divorce must be reported to be included in each sample.[6] Figure 3 depicts the percent of children with currently married parents who experience the divorce of their parents at each age. The probability of divorce in the US is highest at the youngest ages where the hazard of divorce is relatively flat for the British sample. Divorce rates are lowest for the British Cohort, where only 15% of children experienced a divorce by age 18, and highest for the Add Health sample, where 33% experienced their parents' divorce during childhood. Part, but not all, of this cross-country difference is due to the range of younger cohorts that make up the American samples. To illustrate this point, Figure 4 depicts the percent at risk who have divorced by a given age for the British Cohort, three Add Health cohorts, and four NHIS cohorts. Even the oldest American cohorts – those born between 1970 and 1973 for the NHIS and those born between 1974 and 1977 for the Add Health sample – have a substantially higher divorce probability than the 1970 British Cohort.[7]

[6]Although I refer to divorce only throughout this text, I am studying both divorce and separation. The time of divorce is technically the time that one of the parents stopped living in the child's household, or the time of separation, for all three data sets.

[7]This figure highlights a surprising difference across the American samples. Consistent with an upward trend, the cumulative divorce rate for the Add Health sample is higher for the youngest cohorts, but the cohorts overlap for the NHIS-CH sample. Also, although the cumulative divorce rates at age 17 appear to be the same across the American samples, the NHIS-CH children experience parental divorces at a younger age than the Add Health children.

As further evidence, Figure 5 shows that the divorce rate in the US has been historically higher than that of the UK. The persistent cross-country difference in the divorce rates is a puzzle given that the two countries have strikingly similar laws governing divorce as well as somewhat similar demographic compositions and trends. Both countries saw large changes in divorce laws in the early 1970s. The Divorce Reform Act of 1969 expanded the allowable reasons for divorce in the UK from adultery, cruelty, or desertion to also include two years separation with the consent of both spouses and five years separation without the consent of one spouse. Thus, the UK permitted no-fault and unilateral divorce beginning in 1971 when the law became effective, resulting in a spike in the UK divorce rate (Stone, 1990). At the same time, the US went from having thirteen states in 1971 which allowed unilateral divorce – eight of which required a period of separation before granting a divorce – to 34 states in 1973. By 1985, nearly all states allowed unilateral divorce (Friedberg, 1998).

Child custody laws, which may impact the incentives of parents to divorce, also changed in both countries in the 1970s. The Uniform Marriage and Divorce Act of 1979 in the US and the Guardianship of Minors Act of 1971 in the UK shifted priority to the welfare of the children in assigning custody, rather than stipulating a maternal preference as was the practice earlier in the century. However, the distribution of custody arrangements in both countries continued to favor mothers. In 1990, 72% of American wives were granted sole custody of their children and another 16% shared joint custody (Clarke, 1995). Official statistics on child custody in the UK are unavailable but only 8% of lone parents were fathers between 1990 and 1992 (Haskey, 1994), which suggests that a great majority of divorces involving children must result in custody being awarded to the mother, as in the US.

There are also very few relevant demographic characteristics of the countries' populations that differ substantially. Table 1 presents some comparisons. First, the number of married people in the country might have an impact on the divorce rate since it is most often expressed as the number of divorces per 1,000 married couples/women. However, the percent married was the same in both countries in 2000. This similarity reflects the fact that both the US and UK experienced increases in cohabitation over nearly the same period, as the next several rows of the table indicate. In addition, the age at first marriage, which is generally considered an important determinant of divorce, is similar across both countries as well.

The cross-country differences in the racial composition of the populations and in the propensity of mothers to work outside of the home may explain some of the difference in the divorce rates. Black couples are more likely to divorce than white couples in the US (Cherlin, 1992) – for the NHIS-CH sample, 28.1% of black children and 18.2% of white children experience the divorce of their parents. However, the latter proportion is still higher than for the British sample.[8] Because there is evidence that women's labor force participation is correlated with their probability of divorce (Cherlin, 1992), the average difference in mother's employment could impact overall divorce rates. As a mother's labor force participation may be a potential mechanism by which child health affects parental divorce, I will exploit this cross-country difference in a later section of the paper.

Health Measures

Table 2 shows descriptive statistics for the three samples. In both of the American samples, the parent retrospectively reports the child's birth weight, where in the BCS, a medical interviewer records the birth weight of the baby days after the birth. From these reports, I construct a low birth weight indicator (less than 2500g, or 5.5 pounds). Low birth weight (LBW) children account for between six and eight percent of each sample. Add Health does not report the actual birth weight of children below four pounds (1814g) so I cannot report the minimum or mean birth weight among the low birth weight babies. Instead, between one and two percent of each sample weighed less than four pounds at birth and the *median* birth weight among low birth weight babies is around 2200g, or 4.9 pounds.

Before discussing the control variables, it is interesting to look at the unconditional difference in divorce across birth weight categories, shown in Table 3. This first pass provides a preview of the difference in the effect between the US and UK. It appears that children with low birth

[8] The effect of child health on divorce is unchanged when the samples are restricted to white children only.

weight are more likely to have divorced parents in the US and less likely to have divorced parents in the UK. One obvious possible cause of this cross-country difference in the divorce rate by birth health status is the difference in the generosity of social programs across countries. Families with disabled children in the US only receive government support if their household income is below some threshold in the form of Medicaid and Supplemental Security Income. In the UK (in the 1970s and 1980s), there were several programs to give financial support to families with disabled children that were not means-tested (Burchardt, 1999). More importantly, the UK has the National Health Service (NHS), which provides universal health care financed largely out of general taxation. I come back to the importance of the financial burden of a sick child as a potential mechanism by which child health can affect parental divorce.

Control Variables

The cross-country difference evident in Table 3 may also derive from differences across the samples in terms of child, parent, and regional characteristics. Thus, in the main analysis, I include a variety of controls. One set of controls is available in all three surveys: the child's gender, twin status, race, the mother's age at the birth, and the mothers' education. Besides known cross-country differences in race composition and education systems, the control variables have similar means across the surveys.

The availability of additional controls varies by survey. For both of the American samples, I control for regional characteristics of the household,[9] and whether the father responded to the survey. Both the NHIS-CH and the BCS surveys provide the number of years the parents were married at the child's birth. Add Health and the BCS obtain information on the father's education; the adolescent's report of their father's education even if the father is non-resident at the time of the interview in the case of Add Health and the father's education at the time of the cohort member's

[9] Divorce rates are higher in cities and in the Western states in the US. Add Health does not have state identifiers but instead provides characteristics of the child's block group census area. I included an indicator for those block groups that were considered urban and the proportion of family households in the block group that were female headed without a husband present. For the British Cohort, there does not appear to be a significant regional difference in divorce rates.

birth in the case of the BCS. NHIS-CH asks the mothers of children under the age of six at the time of the interview about prenatal smoking and doctor visits. Finally, the BCS reports whether the mother or the father has been ill prior to each interview, the mother's prenatal behavior (doctor visits, smoking, and drinking), and the social class (based on the occupation) of the mother and the father at the birth.[10]

ECONOMETRIC MODEL

To estimate the effect of a child's illness on the risk of his or her parents' divorce, I employ a discrete time hazard model (Allison, 1982) of time until divorce, following Joesch and Smith (1997).[11] The hazard model is preferable to a standard probit analysis where the dependent variable is an indicator of whether a divorce took place at any time during childhood, as used by Corman and Kaestner (1992) and Mauldon (1992), because it permits more variation in the outcome variable, incorporates those observations that are censored before a divorce occurs, and allows explanatory variables to vary across time.

I choose a discrete-time hazard approach primarily because the data provides the events in discrete intervals of time—years, in most cases.[12] Thus, let $t = 1, 2, 3, ..., t_i$ denote child i's age in years. A child becomes at risk of experiencing a parental divorce after he or she is born ($t = 1$) and is no longer at risk ($t = t_i$) when the divorce occurs, when the child reaches age 18, or when the observation is censored because a divorce has not occurred by the interview. Let x_{it} represent characteristics of the child and his family and h_i represent health characteristics of the child. Finally, let T_i be the uncensored time of the divorce. Then, the discrete time hazard rate, $Prob(D_{it})$, is the

[10] I only show two of the seven categories in Table 2. The seven possible categories for men are unemployed, professional, managerial, skilled non-manual, skilled manual, semi-skilled, and unskilled. The seven possible categories for women are unemployed, professional or managerial, skilled non-manual, skilled manual, semi-skilled, unskilled, and housewife.

[11] Joesch and Smith (1997) use a continuous hazard model.

[12] Running a continuous proportional hazard model does not change the results significantly.

conditional probability that a divorce occurs at time t, given that it has not already occurred, or:

$$Prob(D_{it}) = Prob[T_i = t \mid T_i \geq t, x_{it}, h_i]. \tag{3}$$

I assume that the explanatory variables influence the hazard rate by the logistic regression function, written here in logit form:

$$\log[Prob(D_{it})/(1 - Prob(D_{it}))] = \alpha_t + \beta_1 x_{it} + \beta_2 h_i + \epsilon_{it}, \tag{4}$$

where α_t is a set of age dummies which allow the hazard of divorce for a child with no health problems to vary by age. To estimate this model, I convert the sample into child-year observations and estimate logit models using maximum likelihood.[13]

I also allow the effect of a child's illness to vary by time. If it is the case that the impact of the child's illness on divorce varies over the course of the child's life, then the main effect of the child's illness can be insignificant merely because it is an average of, say, a positive effect initially and a negative effect after several years. Figure 6 illustrates this issue. Assume that the solid line represents the hazard rate of experiencing a divorce for a healthy child and the dotted line represents the hazard rate for a low birth weight child. In this scenario, the parents' probability of divorce increases due to the intensity of the stress right around the birth, but over time as the parents recover from their trauma and grow closer because of the experience, say, the probability of divorce decreases such that it eventually becomes lower than it would have been if the child had been born normal weight.[14] The average effect of the illness may be positive, negative, or not significantly different from zero, but it masks the fact that the effect depends on the time since the onset of the illness. Thus, I include $h_i t$ as an additional term in equation (4) to capture the number of years that the child has had the health condition.

