Do fathers really matter? Or is it just their money that matters? Evidence from the British Household Panel Survey

Ian Walker
University of Warwick and Institute for Fiscal Studies

and

Yu Zhu
University of Kent and Centre for the Economics of Education

Version 4.4   09 October 2005

Keywords: parental separation, parental incomes, child support, early school leaving, subjective well-being, youths

JEL Code: D13, D31, J12, J13, J16, J22

Abstract

It is widely thought that separation has real adverse affects on children. This presumption has been the basis of important policy interventions. However, few studies have attempted to separate out the effects of one parent (mostly the father) leaving, from the effects of that parent's money leaving, on the outcomes for the child.

This paper is concerned with a number of outcomes and their relationship to parental separation, parental incomes, and financial transfers between separated partners. By exploiting the Youth Survey records of the British Household Panel Survey, we investigate "real" outcomes: early school leaving and educational attainment. We also investigate attitudinal data on intentions to leave school early and a direct, albeit subjective, measure of the well-being of the children.

While we find that parental separation has strong effects on child well-being, and this result seems to be robust to adding additional control variables, it does not carry over to our instrumental variables analysis. This suggests that there are important unobservables that are correlated with separation and our outcome variables. In contrast, father's income does seem to matter for unhappiness – the departure of a rich father has a bigger impact than the departure of a poor one. Similarly, we find father's departure as well as the departure of father's income matter for both children's intention to leave school at the earliest opportunity and real academic achievements. However, we cannot tell whether rich fathers matter more than poor fathers because money matters or because richer fathers are better fathers.

Corresponding author: Ian Walker,   Department of Economics,   University of Warwick,   Coventry CV7 7AL, UK
Tel   +44/0 2476 523054   Fax   +44/0 2476 523032   Email   i.walker@warwick.ac.uk

1. Introduction

It is widely thought that separation has real affects on children - social researchers have uncovered correlations between separation and many aspects of children's behaviours including early school leaving, low achievement, behavioural disorders, crime, and poor health. The falling cost of separation has resulted in large increases in separation rates in many countries in recent years. Many policy initiatives have been designed to foster reconciliation of fragile partnerships to reduce the separation rates of parents or, at least, reduce the impact of separation of parents on their children[1].

However, relatively few studies have attempted to identify the causal impact of separation. Indeed, to our knowledge, no studies have been concerned with the causal effect of separation and the nature of the transmission mechanism behind it. In particular, few studies have attempted to separate out the effects of one parent (mostly the father) leaving on the outcomes for the child from the effects of that parent's money leaving.

We are concerned that when fathers leave, not only does their time and influence go, but so too does their money. Thus, this paper is concerned with a number of outcomes and their relationship to parental separation, parental incomes, and financial transfers between separated partners (child support). By exploiting the Youth Survey records of the British Household Panel Survey (BHPS), we investigate "real" outcomes: early school leaving and educational attainment; as well as attitudinal measures: intention to leave school early, and a direct subjective measure of the well-being of the children.

Our BHPS data is not large enough, or long enough, and features a separation rate that is not large enough, to use either fixed effect or sibling difference based estimation methods. Moreover, it does not contain sufficient information about pre-separation outcomes to credibly control for selection into separation by unobservables. However, we do estimate random effects models of outcomes for the

---

[1] In the UK attempts to implement compulsory mediation have not been successful. Mediation was a key element of the Family Law Act of 1996 and pilot project results showed that only 7% had attended voluntary mediation and in those pilot areas where mediation was compulsory, there was widespread use of exceptions granted to people fearing violence from former spouses, and it rapidly became clear that people could not be compelled to mediate.

children and examine their sensitivity to including other controls, and we also examine estimates based on matching on pre-separation observables.

We also attempt to control for the endogeneity of parental incomes using instrumental variables exploiting the information on parental birth order[2]. Our empirical results suggest that, controlling for income, living in a non-intact family (especially one in which the custodial natural parent has repartnered) has a large robust negative impact on youth happiness and a large positive (but insignificant) effect on the child's chance of leaving school at the age of 16 and a large positive significant effect on educational attainment. The first finding is robust with respect to the successive addition of regressors that control for total net family income, youth's own characteristics and the characteristics of the responsible parent. Moreover, our main findings are also upheld in Random Effect probit models.

Our analysis also exploits the reform of child support that surprised couples in 1993 with the advent of the Child Support Agency and its complicated but generous rules that determined child support (CS) liabilities. We also find that (for the subsample of intact families at least), an increase in the potential child support liability introduced by the 1993 reform, significantly reduces the risk of early school leaving while its impact on youth's subjective well-being is positive but statistically insignificant. This suggests that CS changes behaviour within intact households.

2. Literature

The number of divorces of couples grew dramatically in many countries from the 1970's. Figure 1 shows the number of (married) couples with children (aged 0-16) in the UK who divorced each year from 1970. The divorce rate, as a percentage of marriages is approximately 2.5% in the UK (2001), and Figure 2 shows that Britain ranks second to the US across a number of other developed countries. The times series patterns elsewhere are similar, although in the US the take-off took place a little earlier and the rate peaks in the early 1980's.

Winkelmann (2003) shows a strong correlation between parental separation and the subjective self-reported well-being of youths in German panel data. An

---

[2] See Booth and Kee (2005).