[13]The standard errors are adjusted for intra-cluster correlations at the child level for the NHIS-CH and the BCS and at the school level for Add Health.

[14]One can also imagine the opposite scenario. The parents' probability of divorce falls when they learn of their child's health problem, but over time the stress of the illness increases their probability of divorce such that it eventually becomes higher than it would have been if the child had not gotten sick.

RESULTS

I begin by demonstrating that reverse causality has likely played an important role in prior research on this topic. Corman and Kaestner (1992) find that the number of physical conditions that a child has increases the probability that the mother is not married at the time of the interview. The physical condition must be present at least two years prior to the time of the interview so that the family has sufficient time to make a change before being observed. Also the physical conditions included in the count were chosen because they were believed to be health problems that could not be affected by a divorce (see note in Table 4 for the list of conditions). I reproduce their positive finding in column (1) of Table 4.[15] However, the timing of the divorce was not taken into account and some of the conditions could in fact be affected by parental divorce. That is, the condition may have occurred after the divorce and, for example, accidents which result in physical impairments can occur during or after a divorce because parents are distracted or there is less supervision time available. In column (2), I further restrict the possible conditions to only those that occurred at least 1 year prior to a divorce and the effect of these conditions is no longer positive or significant.[16]

Because it is evident that reverse causality is an important consideration, I focus on the health of the child at birth. There are many fewer avenues through which a subsequent divorce can have an effect on the birth health of a child. Tables 5, 8, and 9 report the results of applying the hazard model expressed by equation (4) to the NHIS-CH sample, the Add Health sample, and the British Cohort samples, respectively. In the first two columns of each table, I use only controls for characteristics that are not choices – sex, twin status, and race. I include additional controls in every pair of columns to the right.

Before getting to the results, it is worth noting that the coefficients on the common set of control variables have reasonable signs and are fairly consistent across the samples, barring known

[15] Corman and Kaestner (1992) employed a multinomial logit where the possible outcomes are mother is married, mother is single head of household, or mother is single living with extended family.

[16] The change in the effect is not the result of restricting any one specific condition to being present before the divorce.

cross-country differences. In the US, the coefficients on the indicator for whether the child is black are positive where the coefficient on the non-white indicator for the UK sample is negative. This difference reflects the fact that the minority populations in the UK are smaller and have different countries of origin than those in the US. For all three data sets, having an older mother is associated with a lower likelihood of divorce. The controls that are not available for all three samples also generally behave as expected. For Add Health, father's education is important. For the BCS, parents' social class is important. In addition, a mother's illness as well as prenatal smoking and drinking are associated with a higher probability of divorce.

NHIS-CH

Unsurprisingly given Table 3, the first two columns of Table 5 provide evidence that the hazard of divorce is higher for low birth weight children in the NHIS-CH sample, when I include a limited set of controls. When the effect is permitted to vary across time, the average effect masks the fact the effect is greatest at birth and falls across time such that after age 11 (0.359/0.032=11), if the child's parents are still married, the probability of divorce for a low birth weight child is the same as that of a normal birth weight child.[17] When all of the available controls are included, the average effect of low birth weight is close to zero and the effect at birth is substantially smaller than that in column (2). In addition, none of the individual coefficients in the last two columns nor their joint test is significant.

I cannot control for potential third factors, like household income and the mother's prenatal behavior, for the full NHIS-CH sample, which may bias the relationship between child health and parental divorce. However, I can control for prenatal smoking and doctor visits for a small sub-sample of the NHIS-CH – those children under age six. Table 6 presents these results. Column (1) shows coefficients from a regression restricted to this young sub-sample. Consistent with the

[17] The finding that the effect of birth weight decreases as the child ages is not inconsistent with the finding of Mauldon (1992) that the effect of poor child health is greater for divorces between the ages of six and nine than for divorces before age six because the health measures used in Mauldon (1992) did not, for the most part, represent the birth health of the child. If I include measures of health problems that develop after the birth, I also find that the effect of these measures increase as the child ages (see column (2) of Table 13).

finding that the effect of low birth weight is greatest in the first few years of life, the coefficient on low birth weight is higher in column (1) than in the previous table. Column (2) includes controls for prenatal smoking, which I break out into three categories: 10% quit smoking in the first trimester, 9% smoked less than 11 cigarettes per day during the pregnancy, and 8% smoked 11 or more cigarettes per day. Prenatal smoking appears to be a predictor of divorce and heavy smoking is a stronger predictor than light smoking or quitting smoking. I also control for the timing of the first prenatal doctor visit: six percent did not visit a doctor in the first trimester. Seeing a doctor later in the pregnancy does not appear to predict divorce significantly, although the sign is positive. The coefficient on low birth weight is not significantly different whether these controls are included or not, indicating that prenatal smoking and late doctor visits do not appear to be important third factors.

The sample size is less than one-third that of the main sample which could imply that precision is a problem in this particular set of regressions. Thus, I also use an alternate way of getting at prenatal smoking with the full sample using gestational age. In particular, the mother is more likely to have smoked during pregnancy if the low birth weight baby is born full-term than if born pre-term. Low birth weight can be attributed to short gestation length or a slow rate of fetal growth in utero, known as intrauterine growth retardation (IGR). Research on the determinants of low birth weight suggests that, while the cause of low birth weight among pre-term births is largely unknown, a mother's prenatal behavior, smoking in particular, is an important factor leading to IGR in developed countries (Kramer, 1987). Thus, if the mother's behavior is correlated with both the child's birth weight and her probability of divorce, then we should see that full-term low birth weight children are more likely to experience parental divorce than pre-term low birth weight children.

I break down the low birth weight category based on whether or not the baby reached full-term, defined as 38 weeks or more. About 3.1% of the sample are born full-term low birth weight, 3.2% are born pre-term low birth weight, and 3.0% are born pre-term but not low birth weight. I include a control for this last category so that the omitted category is full-term normal birth weight children. In Table 7, I show the effect of these disaggregated measures of low birth weight on the hazard of divorce. I report the p-value of a test of whether the coefficient on full-term low birth weight is equal to the coefficient on pre-term low birth at the bottom of the table and find that the difference is not significant. Thus, again I find that the mother's prenatal behavior does not alter the basic finding that low birth weight has a positive but insignificant effect on the likelihood of parental divorce for the NHIS-CH sample.

Add Health

The first two columns of Table 8 indicate that low birth weight has a significant positive effect on the hazard of divorce for the Add Health sample, when I include a limited set of controls. Moreover, the coefficients on low birth weight and the low birth weight interaction in column (2) are quite similar to those in the corresponding column on Table 5. In columns (3) and (4), I include all of the controls available except father's education for comparison to the NHIS-CH specification. As with the NHIS-CH, the effect of very low birth weight shrinks with the inclusion of these controls. However, unlike the NHIS-CH finding, the effect of low birth weight remains significant and the coefficient size does not differ much between columns (2) and (4). In fact, the joint test of the health conditions is significant in column (4) of Table 8 where the corresponding joint test in Table 5 is not significant.

In columns (5) and (6), I include father's education. This is the best proxy of household income prior to the illness and divorce (assuming that the father did not return to school after the birth) available from the US surveys. In all of the specifications up until now, the relationship between child health and divorce may just be a reflection of the fact that poorer families are more likely to have sick children and more likely to divorce. Consistent with this, the magnitude of the coefficient on low birth weight falls; however, it is still individually and jointly significant.

In sum, data from both of the US sources indicate that children with low birth weight are more likely to experience the divorce of their parents, although the effect diminishes as the child grows older. The effect of low birth weight is partially explained by the parents' characteristics, but there does appear to be some effect that is yet unexplained. These findings are consistent with other US studies; however, the data sources available in the US which can address this question have important limitations associated with cross-sectional or short-panel surveys discussed above. Thus, I now turn to the results using the longitudinal British Cohort Survey.

British Cohort

In contrast to the US findings, Table 9 indicates that low birth weight children in the UK are not more likely to experience the divorce of their parents. The first two columns of Table 9 indicate that low birth weight has a positive but insignificant effect on the hazard of divorce at birth for the British sample, when I include a limited set of controls. In columns (3) and (4), I include only the controls that were available in the NHIS-CH survey for comparison. In columns (5) and (6), I include father's education, and finally, in the last two columns, I include other family illness, the mother's prenatal behavior, and both mother's and father's social class at the time of the child's birth. None of these controls have an important effect on the coefficients of interest, which remain insignificant individually and jointly.

Magnitude of Effects

In Figures 7 though 9, I summarize the birth weight findings by presenting the predicted probabilities of divorce at various ages assuming a normal birth weight and a low birth weight child. For both of the American samples, the predicted probability of parental divorce between birth and age two for a low birth weight baby is significantly higher than that of a normal birth weight baby. The effect size is on the order of a 50 percent increase in the probability of divorce. For the Add Health sample, low birth weight babies also have a marginally significant higher probability of experiencing divorce between the ages of five and seven and between 15 and 18. For the BCS, there is no difference in the predicted probabilities of parental divorce by birth weight category for any of the estimated age groups. Overall, if the six to seven percent of babies that are born with a low birth weight were instead born with a normal birth weight, the divorce rate in the US would fall approximately three percentage points.

The size of the effect of a child's health may be biased by the fact that I have combined children of various birth orders in the samples. That is, the effect of being low birth weight is likely to be different if the child is the first born to the couple compared to a child that is the couples' third child. The parents' marriage is relatively young for first born children which might make them more vulnerable to divorce; however, divorce may be more likely for higher birth order children if the they follow the births of low birth weight siblings, which may push the parents' over the threshold into divorce.

To obtain a more narrowly defined estimate of the magnitude of the effect, I restrict the sample to first born children in Table 10. The coefficients on low birth weight are very similar for both of the American samples. They are also both close in size to the coefficient for the full Add Health sample (see column (4) of Table 8). The effect on first born children is much greater than for the full NHIS-CH sample, which may suggest that there were fewer first born children in the NHIS-CH sample than in the Add Health sample, which is true to some extent – first born children make up 47% of the full NHIS-CH sample but nearly 50% of the full Add Health sample. It may also be the case that there is a greater difference in the effect size across birth orders for the NHIS-CH sample than for the Add Health sample. As for the full sample, the effect of being low birth weight for first born children in the UK is not significantly different from zero. Figure 12 provides the predicted probabilities of divorce for the youngest first born children in each sample. Like for the full sample, the effect size is on the order of a 50 percent increase in the probability of divorce for the American samples and no effect for the British sample.

Cross-country Difference or Cohort Effect?

The age effect demonstrated in Figures 7 through 9 highlight one explanation for the cross-country difference which I have not addressed yet; the effect of low birth weight on divorce may be a new effect only present among the more recent cohorts of children. Thus, low birth weight may have an effect on divorce in the UK among a younger cohort than the 1970 cohort. Because both American data sets are, for my purposes, cross-sectional, normally I could not distinguish between age and cohort effects because a child's age perfectly correlates with the year he was born if all children are interviewed at one time. However, the discrete time hazard framework allows me to control for both. To run the hazards, retrospective, cross-sectional observations are converted into child-year observations. Thus, while children who were interviewed at age 17 will have observations only at age 17, nearly every child in the sample will have an observation at age 1. So, at age 1, I will have children born between 1970 and 1988 for the NHIS-CH sample and between 1974 and 1983 for the Add Health sample.

Table 11 presents some evidence that the cross-country difference I observe is not the result of a cohort effect. In columns (1) and (3), I show the regressions from the main analysis for both of the American samples (from columns (4) on Tables 5 and 8). In these regressions, I include a set of dummies for year that each child-year observation represents which allows the hazard to vary by the child's age as it does in Figure 3. In columns (2) and (4), I show regressions which also include a set of dummies for the year that the child was born. The coefficients on low birth weight are slightly smaller in the regressions with the cohort controls, but the differences are not significant. This suggests that the cross-country difference in the effect of low birth weight on divorce is not merely attributable to differences in cohort.

Discussion of Mechanisms

The results above indicate that low birth weight affects the likelihood that the child's parents divorce in the US but not in the UK. Birth weight, as a health outcome, reduces the possibility that this result is driven by reverse causality. Controls for prenatal smoking and household income demonstrate that the most obvious third factor explanations do not completely explain the effect of low birth weight. In this section, I turn to possible mechanisms which may underlie the relationship between child health and parental divorce. First, I consider two mechanisms by which low birth weight can affect parents and, as a result, affect their decision to divorce – the trauma at the time of the birth and the burden of having a chronically unhealthy child. Then, I exploit the cross-country difference in findings to speculate about whether the mother's labor force participation and whether more generous social support affect the relationship between child health and parental divorce.

Traumatic Event

Low birth weight may affect the parents in important ways immediately after the birth because the delivery is a traumatic event involving long hospital stays, procedures, and a fear of neonatal mortality. Low birth weight may also have a delayed effect on parents because low birth weight is associated with a number of childhood morbidities ranging from congenital abnormalities to reduced cognitive ability in school age children, as detailed in the introduction. The findings thus far suggest that the immediate trauma may be the primary avenue through which low birth weight affects divorce in the US given that the effect is strongest closer to the birth. To investigate this further, I interact low birth weight with other aspects of the birth that would suggest the degree of stress or trauma during this early period.

For the NHIS-CH sample, I know how long the baby remained in the hospital following the delivery and construct an indicator for whether this stay was two weeks or longer. Only 1.9% of the sample are born low birth weight and have long hospital stays; 4.4% are born low birth weight and stay in the hospital less than two weeks. Another 2.8% are born with a normal birth weight but stay in the hospital for an extended period for other reasons. I include a control for this last category so that the omitted category is short-stay normal birth weight children. In Table 12, I show results of hazards of divorce on these disaggregated measures of low birth weight. Column (1) shows that the effect of low birth weight on the hazard of divorce is slightly larger for those children whose stay in the hospital was extended. However, neither the coefficient on long-stay low birth weight, nor the coefficient on short-stay low birth, nor the difference between the two coefficients is significant.

For the BCS sample, I know whether the baby was in a neonatal surgical ward or a special care unit on their seventh day (the last day the interview covered). About 3.1% of the sample are born low birth weight and have special care, 2.9% are born low birth weight and do not have special care on their seventh day, and 1.4% are born with a normal birth weight but receive special care for other reasons. Columns (2) and (3) of Table 12 show that the effect of low birth weight on divorce is not significantly different for children who received special care on their seventh day, whether or not only the controls also available in the NHIS-CH (column (2)) or the full set of controls (column (3)) are used. Thus, the severity of the child's condition, proxied by the length of the hospital stay and the receipt of special care, does not appear to significantly increase the likelihood of parental divorce.

Subsequent Health Problems

I turn now to another possible channel through which low birth weight may affect parents – through the increased risk of childhood health problems. As stated above, the main findings do not point to subsequent morbidities as the mechanism by which low birth weight affects parental divorce because if this were true, the effect of low birth weight should grow stronger as the child ages and more conditions arise, contrary to the findings thus far. However, I pursue more direct evidence in this section by controlling for other health measures.

In choosing these other health measures, I am cautious about reverse causality. Both the BCS and the NHIS-CH contain information on the age at onset of a common set of nine major chronic conditions: arthritis, blindness, bone problems, bowel problems, cerebral palsy, deafness, diabetes, epilepsy, and heart problems. Table A2 lists the exact condition definitions included for each survey. I avoid health conditions that can be stress-induced, like asthma (Wright, 2003), stuttering (Blood, Wertz, Blood, Bennett, & Simpson, 1997), or frequent complaints of minor chronic conditions such as stomach pain or headaches (Zuckerman, Stevenson, & Bailey, 1987), which are particularly suspect in terms of reverse causality; and conditions that can result because parents are distracted, like accident-related injuries.

Parents report the conditions in the NHIS-CH. 3.3% of the children in the NHIS-CH sample have at least one of the nine major chronic conditions. Figure 10 plots a histogram of the age at onset of the first major chronic condition present for the NHIS-CH sample. Nearly half of those with any condition had their first condition present at birth. In the BCS, a doctor reports the conditions and the age at which the condition first appears in the child's medical records. 5.1% of children in the BCS sample have at least one of the nine major chronic conditions. Figure 11 plots a histogram of the age at which the first major chronic condition was recorded. There is a spike at birth and at age five. The BCS's broad definitions of blindness and deafness which include 'low vision' and 'hearing loss' are responsible for the spike at age five. These conditions are likely to be first caught when the child enters school. The results are not affected by whether these two conditions are included or not.

In addition, in the BCS, a medical interviewer notes any congenital abnormalities seven days after the birth. Similar to low birth weight, because of the timing of onset, this health measure is likely to avoid the problem of reverse causality. From this, I create an indicator of the most serious congenital abnormalities (see Table A3 for a list). 1.1% of the sample has a major congenital abnormality.

Table 13 shows three comparisons of hazards with and without these additional health measure controls. The first two columns use the NHIS-CH and the last three use the BCS. If subsequent health problems were an important avenue through which low birth weight affects divorce, we should see a change in the coefficient on low birth weight when controls for the onset of chronic conditions or congenital abnormalities are included. Instead, for the NHIS-CH sample, there is no change in the magnitudes of the coefficients when controls for chronic conditions are included, which implies that the relationship between low birth weight and subsequent chronic conditions have independent effects on the hazard of divorce. This is particularly striking given that the major chronic conditions have a significant effect on the hazard of divorce which changes across time. In particular, at the onset of the first condition, there is a protective effect of having a condition; however, as more conditions accrue and time passes, the likelihood of divorce increases. Given that long-term conditions imply a sustained and perhaps increasing level of burden on the parents, this pattern of coefficients is reasonable.

For the BCS, there is very little change in the magnitude of the coefficients on low birth weight when controls for the number of major chronic conditions or when any major congenital abnormality are included. Also, in neither case are the coefficients on these health measures significant.

Taken together, these results imply that the effect of low birth weight on divorce in the US observed in the main results is not derived from the increased risk of childhood morbidities – at least, not the childhood morbidities captured by these lists of major chronic conditions. In particular, missing from these lists are measures of the child's cognitive abilities and behavior problems which may play an important role but, unfortunately, are difficult to include in this type of analysis because divorce may also be predictive of these types of problems.

Mother's Employment

I now consider whether the greater propensity for mothers in the US to work, mentioned above, contributes to the cross-country difference in the effect of low birth weight on divorce. That is, because all mothers are less likely to work in the UK than in the US, mothers with disabled children might be more likely to specialize in home production in the UK and hence are more likely to stay married. Table 14 shows probits of an indicator for whether the mother is a housewife at the time of the interview on the child's health at birth. I restrict the samples to only those children whose parents did not divorce since mothers may be more likely to work after a divorce. For both the NHIS-CH and Add Health samples, being low birth weight has, if anything, a positive effect on mother's employment, although the effect is not jointly significant.[18] On the other hand, the probability that the mother is a housewife at age 10 or at age 16 for the British Cohort is significantly higher if the child is low birth weight.

To evaluate whether the greater propensity of mothers to stay at home in the UK given a low birth weight child affects the results of interest, Table 15 presents the estimated hazard of divorce using only a sample of working mothers. Only those observations where the mother was known to work before a divorce, if one occurs, are included. 6.8% of this sample divorced. As there is still no positive effect of low birth weight on divorce evident, mothers specializing in home production

[18] Case, Lubotsky, and Paxson (2002) find no effect of child health on mother's employment using the PSID, while Powers (2001) finds that mothers of children in poor health are less likely to work using the Current Population Survey.

do not appear to be responsible for the protective effect of low birth weight on divorce in the UK.

Health Care

The other important and relevant cross-country difference is that the UK has more generous social programs than the US. Government support which covers the additional expenses of having a disabled child should reduce the difference in the propensity to divorce compared to those families without disabled children. If the financial aspects of the child's illness are driving the probability of divorce up in the US, then I expect the effect of child health to be strongest among families who would be financially constrained. Because of Medicaid, the poorest households may be less affected than those whose incomes are just above the Medicaid threshold. In addition, the highest income households should also be less affected than those in the the lower brackets. On the other hand, because of universal health care and financial support for the disabled available in the UK, financial burden should not be an important factor in the break-up of a marriage given a disabled child. Thus, families in the lowest income bracket should be no more likely to divorce because of a sick child than families in higher brackets in the UK.