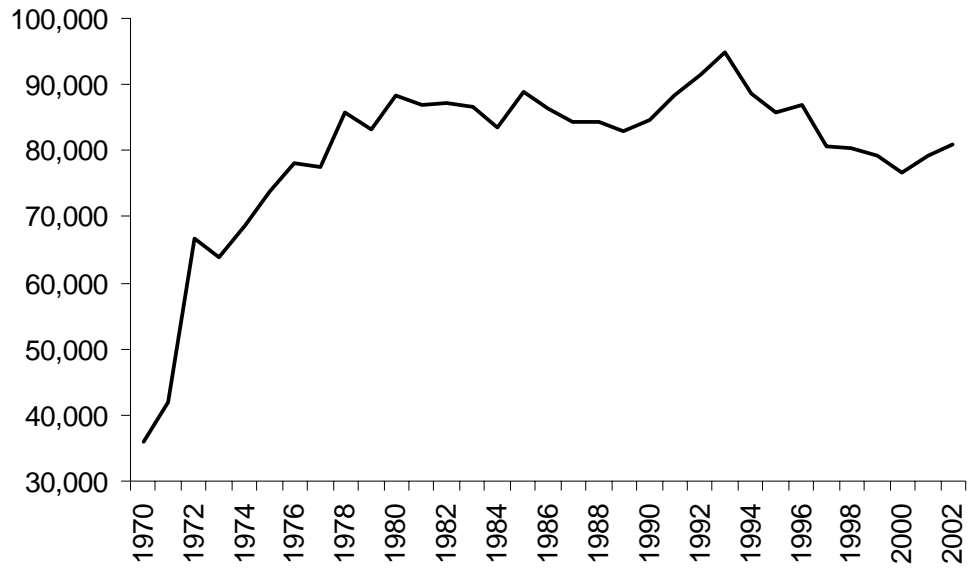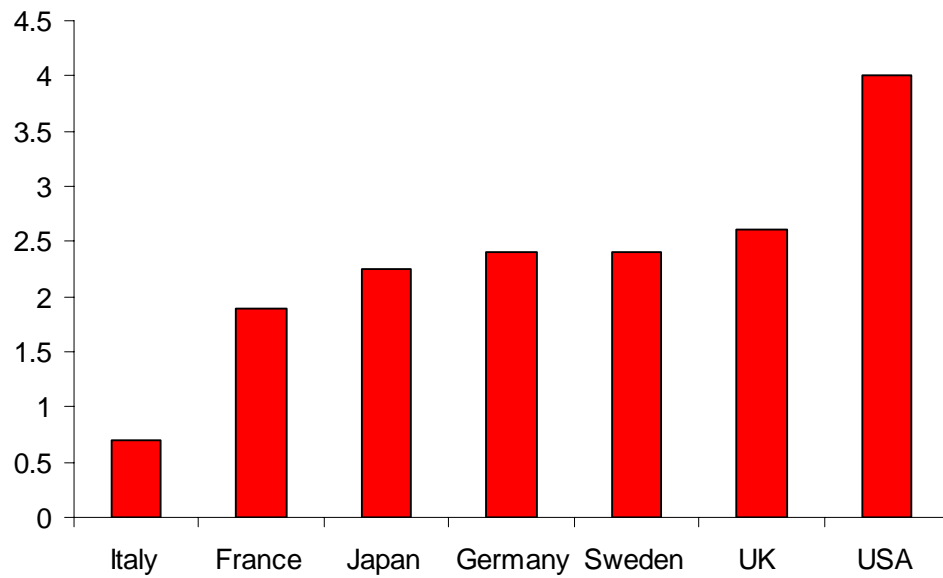*Figure 1 Number of Parents Divorcing (Child aged 0-16)*

Figure 2   Cross-country divorce rates (% of marriages p.a.)

extensive meta-analysis of the effects of parental divorce on the well-being of children was conducted by Amato and Keith (1991) and concluded that children with divorced parents, compared with children with continuously married parents, score significantly lower on measures of academic achievement, conduct, psychological adjustment, self-concept, and social relations. Amato (2001) updated this analysis and, for these outcomes, found the gap between children with divorced and married parents decreased during the 1980s but increased again during the 1990s. Haveman and Wolfe (1995) identify divorce as a major contributing factor in their review of the determinants of child outcomes. Despite the wealth of evidence an important limitation of most of the literature is that divorce is correlated with the unobservable determinants of child outcomes and this fact results in the adverse effects of separation being exaggerated in correlation studies.

Gruber (2000) takes a novel approach. He uses 40 years of census data to capture the variation in divorce regulations across US states and over time and finds that unilateral divorce regulations have significantly increased the odds of an adult being divorced (by about 12%) and of a child living with a divorced parent (15% more likely to be living with a divorced mother and 11% more likely to be living with a divorced father, relative to the old laws). He then assesses the impact of easier divorce regimes on the long-run well-being of children by comparing the adult circumstances of children who grew up in states where unilateral divorce was available versus children who grew up in states where it was not available. He finds that children who grew up under laxer laws were less likely to go to college and more likely to live in lower income households. His findings indicate that increased exposure to unilateral divorce regimes worsens child outcomes, but only up to about eight years after the change in laws. After that, there is little additional harm from continuing exposure to the laxer laws. Gruber suggests that this implies that unilateral divorce rules may have only a short-run impact on the divorce rate. Finally, Gruber notes that making divorce easier not only increases the odds that a child grows up in a divorced household but it also changes the bargaining power within intact households. For example, a less attached spouse can shift family spending away from child investment towards private consumption. Sanz de Galdeano and Vuri (2004) employ a difference-in-differences methodology that relies on comparing teenager's outcomes before and after divorce with those who did not experience divorce, to control for

family specific effects. They conclude that parental divorce does not adversely affect teenagers' cognitive development, as had been suggested by cross-sectional evidence. However, this study only considers the impact up to two years after separation and does not consider the impact of repartnership.