Table 16 shows the effect of child health on divorce by several measures of income and aid status for the US and the UK. In the first column, I look at the effect of Medicaid receipt and father's education on the effect of low birth weight using the Add Health sample. 6.8 percent of all children received Medicaid and 3.3 percent of children with married parents received Medicaid.[19] This column shows that Medicaid recipients are more likely to divorce overall, and, consistent with the hypothesis that health insurance is protective, are less likely to divorce if they have a low birth weight baby (although not significantly).[20] In contrast, the coefficients on father's education in

[19]Children who are in poor health are more likely to have received Medicaid; however, there is no difference in Medicaid take-up between sick children with married parents and sick children with divorced parents for this sample.

[20]Medicaid receipt is only known at the time of the first interview; i.e. after most of the divorces in the sample occur. However, if Medicaid receipt is endogenous because parents of low birth weight babies divorce in order to reduce their household income and qualify for Medicaid, the estimated coefficient on the Medicaid-LBW interaction would be biased up. Because this coefficient is negative, either parents are not divorcing to get on Medicaid or the actual coefficient on the interaction is even more negative than this estimate.

column (1) indicate that households with more highly educated fathers are less likely to divorce overall, but more likely to divorce if they have a low birth weight baby. If more educated households are more likely to have health insurance and less financially constrained than less educated households, then this would indicate that financial burden is not a mechanism behind the divorces of parents with sick children.

However, father's education may not be the perfect proxy for financial power; it may also represent the opportunity costs of the parents' time. Because of assortative mating, if the father's education is high, the mother may also be highly educated which increases her likelihood of working. If this highly educated mother needs to quit her job to care for her low birth weight baby, she may feel especially burdened by the costs of having a sick child which could lead to divorce. For this reason, I also include interactions between low birth weight and mother's education. Consistent with Jalovaara (2003), mothers who are more educated are more likely to divorce. However, the effect of low birth weight does not change across mother's education categories as it does for father's education. Since a mother is more likely to be the primary care-giver for the child, this finding implies that the opportunity cost of a parent's time is not an important factor in the effect of low birth weight on divorce in the US. Thus, it is still not clear why the effect of low birth weight increases with father's education. It may be that health care expenses rise with income and thus there are very few households which are truly unconstrained. It may also be that father's education is correlated with the expectations for the child's future such that having a sick child is more costly in this sense for educated parents than for parents with lower expectations. In sum, the Medicaid and parents' education evidence weakly suggests that health insurance may – but household income likely does not – alleviate the impact of poor child health on the likelihood of divorce in the US.

Column (2) shows the effect of child health on divorce by parents' education and father's social class (based on occupation) using the British Cohort. This column shows that the likelihood of divorce does not vary by father's or mother's education but that households with fathers in lower class occupations are more likely to divorce. However, consistent with the hypothesis that health insurance is protective, the effect of low birth weight is not significantly affected by parents' education or father's social class. Taken as a whole, this table suggests that health insurance may be an important factor influencing the likelihood of divorce for families with sick children but income is not. The evidence also suggests a puzzle – the least financially constrained families in the US, those with college educated fathers, are the most likely to experience a divorce following the birth of a low birth weight child.

CONCLUSION

Consistent with other US studies on the effect of child health on divorce, I find that children in poor health are more likely to experience the divorce of their parents in the US. In particular, low birth weight children in the US have a positive and significant effect on the likelihood of divorce in the first few years after birth. In addition, the number of major chronic conditions that the child develops also has a significant effect on the likelihood of divorce. For both health measures, the effect of a child's health is not constant across time and the effect may be missed altogether or misinterpreted if time since the onset of the condition is not considered. However, the positive effect of child health on divorce is not universal; low birth weight children as well as children with major chronic conditions in the UK have no impact on the likelihood of parental divorce.

There is a need for future research to identify the mechanisms that underlie the relationship between low birth weight and parental divorce in the US. I have been able to rule out to some degree several possible mechanisms: the effect of low birth weight does not seem to be derived from the stress of the days surrounding the birth or subsequent chronic conditions that develop; nor does it appear to be driven by high rates of mothers' labor force participation. On the other hand, health insurance may be important but there is evidence that sick children with college-educated fathers are the most likely to experience divorce, although the reason is unclear.

The results in this paper indicate that there is selection into divorce based on characteristics of the child which biases various estimates of the consequences of divorce for children's outcomes. These findings also imply that part of the gradient observed in children's health in the US may run from health to income.

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Table 1: Comparison of US and UK Characteristics

	US	UK
% married, 2000 [1] [2]	52	52
% married between 1965-1974 who cohabited [3]	11	
% married between 1980-1984 who cohabited [3]	44	
% unmarried women cohabiting, 1976 [4]		9
% unmarried women cohabiting, 1998 [4]		29
Average age at first marriage, 1981 [5] [6]		
bride	23.0	23.1
groom	25.0	25.4
% black, 2001 [7]	12	
% Hispanic, 2001 [7]	12	
% non-white, 2001 [8]		8
% mothers with children<6 years old who work fulltime, 2002 [9]	40	
% mothers with children<5 years old who work fulltime, 2002 [2]		20

[1] Current Population Report, 2000 [2] Summerfield & Babb, 2003 [3] Bumpass & Sweet, 1989 [4] Haskey, 2001 [5] U.S. Centers for Disease Control and Prevention, 1988 [6] Office for National Statistics, 2003 [7] U.S. Bureau of the Census, 2001 [8] Office for National Statistics, 2001 [9] Bureau of Labor Statistics, 2002

Table 2: Descriptive Statistics

	NHIS-CH			Add Health			British Cohort		
	N	Mean	SE	N	Mean	SE	N	Mean	SE
Birth Weight:									
LBW ($< 2500g$)	11525	0.061	0.002	8654	0.072	0.003	15890	0.076	0.002
BW$< 1814g$	11525	0.011	0.001	8654	0.015	0.001	15890	0.019	0.001
Median BW if LBW	714	2268	8.03	588	2183	41.51	1208	2211	19.30
Child's Characteristics:									
Age, first interview	12051	8.39	0.047	9663	15.32	0.018			
Boy	12051	0.513	0.005	9671	0.511	0.005	15907	0.520	0.004
Twin	12051	0.043	0.002	9412	0.022	0.002	15915	0.022	0.001
Hispanic	11816	0.110	0.003	9671	0.121	0.003			
Black	11816	0.090	0.003	9671	0.123	0.003			
Non-white							11662	0.028	0.002
Parents' Characteristics:									
M's age at birth*	11765	25.89	0.048	8542	26.08	0.056	15821	26.23	0.043
Yrs married at birth	10720	4.86	0.038				15806	5.332	0.034
M <high school	11879	0.163	0.003	9233	0.156	0.004			
M no qualifications							11391	0.553	0.005
M 2+ yrs college	11879	0.316	0.004	9233	0.274	0.005	11391	0.078	0.003
F <high school				8866	0.161	0.004			
F no qualifications							10747	0.489	0.005
F 2+ yrs college				8866	0.309	0.005	10747	0.158	0.004
M ill							15915	0.179	0.003
F ill							15915	0.134	0.003
N of prenatal visits (Max=21+)							15264	10.31	0.034
Smoked while pregnant							15841	0.402	0.004
Drank while pregnant							11454	0.054	0.002
M non-manual skilled							14427	0.299	0.004
M housewife							14427	0.344	0.004
F professional							15356	0.053	0.002
F manual skilled							15356	0.479	0.004
F responded to survey	12051	0.113	0.003	8923	0.047	0.002			
Regional Characteristics:									
Urban	12051	0.258	0.004	9581	0.525	0.005			
Large city (pop>1m)	12051	0.387	0.004						
West (US)	12051	0.212	0.004						
Female Head/Family HH				9535	0.157	0.001			

*For Add Health, if mother's age is missing, father's age is used instead.

Table 3: Percent Divorced by Birth Weight Category

	NHIS-CH		Add Health		British Cohort	
	% Divorced	N	% Divorced	N	% Divorced	N
Normal Birth weight (>2500g)	18.5	10811	32.7	7709	15.4	14004
L Birth weight (<2500g)	23.6	714	44.2	553	12.7	1142

Table 4: Replication of Corman and Kaestner (1992)

Dependent Variable: The Hazard of Divorce

	Condition present 2 years before interview	Plus condition present 1 year before divorce
Number of Physical Conditions	0.225*	-0.006
	(0.088)	(0.103)
	[.0483]	[.0478]
N child-years	96566	96566
N children	12030	12030

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Includes controls listed in Table 2, a set of age dummies, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the child level. Possible conditions: arthritis, blindness, bone problems, bowel problems, cerebral palsy, deafness, diabetes, epilepsy, heart problems, physical impairment, sickle cell anemia, and asthma. Means in square brackets.

Table 5: The Effect of Child Health on Divorce in the US (NHIS-CH)
Dependent Variable: The Hazard of Divorce

	(1)	(2)	(3)	(4)
LBW	0.195*	0.359*	0.057	0.168
	(0.096)	(0.155)	(0.099)	(0.173)
LBW * Age		-0.032		-0.022
		(0.024)		(0.026)
Boy	0.008	0.009	-0.055	-0.055
	(0.050)	(0.050)	(0.050)	(0.050)
Twin	0.154	0.150	0.167	0.164
	(0.124)	(0.123)	(0.126)	(0.126)
Hispanic	-0.062	-0.061	-0.161+	-0.159+
	(0.088)	(0.088)	(0.094)	(0.094)
Black	0.508**	0.508**	0.386**	0.386**
	(0.074)	(0.074)	(0.082)	(0.082)
M's age at birth			-0.143**	-0.143**
			(0.037)	(0.037)
M's age squared			0.002*	0.002*
			(0.001)	(0.001)
Yrs married at birth			-0.057**	-0.057**
			(0.010)	(0.010)
Jointly Sig? (p-value)				
LBW		0.0472		0.6241
M's Educ			0.0114	0.0116
Region			0.0000	0.0000
N child-years	91562	91562	91495	91495
N children	11514	11514	11505	11505

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies, an indicator of whether the respondent was the father, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the child level.

Table 6: Does mother's prenatal behavior matter? (NHIS-CH, under age 6)
Dependent Variable: The Hazard of Divorce

	(1)	(2)
LBW	0.666	0.623
	(0.453)	(0.444)
LBW * Age	-0.250	-0.246
	(0.171)	(0.167)
Quit smoking in first trimester		0.158
		(0.213)
Smoked $\leq$ 10 cigs/day		0.486**
		(0.186)
Smoked $>$ 10 cigs/day		0.621**
		(0.195)
First doctor visit after first trimester		0.313
		(0.239)
Boy	-0.055	-0.078
	(0.130)	(0.130)
Twin	0.404	0.471
	(0.318)	(0.308)
Hispanic	0.084	0.193
	(0.241)	(0.239)
Black	0.697**	0.743**
	(0.202)	(0.205)
M's age at birth	-0.273*	-0.296**
	(0.109)	(0.111)
M's age squared	0.004+	0.004*
	(0.002)	(0.002)
Yrs married at birth	-0.036	-0.026
	(0.029)	(0.028)
Jointly Sig? (p-value)		
LBW	0.3143	0.3253
M's Educ	0.0000	0.0000
Region	0.0428	0.0368
N child-years	11337	11337
N children	3589	3589

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies, an indicator of whether the respondent was the father, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the child level.

Table 7: Does mother's prenatal behavior matter? (NHIS-CH, full sample)

Dependent Variable: The Hazard of Divorce

Full-term LBW	0.199
	(0.186)
Pre-term LBW	0.229
	(0.205)
Pre-term Normal BW	0.199
	(0.135)
LBW * Age	-0.027
	(0.026)
LBW Jointly Sig?	0.6705
Row (1) = Row (2)?	.8742
N child-years	90845
N children	11417

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Includes controls listed in Table 2, a set of age dummies, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the child level.

Table 8: The Effect of Child Health on Divorce in the US (Add Health)

Dependent Variable: The Hazard of Divorce

	(1)	(2)	(3)	(4)	(5)	(6)
LBW	0.342**	0.455**	0.284**	0.414*	0.211*	0.334*
	(0.094)	(0.159)	(0.099)	(0.162)	(0.097)	(0.169)
LBW * Age		-0.014		-0.016		-0.015
		(0.017)		(0.018)		(0.018)
Boy	-0.042	-0.042	-0.049	-0.049	-0.044	-0.044
	(0.049)	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)
Twin	-0.292	-0.290	-0.243	-0.240	-0.229	-0.227
	(0.201)	(0.200)	(0.212)	(0.211)	(0.209)	(0.208)
Hispanic	0.101	0.102	-0.033	-0.033	-0.062	-0.062
	(0.118)	(0.118)	(0.106)	(0.106)	(0.101)	(0.101)
Black	0.638**	0.638**	0.307**	0.306**	0.254**	0.253**
	(0.084)	(0.084)	(0.075)	(0.075)	(0.074)	(0.074)
M's age at birth			-0.171**	-0.171**	-0.156**	-0.156**
			(0.039)	(0.039)	(0.040)	(0.040)
M's age squared			0.002**	0.002**	0.002*	0.002*
			(0.001)	(0.001)	(0.001)	(0.001)
Jointly Sig? (p-value)						
Health		0.0006		0.0063		0.0525
M's Educ			0.0000	0.0000	0.0000	0.0000
Region			0.0000	0.0000	0.0000	0.0000
F's Educ					0.0000	0.0000
N child-years	121123	121123	121123	121123	121123	121123
N children	8254	8254	8254	8254	8254	8254

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies, an indicator of whether the respondent was the father, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the school level.

Table 9: The Effect of Child Health on Divorce in the UK (British Cohort)
Dependent Variable: The Hazard of Divorce

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LBW	0.110	0.215	0.025	0.129	0.005	0.129	-0.057	0.077
	(0.094)	(0.180)	(0.094)	(0.181)	(0.096)	(0.179)	(0.098)	(0.180)
LBW * Age		-0.013		-0.013		-0.015		-0.016
		(0.019)		(0.019)		(0.019)		(0.019)
Boy	0.031	0.031	0.011	0.011	0.019	0.019	0.013	0.013
	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.044)	(0.044)
Twin	-0.201	-0.204	-0.083	-0.086	-0.149	-0.152	-0.115	-0.119
	(0.249)	(0.248)	(0.252)	(0.251)	(0.259)	(0.258)	(0.255)	(0.254)
Non-white	-0.486*	-0.486*	-0.416*	-0.416*	-0.500*	-0.500*	-0.419*	-0.419*
	(0.193)	(0.193)	(0.201)	(0.201)	(0.208)	(0.208)	(0.211)	(0.211)
M's age at birth			-0.200**	-0.200**	-0.198**	-0.198**	-0.175**	-0.175**
			(0.038)	(0.038)	(0.039)	(0.039)	(0.040)	(0.040)
M's age squared			0.002*	0.002*	0.002*	0.002*	0.001	0.001
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Yrs married at birth			0.031**	0.031**	0.029**	0.029**	0.033**	0.033**
			(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
M is ill							0.302**	0.302**
							(0.063)	(0.063)
F is ill							-0.188*	-0.188*
							(0.075)	(0.075)
N of prenatal visits							-0.010+	-0.010+
							(0.006)	(0.006)
Smoked while pregnant							0.158**	0.158**
							(0.046)	(0.046)
Drank while pregnant							0.201*	0.201*
							(0.099)	(0.099)
Jointly Sig? (p-value)								
LBW		0.3927		0.7714		0.7260		0.5981
M's Educ			0.1863	0.1863	0.0498	0.0496	0.0366	0.0365
F's Educ					0.1323	0.1300	0.4082	0.4015
M's Social Class							0.0063	0.0064
F's Social Class							0.0634	0.0630
N child-years	188132	188132	188132	188132	188132	188132	188132	188132
N children	12892	12892	12892	12892	12892	12892	12892	12892

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies and missing indicators. The standard errors are adjusted for intra-cluster correlations at the household level.

Table 10: The Effect of Child Health on First Born Children

Dependent Variable: The Hazard of Divorce

Sample: First Born Children

	NHIS-CH	Add Health	British Cohort
LBW	0.386+	0.380+	-0.136
	(0.232)	(0.221)	(0.319)
LBW * Age	-0.056	-0.012	0.015
	(0.041)	(0.025)	(0.030)
Boy	-0.080	-0.100	-0.091
	(0.070)	(0.068)	(0.074)
Twin	0.194	-0.101	0.615
	(0.201)	(0.366)	(1.126)
Non-white			-0.887+
			(0.464)
Hispanic	-0.027	-0.102	
	(0.133)	(0.117)	
Black	0.335**	0.319**	
	(0.126)	(0.098)	
M's age at birth	-0.161*	-0.186**	-0.254**
	(0.074)	(0.050)	(0.070)
M's age squared	0.001	0.002**	0.003+
	(0.002)	(0.001)	(0.001)
Yrs married at birth	-0.026		0.028
	(0.020)		(0.027)
Jointly Sig? (p-value)			
LBW	0.2496	0.0731	0.8814
M's Educ	0.0132	0.0029	0.3288
Region	0.0002	0.0000	
N child-years	37429	58227	61786
N children	5402	4078	4138

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies, an indicator of whether the respondent was the father, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the household or school level.

Table 11: Cohort Effect?

Dependent Variable: The Hazard of Divorce

	NHIS-CH		Add Health	
	(1)	(2)	(3)	(4)
LBW	0.168	0.159	0.414*	0.338*
	(0.173)	(0.173)	(0.162)	(0.170)
LBW * Age	-0.022	-0.021	-0.016	-0.015
	(0.026)	(0.026)	(0.018)	(0.018)
Boy	-0.055	-0.056	-0.049	-0.044
	(0.050)	(0.051)	(0.049)	(0.050)
Twin	0.164	0.156	-0.240	-0.245
	(0.126)	(0.127)	(0.211)	(0.214)
Hispanic	-0.159+	-0.165+	-0.033	-0.060
	(0.094)	(0.094)	(0.106)	(0.101)
Black	0.386**	0.383**	0.306**	0.249**
	(0.082)	(0.083)	(0.075)	(0.075)
M's age at birth	-0.143**	-0.150**	-0.171**	-0.157**
	(0.037)	(0.037)	(0.039)	(0.040)
M's age squared	0.002*	0.002*	0.002**	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Yrs married at birth	-0.057**	-0.056**		
	(0.010)	(0.010)		
Jointly Sig? (p-value)				
LBW	0.6241	0.6523	0.0063	0.0520
M's Educ	0.0116	0.0127	0.0000	0.0000
Region	0.0000	0.0001	0.0000	0.0000
Cohort Dummies		x		x
N child-years	91495	91562	121123	121015
N children	11505	11514	8254	8248

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regressions are a set of age dummies, an indicator of whether the respondent was the father, and missing indicators. The standard errors are adjusted for intra-cluster correlations at the household or school level.

Table 12: Is a LBW birth a traumatic event?

Dependent Variable: Hazard of Divorce

	NHIS-CH	British Cohort	
	(1)	(2)	(3)
LBW * long stay or special care	0.202	0.159	0.125
	(0.240)	(0.207)	(0.207)
LBW * short stay or no special care	0.154	0.136	0.057
	(0.178)	(0.198)	(0.197)
Normal BW * long stay or special care	-0.011	0.195	0.218
	(0.142)	(0.167)	(0.167)
LBW * Age	-0.022	-0.014	-0.018
	(0.026)	(0.019)	(0.019)
LBW Jointly Sig?	0.8122	0.8801	0.7475
Row (1) = Row (2)?	0.8194	0.8957	0.7026
N child-years	91495	184173	184173
N children	11505	12616	12616

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. The controls in columns (1) and (2) are the variables listed in Table 2 that are common to both the NHIS-CH and the BCS surveys plus a set of age dummies and missing indicators. In column (3), all of the controls available to the BCS are included. The standard errors are adjusted for intra-cluster correlations at the child level for the NHIS sample and the household level for the BCS sample.