Piketty (2003) shows that, controlling for observable parental characteristics, children with divorced or separated parents tend to perform less well at school than children living with their two parents. He pursues two identification strategies to address the potential selection problem. First, he notes that children whose parents eventually separate do as badly in school as children whose parents have already separated. Secondly he, like Gruber, exploits the large increase in separation rates following the 1975 divorce law reform, together with the regional variations in divorce rates. He argues that his results imply that it is parental conflict, rather than separation, that is bad for children, and that the degree of conflict intensity between couples has been fairly stable over time.

Our overall reading of the literature is that a substantial part of the observed correlation between separation and outcomes for children can be accounted for by selection.

3. Data

Our data comes from the British Household Panel Survey (BHPS) which is a nationally representative sample of some 5,500 households recruited in 1991, with around 10,000 original sample members (OSMs). These OSMs and their children, who also become sample members after reaching 16, are interviewed each year, together with all adult members of their families, even if the OSMs split off from their original households to form new families and/or relocate to other areas (of the UK). This sampling design ensures that the sample remains representative of the UK population over time. The core questionnaire of BHPS collects information on household organisation, housing, employment, education, health and incomes in all waves. In wave 2, BHPS also collected lifetime histories of marriage, cohabitation, and fertility and employment transitions, which allow us to construct spells in progress of the current relationship for all couples in our sample, despite the fact that we are unable to observe the partnerships from the time of their formation.

The sample in this paper includes all OSMs who have ever been involved in the Youth Survey in the BHPS, which interviews all 11-15 year olds since wave 4. Topics covered by the Youth Survey include health, social networks, subjective well-being and aspirations. In particular, youths are asked to describe how they feel about their lives as a whole on a scale of 1-7. Moreover, these youths are also asked of their intentions to leave school at 16 (as opposed to go on to post-compulsory education) in each wave. By matching Youth Survey information with data from the adult questionnaire, we find that 65% of those who intended to leave at 16 did so, compared to 22% of those intended to stay on. On average, 2% of partnerships separate each year. Figure 3 shows the histograms of the response to the well-being question, by parental status. Although the shapes for the two type of families are similar, the distribution for youths living in non-intact families is more skewed to the left (i.e. more unhappy), with a higher share of youths choosing each of the points between 1 and 5, than their counterparts in intact families.

Table 1 reports summary statistics by family types, where non-intact families are further divided into lone-mother and repartnered-mother households. By pooling the Youth Survey across all years, we have 7159 youth-years in our sample, of which 66.4% are in intact families, 15.1% in lone-mother families and 18.5% in repartnered families.[3] About 16% of youths in either type of non-intact families give responses of 4 or below (which we conveniently aggregate into a single group of "unhappy" youths), compared to 10.6% of youths in intact families. It is worth noting that there is not much difference in terms of household net income between intact and remarried families, which both average 50 log points higher than lone-mother families. In contrast, youths living with repartnered mothers have the highest rate of intention to leave school at 16, at almost 17%, comparing to about 15% and 11% for youths in lone-mother and intact families respectively.

---

[3] Families headed by custodial fathers constitute only a very small proportion of all non-intact families (less than 5%), and hence are dropped out of our sample.

Figure 3   Youth Happiness by Parental Status (1=Lone Parent, 2=Couple)

Graphs by number of natural parents at current wave
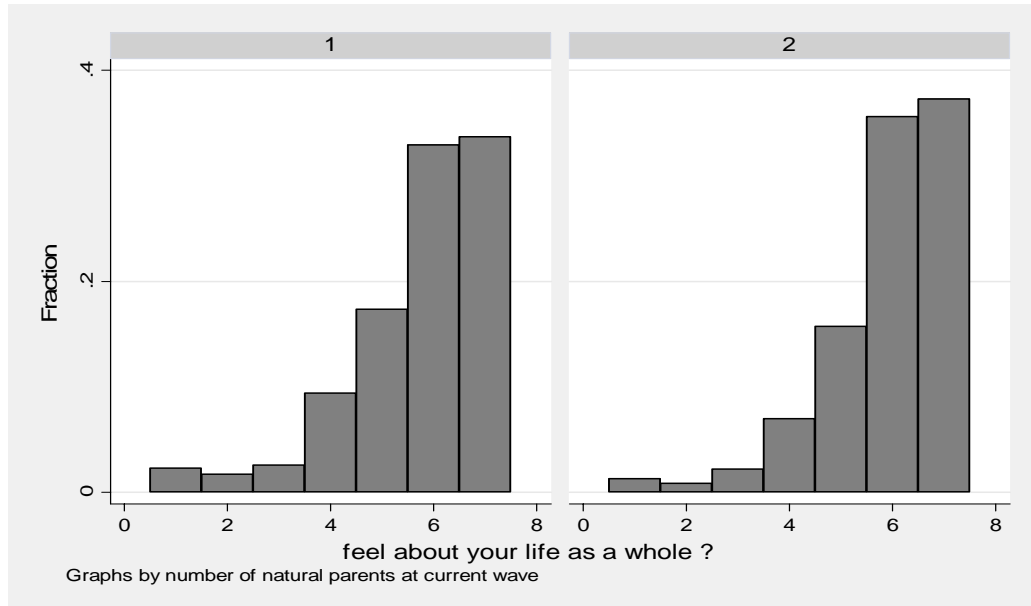
Table 1: Summary Statistics by Family Types