Table 13: Are subsequent health problems important?
Dependent Variable: Hazard of Divorce

	NHIS-CH		British Cohort		
	(1)	(2)	(3)	(4)	(5)
LBW	0.168	0.168	0.129	0.065	0.128
	(0.173)	(0.174)	(0.181)	(0.197)	(0.182)
LBW * Age	-0.022	-0.022	-0.013	-0.004	-0.012
	(0.026)	(0.026)	(0.019)	(0.023)	(0.019)
One Major Chronic Condition		-0.603*		-0.098	
		(0.248)		(0.178)	
Two Major Chronic Conditions		0.216		-0.045	
		(0.371)		(0.489)	
Three Major Chronic Conditions		0.350			
		(0.822)			
Time since onset of first major chronic condition		0.080*		0.029	
		(0.032)		(0.023)	
Major Congenital Abnormality					0.004
					(0.574)
Congenital Abnormality * Age					0.012
					(0.064)
LBW Jointly Sig?	0.6241	0.6243	0.7714	0.9280	0.7781
N child-years	91495	91495	188132	142230	187643
N children	11505	11505	12892	11591	12858

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Included in all regression are the controls listed in Table 2 that are common to both the NHIS-CH and the BCS surveys plus a set of age dummies and missing indicators. The standard errors are adjusted for intra-cluster correlations at the child level for the NHIS sample and the household level for the BCS sample. Possible major chronic conditions: arthritis, blindness, bone problems, bowel problems, cerebral palsy, deafness, diabetes, epilepsy, and heart problems.

Table 14: Child Health and Mother's Labor Force Participation

Dependent Variable: Mother is a Housewife at the interview

Sample: Not divorced at interview

	NHIS-CH	Add Health	British Cohort		
Age:	0-17	12-18	5	10	16
LBW	-0.020	-0.177+	-0.005	0.074**	0.060*
	(0.037)	(0.096)	(0.024)	(0.023)	(0.028)
Child's age at interview	0.003	-0.006			
	(0.004)	(0.004)			
LBW * child's age	-0.011**	0.017			
	(0.001)	(0.017)			
LBW Jointly Sig?	0.7231	0.5862			
N	9244	5235	9140	8783	6264
% HSWives	34.2%	21.5%	57.3%	31.7%	31.8%

Probits. Marginal effects on the probability of being a housewife are reported. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Includes the controls listed in Table 2 that are common to all three data sets as well as missing indicators. The standard errors are adjusted for intra-cluster correlations at the school level for the Add Health sample and the household level for the BCS sample.

Table 15: Is Mother's Labor Force Participation an Issue? (British Cohort)

Dependent Variable: The Hazard of Divorce

Sample: Working Mothers Only

LBW	-0.899
	(0.637)
LBW * Age	0.059
	(0.048)
LBW Jointly Sig?	0.3316
N child-years	97226
N children	8185

Hazard. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Includes the controls listed in Table 2, a set of age dummies, and missing indicators. Only those observations where the mother was known to work before a divorce, if one occurs, are included. 6.8% of the sample divorced. The standard errors are adjusted for intra-cluster correlations at the household level.

Table 16: Does the Financial Burden Matter?
Dependent Variable: Hazard of Divorce

	Add Health	BCS
LBW	-0.028	0.286
	(0.287)	(0.636)
LBW * Age	-0.016	-0.001
	(0.017)	(0.026)
Medicaid	0.707**	
	(0.071)	
LBW * Medicaid	-0.430	
	(0.282)	
F HS grad/vocational quals	-0.316**	-0.079
	(0.069)	(0.100)
F some college/O-levels	-0.496**	-0.060
	(0.082)	(0.083)
F college grad/A-levels or degree	-0.578**	-0.127
	(0.086)	(0.116)
LBW * F hs grad/vocational quals	0.241	0.133
	(0.290)	(0.410)
LBW * F some college/O-levels	0.405	0.238
	(0.341)	(0.336)
LBW * F college grad/A-levels or degree	0.835*	0.278
	(0.378)	(0.499)
M HS grad/vocational quals	0.348**	-0.127
	(0.092)	(0.091)
M some college/O-levels	0.594**	-0.035
	(0.098)	(0.081)
M college grad/A-levels or degree	0.538**	0.205
	(0.097)	(0.126)
LBW * M hs grad/vocational quals	0.274	0.101
	(0.273)	(0.372)
LBW * M some college/O-levels	-0.096	0.368
	(0.284)	(0.335)
LBW * M college grad/A-levels or degree	-0.092	0.046
	(0.347)	(0.654)

continued on next page

Table 16, continued

	Add Health	BCS
F managerial		0.321+
		(0.171)
F skilled non-manual		0.259
		(0.172)
F skilled manual		0.266+
		(0.158)
F semi-skilled		0.267
		(0.170)
F unskilled		0.483*
		(0.190)
LBW * F managerial		0.009
		(0.716)
LBW * F skilled non-manual		-0.198
		(0.692)
LBW * F skilled manual		-0.532
		(0.615)
LBW * F semi-skilled		-0.059
		(0.635)
LBW * F unskilled		-0.640
		(0.692)
LBW Jointly Sig?	0.0283	0.7438
N child-years	121123	142251
N children	8254	9348

Hazards. Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. Includes the controls listed in Table 2 that are common to all three data sets, a set of age dummies, and missing indicators.

Table A1: Sample Attrition in the British Cohort Survey

Age at interview:	birth	10		16		29
Interview type:	medical	parent	medical	parent	medical	parent
Sample Size	15890	11967	11803	7898	5035	11021
Means:						
LBW	0.076	0.062	0.061	0.062	0.064	0.073
M no qualifications	0.553	0.548	0.549	0.530	0.494	0.523
M 2+yrs college	0.078	0.078	0.077	0.086	0.101	0.083
F professional	0.053	0.053	0.052	0.053	0.062	0.060
F managerial	0.122	0.123	0.122	0.126	0.145	0.128
F skilled non-manual	0.123	0.128	0.128	0.137	0.140	0.133
F skilled manual	0.479	0.485	0.485	0.478	0.468	0.469
F semi-skilled	0.156	0.152	0.152	0.147	0.136	0.149
F unskilled	0.067	0.061	0.060	0.059	0.049	0.062

Table A2: Possible Major Chronic Conditions in NHIS-CH and BCS

Condition Category	N
Arthritis	
NHIS-CH	21
73 arthritis or other joint problem	
BCS (ICD9 3-digit codes)	24
00323 Salmonella arthritis	
05671 Arthritis due to rubella	
09850 Gonococcal arthritis	
710-719 Arthropathies and related disorders	
V134 Arthritis	
Blindess	
NHIS-CH	21
62 blind in one eye	
63 blind in both eyes	
BCS (ICD9 3-digit codes)	127
366 Cataract	
369 Blindness and low vision	
Bone Problems	
NHIS-CH	49
74 other bone, cartilage, muscle or tendon problem	
BCS (ICD9 3-digit codes)	33
730 Osteomyelitis, periostitis and other infections involving bone	
731 Osteitis deformans and osteopathies	
associated with other disorders classified elsewhere	
732 Osteochondropathies	
733 Other disorders of bone and cartilage	
Bowel Problems	
NHIS-CH	16
46 frequent or repeated diarrhea or colitis	
47 any other persistant bowel trouble	
BCS (ICD9 3-digit codes)	4
555-558 Noninfective enteritis and colitis	
Cerebral Palsy	
NHIS-CH	16
75 cerebral palsy	
BCS (ICD9 3-digit codes)	19
343 Infantile cerebral palsy	
Deafness	
NHIS-CH	80
60 deafness in one ear	
61 deafness in both ears	
BCS (ICD9 3-digit codes)	290
389 Deafness	
V192 deafness or hearing loss	

continued on next page

Table A2, continued

Condition Category	N
Diabetes	
NHIS-CH	10
48 diabetes	
BCS (ICD9 3-digit codes)	17
250 Diabetes mellitus	
Epilepsy	
NHIS-CH	19
67 epilepsy or convulsion without fever	
68 seizures associated with fever	
BCS (ICD9 3-digit codes)	57
345 Epilepsy	
Heart Problems	
NHIS-CH	112
76 congenital heart disease	
77 any other heart disease or condition	
BCS (ICD9 3-digit codes)	52
093 Cardiovascular syphilis	
391 Rheumatic fever with heart involvement	
393 Chronic rheumatic pericarditis	
394 Diseases of mitral valve	
395 Diseases of aortic valve	
396 Diseases of mitral and aortic valves	
397 Diseases of other enocardial structures	
398 Other rheumatic heart disease	
402 Hypertensive heart disease	
404 Hypertensive heart and renal disease	
410-414 Ischaemic heart disease	
415-417 Diseases of pulmonary circulation	
420-429 Other forms of heart disease	
745-747 Congenital anomalies of the heart or circulatory system	

Table A3: Possible Major Congenital Abnormalities in the British Cohort Survey

Condition	N
Anencephalus	27
Hydropcephalus only	12
Microcephalus	2
Spina bifida, no hydrocephalus	9
Spina bifida & hydrocephalus	12
Malformation of the eye	2
Malformation of intestinal tract	11
Cleft lip	22
Cleft palate	3
Trachea/oesophageal fistula	1
Oseophageal atresia	5
Rectal/anal atresia	2
Indeterminate sex	1
Malformation of the upper limb	2
Malformation of the lower limb	4
Cystic hygroma	2
Exomphalos, omphalocele	3
Congenital malformation not specified	1
Chromosomal abnormality	6
Down's syndrome	21
Multiple congenital abnormalities	30

Figure 1: If $\alpha(H) > 1$, more likely that marriage $\succ$ divorce

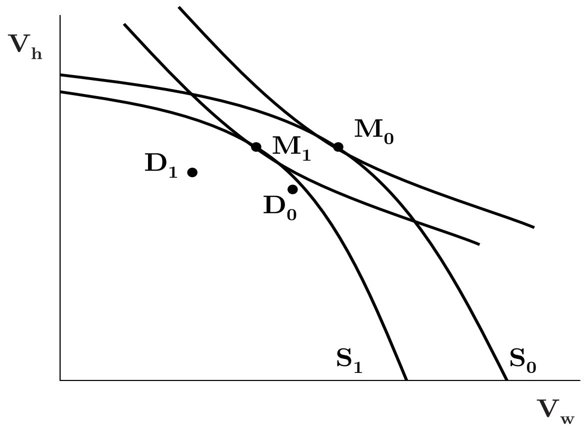


Figure 2: If $\alpha(H) < 1$, more likely that divorce $\succ$ marriage

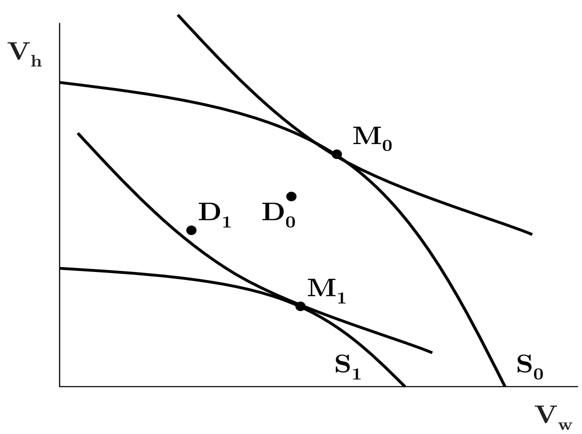


Figure 3: Divorce by Child's Age

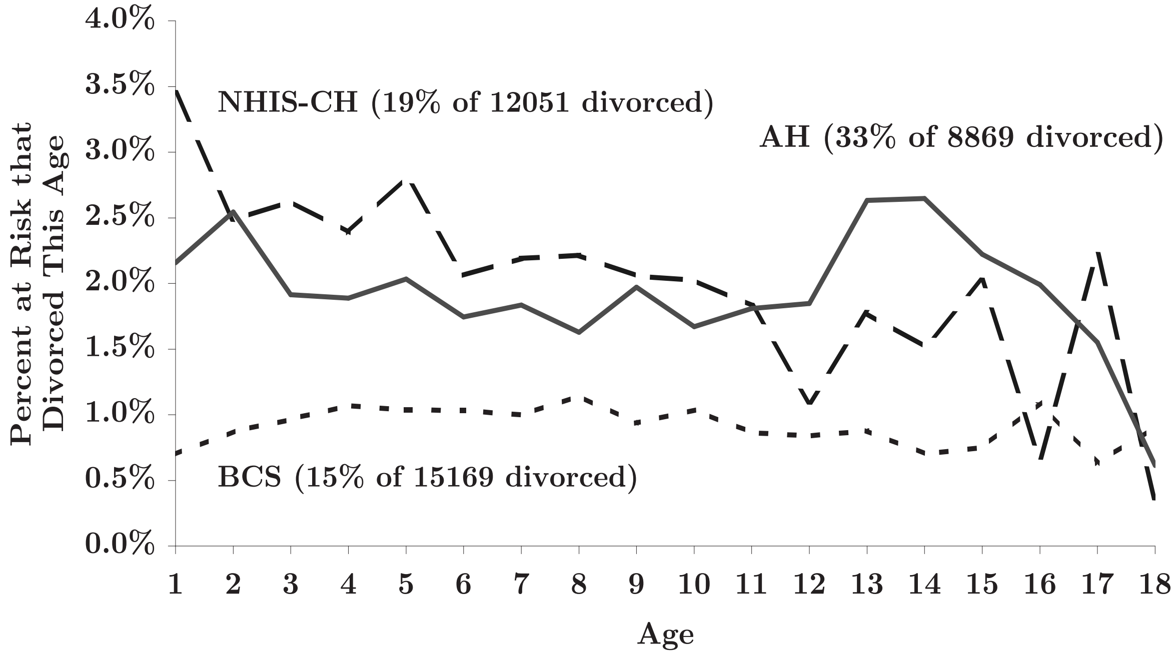


Figure 4: Cumulative Divorce by Child's Age and Cohort

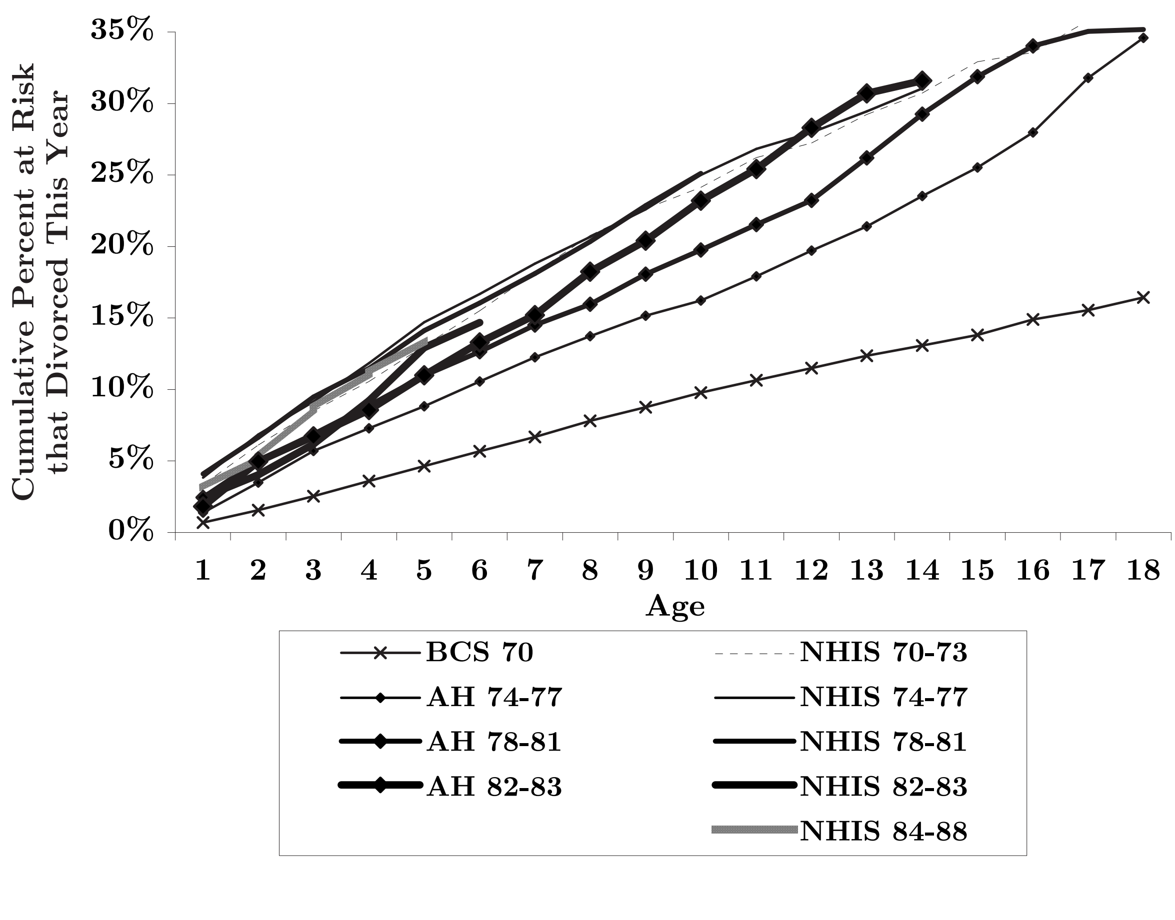
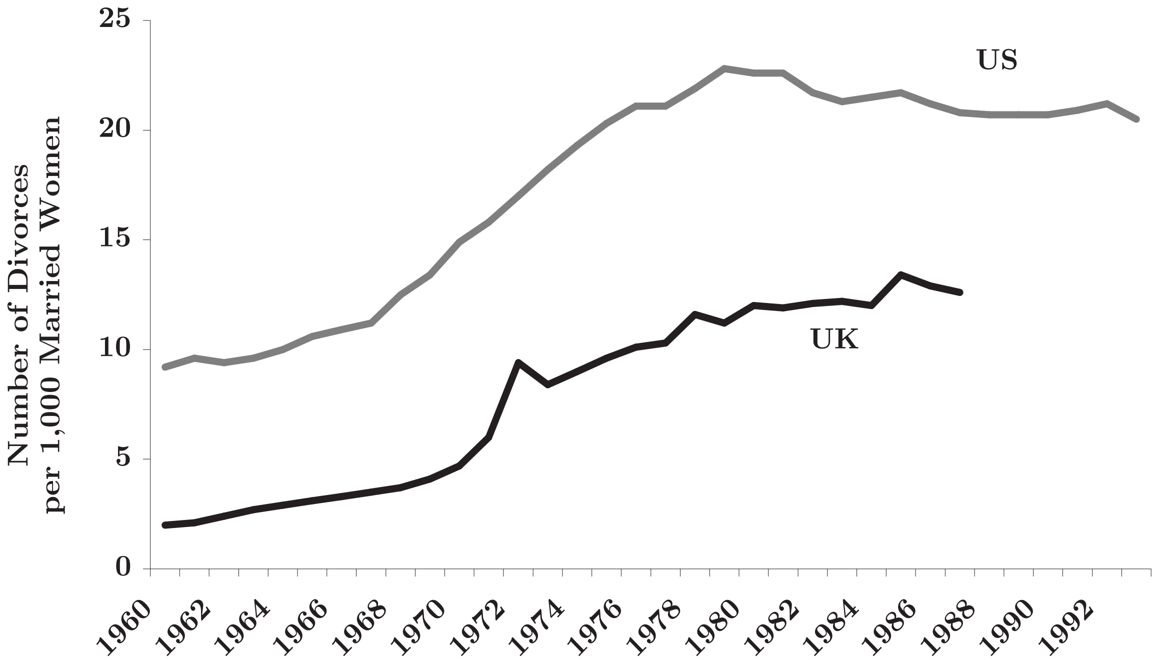


Figure 5: Divorce Rates in US and UK



Source: Stone (1990) and Clarke (1995).