Family Type	Intact Families	Lone Mothers	Repartnered Mothers	Total
Mean Happiness	5.93	5.69	5.72	5.85
% Not Happy (H=1-4)	10.6	16.2	16.0	12.4
% Intend to leave at 16	10.8	15.1	16.9	12.5
% cohabiting	1.7	-	45.7	9.6
Log total income	5.99	5.44	5.94	5.90
% boys	50.3	50.3	48.7	50.0
% only child	8.8	22.4	15.9	12.2
No. of kids<16	2.09	1.94	2.30	2.10
Youth's age	12.8	12.8	12.8	12.8
% step siblings	3.0	0.4	37.6	9.0
% new siblings	0.0	0.0	33.8	6.3
% mother non-white	6.2	7.7	5.4	6.3
% owning house	81.6	49.2	61.8	73.1
Age of mother	40.8	38.6	37.1	39.8
Age mother left school	17.6	17.4	17.3	17.5
Obs	4756	1078	1325	7159
%	66.4	15.1	18.5	100.0

Table 2 breaks down the index based on the "Life as a whole" question into four "domains"[4] – schoolwork, appearance, family, and friends. Happiness with friends and appearance seems to be independent of status, but schoolwork happiness is considerably lower in non-intact households irrespective of the presence of a step-father, while happiness with family actually seems higher with a step-father present. In the Appendix Table A2 we show that the coefficients on these four domain measures sum to very close to unity and that their coefficients are stable with respect to adding observable variables. That is, these domains appear to completely characterize overall happiness with weights of 0.2 on schoolwork, 0.3 on appearance, 0.3 on family, and 0.2 on friends.

Table 2:   Summary Statistics of Domain Happiness by Family Types

Family Type	Intact Families	Lone Mothers	Repartnered Mothers	Total
Mean Happiness With Schoolwork	5.418 (0.017)	5.188 (0.043)	5.231 (0.038)	5.349 (0.015)
Proportion Not Happy (DH=1-4)	0.181 (0.006)	0.246 (0.013)	0.238 (0.012)	0.201 (0.005)
Mean Happiness With Appearances	5.342 (0.019)	5.315 (0.041)	5.334 (0.038)	5.336 (0.016)
Proportion Not Happy (DH=1-4)	0.215 (0.006)	0.223 (0.013)	0.233 (0.012)	0.220 (0.005)
Mean Happiness With Family	6.369 (0.015)	6.165 (0.037)	6.237 (0.032)	6.314 (0.013)
Proportion Not Happy (DH=1-4)	0.055 (0.003)	0.100 (0.009)	0.089 (0.008)	0.068 (0.003)
Mean Happiness With Friends	6.229 (0.014)	6.213 (0.031)	6.204 (0.028)	6.222 (0.012)
Proportion Not Happy (DH=1-4)	0.052 (0.003)	0.057 (0.007)	0.059 (0.006)	0.054 (0.003)
Mean Happiness With Life as a Whole	5.928 (0.017)	5.688 (0.042)	5.722 (0.038)	5.854 (0.015)
Proportion Not Happy (GH=1-4)	0.106 (0.004)	0.164 (0.011)	0.161 (0.010)	0.125 (0.004)

Note: Standard errors in brackets

---

[4] See van Praag and Ferre-i-Carbonell (2004).

4.   Results

Table 3 presents the raw differences in various outcomes by family types. Apart from the happiness scores and intentions to leave school at 16, we also report a binary unhappy indicator, actual school leaving, and whether attained good grades in 5 GCSEs[5]. The first three columns simply confirm what we have already learnt from Table 1: i.e. living in non-intact families has a large and statistically significant adverse impact on all measures of happiness and education. However, the next two columns in Table 3 indicate that those youths whose parents separate in the following year are doing as badly as youths in non-intact families, a result consistent with Piketty (2003). Unfortunately, the size of the BHPS is not large enough for us to look at anything beyond $t+1$, as evidenced by small numbers in the last two columns.

4.1   The Effects of Separation

Table 4a presents ordered probit estimates for 5 different model specifications of the subjective well-being of youths. We start with a single non-intact dummy and sequentially include controls for repartnership, log total household income, youth's own characteristics and, finally, mother's characteristics. The estimate for the non-intact dummy is highly significant and, contrary to what one would expect if selection accounted for the correlation, this result is remarkably stable across all specifications[6]. However, neither repartnership nor income turns out to be significant in any specification[7]. Our specifications here exclude any interactions between income and marital status – they prove to be insignificant when included and leave other coefficients unchanged when excluded. In Table A4a in the Appendix we decompose this happiness with life as a whole into four domains and estimate the effect of separation on each domain. We find that income and repartnership is never significant for any domain and non-intactness is significantly negative, as one would intuitively expect, only for schoolwork and family and not for appearance and friends.

---

[5] The use of the GCSE measure will reduce the sample size significantly, as it is only available for youths who reach the age of at least 16 by the end of the sample period. Therefore our main focus will be on the first three outcomes in this study.

[6] Gregg *et al* (2005) and Rhum (2004) argue that adding further controls can drive out unobserved heterogeneity and reduce the bias due to endogeneity. That is, adding further controls allows us to tighten the upper bound on the effect of the endogenous partnership status variable.

[7] Note that throughout the paper we report robust estimates of standard errors which allows for the repeated observations on individuals.