Figure 6: An Illustration of the Importance of Time since the Onset of a Child's Illnes

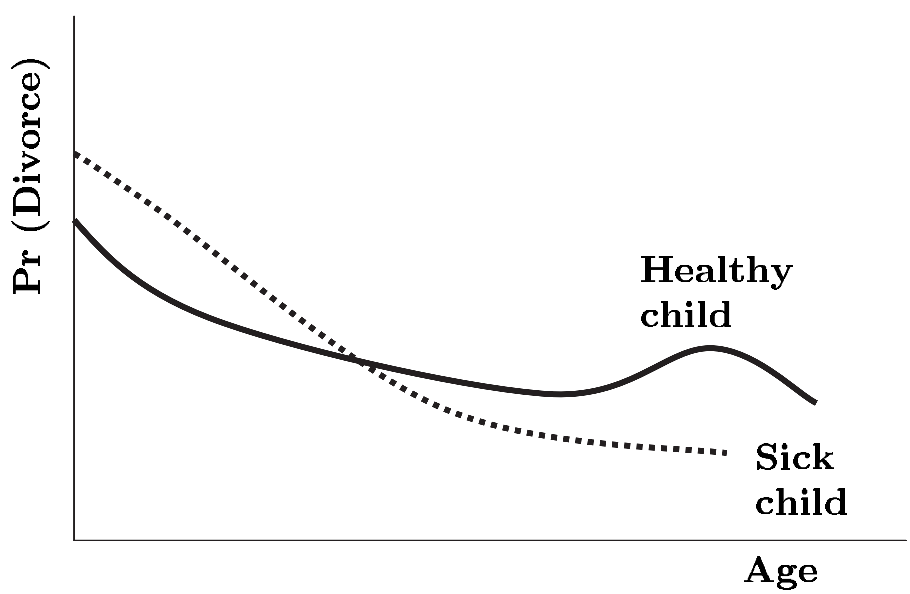


Figure 7: Predicted Probability of Divorce by Child's Age (NHIS-CH)

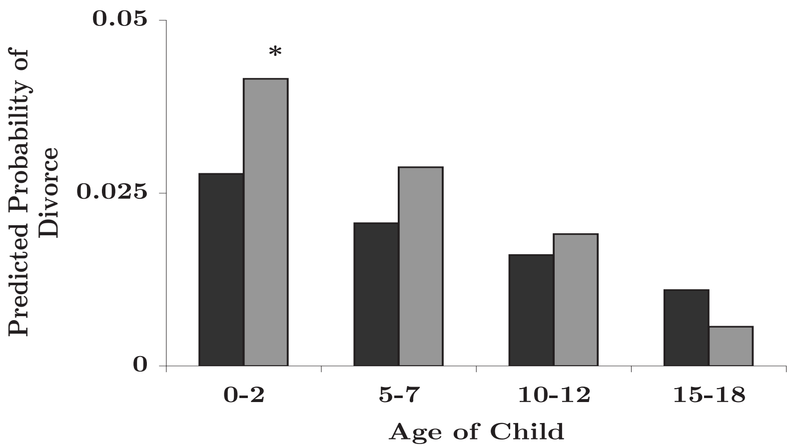


Figure 8: Predicted Probability of Divorce by Child's Age (Add Health)

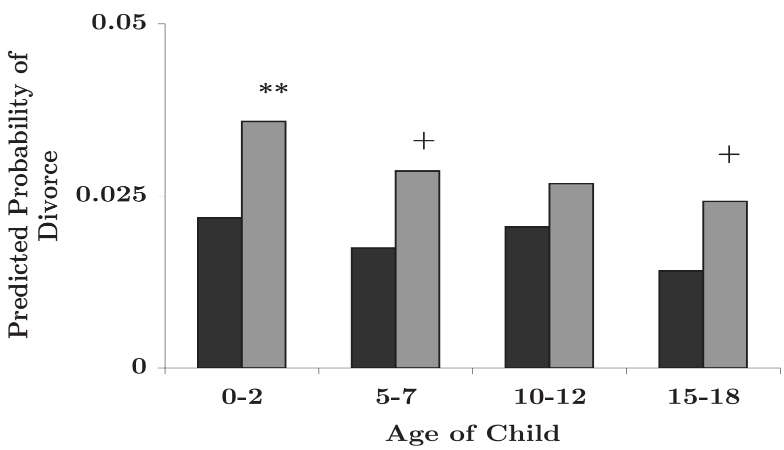
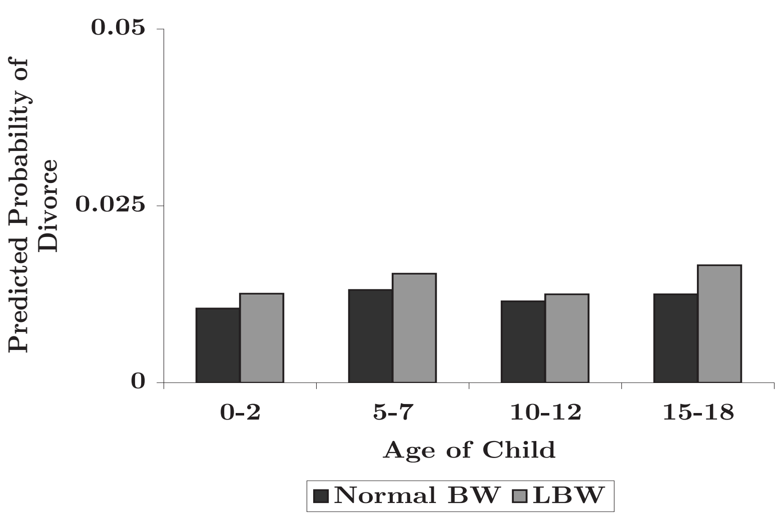
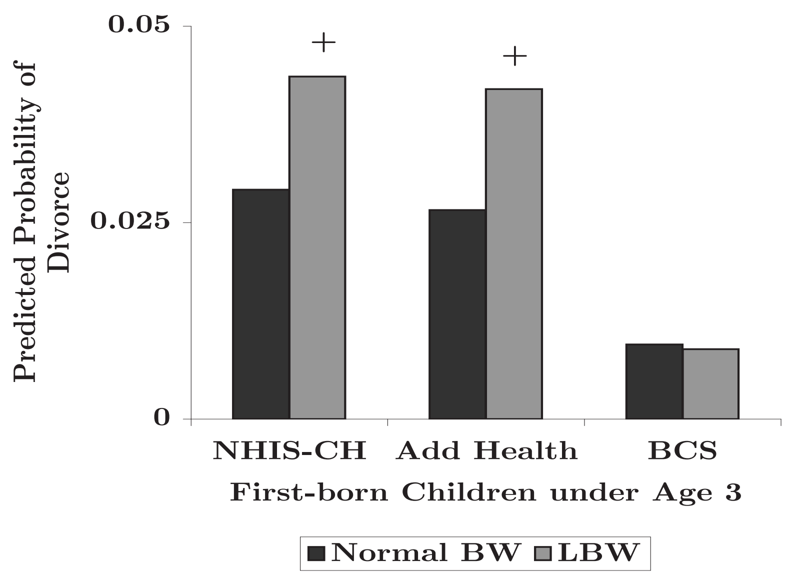


Figure 9: Predicted Probability of Divorce by Child's Age (British Cohort)



+ significant at 10%; * significant at 5%; ** significant at 1%.

Figure 10: Predicted Probability of Divorce by Child's Age (First Born Children)



+ significant at 10%; * significant at 5%; ** significant at 1%.

Figure 11: Age at Onset of Condition - 1988 NHIS-CH

N=12,051, 3.3% of Sample

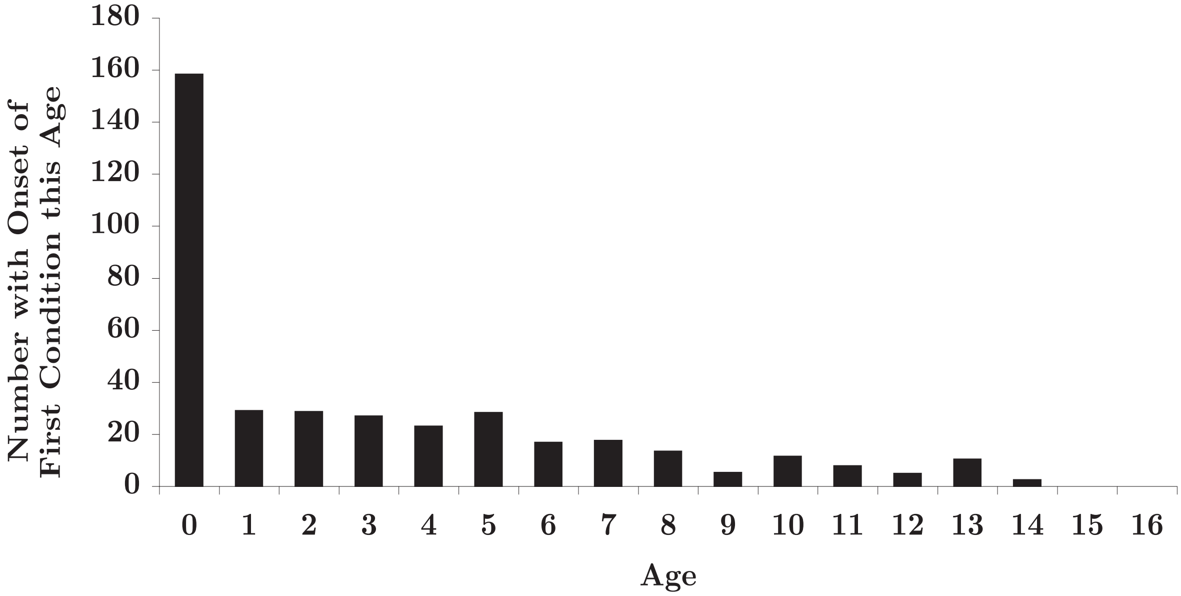


Figure 12: Age at First Record of Condition – 1970 BCS

N=11,602, 5.1% of Sample