Table 3: Raw Differences in Various Outcomes by Family Types

Outcomes	All youths	Intact families	Non-intact families	Youths in intact families stable at $t+1$	Youths in intact families who separate at $t+1$	Youths in intact families stable at $t+1$ and $t+2$	Youths in intact families stable at $t+1$ who separate at $t+2$
Youth Happiness (scale 1-7)							
%	5.854	5.928	5.707	5.981	5.500	6.035	5.724
s.e.	0.015	0.017	0.028	0.020	0.184	0.025	0.227
N	7126	4741	2385	3203	64	2009	29
Binary Unhappy Indicator (happiness score at 4 or below)							
%	0.124	0.106	0.161	0.100	0.266	0.092	0.103
s.e.	0.004	0.004	0.008	0.005	0.056	0.006	0.058
N	7159	4756	2403	3214	64	2017	29
Intention to Leave School at 16							
%	0.125	0.108	0.161	0.103	0.170	0.103	0.037
s.e.	0.004	0.005	0.008	0.006	0.052	0.008	0.037
N	5979	4006	1973	2640	53	1624	27
5 Good GCSE Grades							
%	0.467	0.488	0.420	0.502	0.300	0.517	0.500
s.e.	0.014	0.017	0.005	0.020	0.153	0.024	0.224
N	1260	877	383	634	10	422	6

Table 4b presents corresponding estimates for the early school leaving intention equation. Contrary to the happiness equation, the non-intact dummy now becomes much smaller and statistically insignificant when further control variables are added. This is consistent with the strong correlation in the raw data being spuriously due to selection by unobservables – a result consistent with previous recent research. Again, in contrast to the happiness results, repartnership and income become important determinants of the intention to drop out of school at the minimum possible age.

Table 4c presents estimates for actual early school leaving and the pattern is similar to intended leaving with a similarly strong effect of income, although now repartnership seems not to matter.

Table 4d presents the results for educational attainment – the probability of attaining 5+ GCSEs good passes. As in Table 4c separation and repartnership seems not to matter but income has an extremely strong effect.

The effect of separation on concern about schoolwork that is found in Appendix Table A4a is mirrored in intention to leave early but not in actual attainment and in actual early leaving. The results suggest that separation is accompanied by an unjustified lack of self-confidence.

Table 4a: Ordered Probit for Youth Happiness (robust s.e's in brackets)

	(1)	(2)	(3)	(4)	(5)
Non-intact	-0.164***	-0.183***	-0.373	-0.440	-0.538
	(0.037)	(0.046)	(0.387)	(0.390)	(0.393)
Mother		0.034	0.352	0.417	0.374
Repartnered		(0.057)	(0.514)	(0.523)	(0.523)
Log income			-0.013	-0.011	-0.007
			(0.029)	(0.029)	(0.030)
Non-intact*log income			0.035	0.047	0.065
			(0.069)	(0.070)	(0.070)
Mother repartnered			-0.056	-0.068	-0.069
*log income			(0.089)	(0.090)	(0.090)
Youth characteristics				Yes	Yes
Family characteristics					Yes
Wave dummies					Yes
Region dummies					Yes
N	7126	7126	7034	7034	7034
χ^2(d.f.)	20.25 (1)	21.11 (2)	20.74 (5)	93.94	148.94
				(10)	(42)
Log likelihood	-10158.31	-10158.00	-10008.46	-9961.90	-9924.02

Note: *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Youth characteristics include youth being a boy, the only child, age of the youth, number of children, and the presence of any step siblings. Family characteristics include the presence of new child (of the natural mother and the step father), whether family owns house, mother's age, years of education and being non-white.

Table 4b: Probit for Youths' Intention to Leave School at 16 (robust s.e's in brackets)

	(1)	(2)	(3)	(4)	(5)
Non-intact	0.250***	0.205***	0.157	0.065	-0.074
	(0.060)	(0.078)	(0.566)	(0.571)	(0.607)
Mother		0.077	0.186	0.251	0.139
Repartnered		(0.091)	(0.708)	(0.717)	(0.777)
Log income			-0.263***	-0.266***	-0.168***
			(0.042)	(0.041)	(0.045)
Non-intact*log income			-0.014	0.006	0.018
			(0.101)	(0.102)	(0.110)
Mother repartnered			0.036	-0.011	0.013
*log income			(0.123)	(0.124)	(0.137)
Youth Characteristics				Yes	Yes
Family characteristics					Yes
Wave dummies					Yes
Region dummies					Yes
N	5979	5979	5900	5900	5900
χ^2(d.f.)	17.35 (1)	17.84 (2)	76.76 (5)	130.43	243.44
				(8)	(42)
Log likelihood	-2239.13	-2238.49	-2182.09	-2124.91	-1992.38

Note: *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Youth characteristics include youth being a boy, the only child, age of the youth, number of children, and the presence of any step siblings. Family characteristics include the presence of new child (of the natural mother and the step father), whether family owns house, mother's age, years of education and being non-white.

Table 4c: *Probit for Actual School Leaving at 16 (robust s.e's in brackets)*

	(1)	(2)	(3)	(4)	(5)
Non-intact	0.247**	0.286**	0.100	0.101	0.012
	(0.101)	(0.128)	(0.132)	(0.136)	(0.142)
Mother Repartnered		-0.072	0.098	0.111	0.030
		(0.155)	(0.159)	(0.169)	(0.180)
Log income			-0.318***	-0.320***	-0.197***
			(0.062)	(0.063)	(0.067)
Youth Boy				0.394***	0.420***
				(0.098)	(0.102)
Youth only Child				-0.167	-0.065
				(0.149)	(0.153)
Number of children				-0.000	0.001
				(0.049)	(0.057)
Youth age				-0.016	-0.028
				(0.016)	(0.026)
Step brother/sister				-0.031	0.140
				(0.199)	(0.304)
New brother/sister					-0.126
					(0.397)
Mother nonwhite					-0.433*
					(0.233)
Owns House					-0.387***
					(0.120)
Mother age					-0.009
					(0.012)
Mother age left school					-0.062***
					(0.021)
Wave dummies					Yes
Region dummies					Yes
N	3108	3108	3083	3083	3083
χ^2(d.f.)	5.89 (1)	6.24 (2)	32.08 (3)	50.47 (8)	98.97 (38)
Log likelihood	-1876.60	-1876.25	-1818.56	-1782.41	-1677.91

Note: standard errors in brackets, *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level.

Table 4d: Probit for Passing 5 GCSEs (robust s.e's in brackets)

	(1)	(2)	(3)	(4)	(5)
Non-intact	-0.171	-0.335	0.046	-0.008	0.114
	(0.160)	(0.241)	(0.254)	(0.257)	(0.281)
Mother Repartnered		0.239	-0.153	-0.122	-0.494
		(0.270)	(0.286)	(0.292)	(0.331)
Log income			0.726***	0.773***	0.672***
			(0.124)	(0.124)	(0.126)
Youth Boy				0.731***	0.724***
				(0.158)	(0.168)
Youth only child				-0.413	-0.324
				(0.261)	(0.262)
Number of children				-0.088	-0.016
				(0.077)	(0.096)
Youth age				-0.061***	-0.084
				(0.022)	(0.040)
Step brother/sister				0.180	-0.358
				(0.283)	(0.442)
New brother/sister					1.205**
					(0.599)
Mother nonwhite					-0.594
					(0.678)
Owns House					0.365*
					(0.205)
Mother age					0.011
					(0.020)
Mother age left school					0.022
					(0.035)
Wave dummies					Yes
Region dummies					Yes
N	1260	1260	1253	1253	1253
χ^2(d.f.)	1.14 (1)	1.99 (2)	36.29 (3)	66.33 (8)	(38)
Log likelihood	-868.24	-866.76	-793.94	-740.96	-679.88

Note: standard errors in brackets, *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level.

In Table 5, we compare the probit estimates using the pooled cross sectional data to the random effect probit estimates which explicitly allows for time series variation within individuals: nonintactness continues to matter for unhappiness, and income continues to matter for school leaving intention but the repartnership effect becomes insignificant in the RE model[8]. It is interesting to note that much of the total

---

[8] It is not possible to apply random effects estimation to the actual school leaving and having 5+ GCSEs since this is no time series variation in these dependent variables.

variation in youth happiness is due to heterogeneity across youths, with the panel-level variance component contributing to only 38% of the total variance. On the other hand, the time-series variance component explains almost 70% of the total variation in the early school leaving equation. Overall, the random effect model estimates are broadly consistent with the pooled model estimates, although they tend to be less precisely determined.

Table 5:   *Youth Unhappiness and Intention to Leave School at 16*
               Pooled and Random Effect Probit (standard errors in brackets)

	Unhappiness=1		Intend to leave school at 16 =1	
	Pooled	Random Effects	Pooled	Random Effects
Non-intact	0.208***	0.280***	0.026	0.170
	(0.067)	(0.085)	(0.087)	(0.144)
Mother Repartnered	0.019	-0.044	0.222**	0.254
	(0.083)	(0.102)	(0.104)	(0.160)
Log income	-0.052	-0.049	-0.160***	-0.190***
	(0.034)	(0.042)	(0.038)	(0.067)
Youth Boy	-0.149***	-0.162***	0.501***	0.932***
	(0.048)	(0.060)	(0.061)	(0.116)
Youth only Kid	-0.049	-0.067	-0.012	-0.021
	(0.080)	(0.098)	(0.101)	(0.163)
Number of children	0.019	0.028	-0.001	-0.051
	(0.028)	(0.035)	(0.034)	(0.059)
Youth age	0.032**	0.035**	-0.011	-0.009
	(0.015)	(0.018)	(0.017)	(0.027)
Step brother/ sister	0.108	0.163	0.185	0.363
	(0.121)	(0.155)	(0.152)	(0.248)
New brother/ sister	-0.155	-0.186	-0.357	-0.613*
	(0.154)	(0.198)	(0.194)	(0.327)
Mother non-white	-0.126	-0.130	-0.330***	-0.567***
	(0.106)	(0.139)	(0.125)	(0.266)
Owns House	-0.149***	-0.196***	-0.404***	-0.745***
	(0.056)	(0.071)	(0.069)	(0.122)
Mother age	-0.004	-0.007	-0.006	-0.018
	(0.006)	(0.007)	(0.007)	(0.012)
Mother age left school	0.007	-0.001	-0.097***	-0.167***
	(0.009)	(0.012)	(0.014)	(0.024)
ρ	-	0.379	-	0.697
		(0.029)		(0.026)
N	7065	7065	5900	5900
χ^2(d.f.)	100.87 (40)	83.79 (40)	242.66 (40)	188.32 (40)
Log likelihood	-2576.96	-2473.59	-1992.45	-1738.81

Note: Other regressors include wave and region dummies. ρ measures the proportion of the total variance contributed by the panel-level variance component (i.e. the pooled estimator implicitly assumes that $\rho=0$). *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level.

Since the youth gender dummy appears to be highly significant for both outcomes, we check this pooled specification by re-estimating the probit models for boys and girls separately in Tables 6a and 6b. For the sake of ease of interpretation, we report the change in the probability for an infinitesimal change in each independent continuous variable and the discrete change in the probability for dummy variables, rather than reporting coefficients of the probit model. We find parental separation has a much stronger adverse effect on unhappiness for boys than for girls while the presence of a step-father, and changes in family income, do not seem to have any additional effect for either gender. In contrast, the separate estimates for the early school leaving decision suggest that there is virtually no impact of parental separation for either boys or girls. While the pooled specification indicates that the proportion of boys intending to leave school at 16 is 8.8 percentage points higher than girls, ceteris paribus, the separate estimates suggest that this difference is almost entirely driven by the much stronger income effects for boys.

In Table 6b we also find strong income effects for boys in early school leaving, while for 5GCSE's we find income effects of similar magnitude across child gender. The age effect picks up age of interview and hence captures cohort effects in achievement – boys are closing the gender gap in achievement. Maternal education has a beneficial effect on school leaving, while the effect on academic achievement is positive for girls and negative for boys.

A possible concern with the analysis above is that separated and intact households are quite different in their observable characteristics so that linear unweighted regression methods suffer from a lack of common support. Thus, in Table 7, we present propensity score matching estimates of the impact of parental separation on four different measures of youth outcomes. Here the treatment group (non-intact families) and the control group (intact families) are matched on the parents' scores from the General Health Questionnaire section of the BHPS (GHQ12 scores are the most reliable measures of mental well-being), together with mother's age, and total household net income in wave 1 and contemporary measures of youth's gender and age, whether only child, number of dependent children in the household, whether house owner and mother's age, education and ethnicity. The fact that there is at least a 3-year lag (recall that the Youth Survey starts in wave 4) between youth outcomes and the parental happiness and income controls should minimize the potential endogeneity

problem. However, we have to exclude any non-intact families who separated before wave 1 (which means all families in the matching analysis were intact at the beginning of the sample period). As a result, the sample size will be reduced by just over 20%.

The fact that there is not much difference between the unmatched gap and the treatment effects in the top two panels, where we analyse happiness outcomes, suggests selection (by **observable** variables) is relatively unimportant in explaining the observed gap between the reported subjective well-being of youths in intact and non-intact families. Our finding lends some support to the idea that parental separation (the departure of the natural father) causes youths to feel less happy about their lives as a whole.

On the other hand, the treatment effects for the education outcomes are only about half the size of the unmatched difference (and statistically insignificant in some cases), suggesting that selection plays a more important role here. In the last panel we show the treatment effects on GCSE passes. These are always statistically significant, but based on a smaller sample of children who are 16+ by the end of the sample period. Note that there is high correlation between early school leaving intentions and actual GCSE passes (the correlation coefficient in a bivariate probit model is estimated to be around -0.6). For those who intended to leave at 16, just over 10% managed to achieve the 5 good pass grades in their GCSE's taken at age 15 or 16, comparing to nearly 60% for those who intended to stay on.

The last two columns of Table 7 suggest that the use of father's, or mean parental, GHQ12 score in wave 1 does not make much difference to the matching estimates. This is perhaps not surprising, given the strong correlation between spouses for most measures of satisfaction (see Van Praag and Ferrer-i-Carbonell (2004)).

Table 6a: Gender Effects: Marginal Effects (std errors are given in brackets)

	Unhappiness = 1			Intend to leave school at 16 = 1		
	All	Boys	Girls	All	Boys	Girls
Non-intact	**0.043**	**0.072**	0.021	0.005	0.005	0.001
	(0.014)	(0.020)	(0.021)	(0.015)	(0.026)	(0.017)
Mother Repartnered	0.004	-0.010	0.016	**0.042**	0.048	**0.046**
	(0.016)	(0.020)	(0.026)	(0.022)	(0.037)	(0.026)
Log income	-0.010	-0.002	-0.017	**-0.028**	**-0.042**	**-0.016**
	(0.007)	(0.008)	(0.011)	(0.007)	(0.011)	(0.008)
Youth Boy	**-0.029**	-	-	0.088	-	-
	(0.009)			(0.011)		
Youth only child	-0.009	0.011	-0.027	-0.002	-0.020	0.003
	(0.015)	(0.020)	(0.021)	(0.017)	(0.029)	(0.019)
Number of children	0.004	0.008	0.001	-0.000	0.007	-0.006
	(0.006)	(0.007)	(0.008)	(0.006)	(0.011)	(0.007)
Youth age	**0.006**	-0.005	**0.017**	-0.002	0.006	**-0.008**
	(0.003)	(0.004)	(0.004)	(0.003)	(0.005)	(0.004)
Step brother/ Sister	0.022	0.013	0.037	0.035	0.089	-0.016
	(0.026)	(0.031)	(0.043)	(0.032)	(0.056)	(0.027)
New brother/ sister	-0.028	-0.011	-0.050	-0.050	**-0.095**	-0.004
	(0.026)	(0.035)	(0.035)	(0.022)	(0.032)	(0.038)
Mother non-white	-0.023	-0.038	-0.001	**-0.047**	**-0.060**	-0.040
	(0.018)	(0.019)	(0.033)	(0.015)	(0.026)	(0.041)
Owns House	**-0.031**	-0.001	**-0.055**	**-0.080**	**-0.089**	**-0.077**
	(0.012)	(0.014)	(0.019)	(0.015)	(0.025)	(0.000)
Mother age	-0.001	-0.001	-0.001	-0.001	**-0.005**	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Mother age left school	0.001	-0.001	0.003	**-0.017**	**-0.023**	**-0.011**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)
N	7065	3537	3528	5900	2890	2903
χ^2(d.f.)	100.87 (40)	62.65 (39)	81.23 (39)	242.66 (40)	162.33 (39)	99.46 (37)
Log likelihood	-2576.96	-1162.50	-1379.11	-1992.45	-1196.91	-760.58

Notes: Robust standard errors in brackets. Other regressors include wave and region dummies. Rather than reporting coefficients, we report the change in the probability for an infinitesimal change in each independent continuous variable and the discrete change in the probability for dummy variables. P-values are given in brackets. Bold figures indicate statistical significance at the 5% level.

Table 6b: Gender Effects: Marginal Effects (std errors are given in brackets)

	Left school at 16 = 1			Attained 5+ GCSEs = 1		
	All	Boys	Girls	All	Boys	Girls
Non-intact	0.004	0.004	0.041	0.045	-0.165	0.146
	(0.047)	(0.070)	(0.061)	(0.111)	(0.139)	(0.137)
Mother Repartnered	0.010	-0.008	-0.028	-0.188	-0.097	-0.067
	(0.060)	(0.088)	(0.070)	(0.119)	(0.185)	(0.178)
Log income	**-0.065**	**-0.086**	-0.028	**0.266**	**0.234**	**0.216**
	(0.022)	(0.034)	(0.050)	(0.050)	(0.064)	(0.067)
Youth Boy	0.138	-	-	**-0.282**	-	-
	(0.033)			(0.062)		
Youth only child	-0.021	0.070	-0.090	-0.124	-0.161	-0.101
	(0.049)	(0.080)	(0.050)	(0.097)	(0.124)	(0.139)
Number of children	0.000	0.008	0.006	-0.006	0.004	0.011
	(0.019)	(0.029)	(0.024)	(0.038)	(0.056)	(0.059)
Youth age	-0.009	0.007	**-0.022**	**-0.033**	**-0.054**	-0.009
	(0.009)	(0.013)	(0.012)	(0.016)	(0.023)	(0.022)
Step brother/ Sister	0.048	0.108	0.003	-0.137	-0.104	**-0.610**
	(0.107)	(0.154)	(0.137)	(0.161)	(0.177)	(0.187)
New brother/ sister	-0.040	-0.047	-0.068	**0.422**	0.211	**0.425**
	(0.122)	(0.183)	(0.137)	(0.151)	(0.349)	(0.058)
Mother non-white	-0.125	-0.163	-0.108	-0.216	-0.217	-
	(0.057)	(0.085)	(0.064)	(0.213)	(0.151)	
Owns House	**-0.135**	-0.106	**-0.166**	0.141	**0.254**	0.026
	(0.043)	(0.062)	(0.061)	(0.077)	(0.100)	(0.113)
Mother age	-0.003	-0.007	-0.003	0.004	0.006	0.014
	(0.004)	(0.006)	(0.005)	(0.008)	(0.013)	(0.010)
Mother age left school	**-0.021**	**-0.026**	**-0.015**	0.009	**-0.022**	**0.030**
	(0.007)	(0.010)	(0.009)	(0.014)	(0.019)	(0.021)
N	3083	1581	1502	1253	632	536
χ^2(d.f.)	98.97	62.26	54.41			
	(38)	(37)	(37)	(38)	(34)	(32)
Log likelihood	-1677.91	-912.38	-694.48	-679.88	-304.33	-280.99

Notes: Robust standard errors in brackets. Other regressors include wave and region dummies. Rather than reporting coefficients, we report the change in the probability for an infinitesimal change in each independent continuous variable and the discrete change in the probability for dummy variables. Bold figures indicate statistical significance at the 5% level. The sum of observations of the last two columns is less than the number of observations in the pooled specification due to the invariance in the mother non-white dummy and some region/wave dummies.

Table 7   Propensity Score Matching estimates of impact of parental separation

	Mother's GHQ12	Father's GHQ12	Parents' mean GHQ12
Youth Happiness (scale 1-7), N=5465			
Unmatched	-0.285 (0.043)	-0.285 (0.043)	-0.285 (0.043)
ATT	-0.274 (0.057)	-0.288 (0.061)	-0.268 (0.058)
ATU	-0.266 (0.057)	-0.274 (0.055)	-0.277 (0.055)
Binary Unhappy Indicator, N=5485			
Unmatched	0.065 (0.011)	0.065 (0.011)	0.065 (0.011)
ATT	0.055 (0.015)	0.058 (0.015)	0.052 (0.015)
ATU	0.055 (0.018)	0.058 (0.017)	0.057 (0.016)
Intention to Leave School at 16, N=4607			
Unmatched	0.055 (0.012)	0.055 (0.012)	0.055 (0.012)
ATT	0.031 (0.016)	0.043 (0.013)	0.035 (0.015)
ATU	0.028 (0.017)	0.023 (0.017)	0.035 (0.015)
Actual school leaving, N=1004			
Unmatched			
ATT			
ATU			
5 good GCSE grades, N=1004			
Unmatched	-0.169 (0.043)	-0.169 (0.043)	-0.169 (0.043)
ATT	-0.137 (0.046)	-0.131 (0.043)	-0.123 (0.052)
ATU	-0.110 (0.045)	-0.075 (0.048)	-0.099 (0.051)

Notes: Standard error in parentheses bootstrapped with 100 repetitions. The treatment group (non-intact families) and the control group (intact families) are matched on parental GHQ12 scores, log total household net income and mother's age in wave 1, as well as contemporary measures of youth's gender and age, whether only child, number of children in the household, whether owns house, and mother's age, education and ethnicity.

4.2   Instrumental Variable Estimates

Lundberg (2005) and many other authors emphasise the important of marital status endogeneity. Here, we use the sample of youths whose parents stayed together at wave 1, N=2910 (of 805 distinct youths) and consider the following variables to be potentially endogenous: log income, non-intact, mother repartnered, mother's education. We use a variety of specifications. Our (11) core instruments are: mother's birth order index, number of siblings, dummy for only child, as well as her GHQ12 and age at wave1; father's birth order index, number of siblings, dummy for only child, as well as her GHQ12 and age at wave1; and log income at wave 1. We also use a extended specification which includes additionally nineteen wave 1 characteristics: cohabiting, number of former marriages, age relationship started, log duration of relationship spell, same race, same religion, partner non-religious, youngest child under 5, number of dependent children, parents with different education levels, 5 dummies for age differences between parents, mother in employment, mother unemployed, father in employment, father unemployed.

The results are shown in Tables 8a for youth happiness, Table 8b for intention to leave school, Table 8c for actual school leaving at 16, and Table 8d for 5+ GCSEs. The columns in each table correspond to different instrument sets[9]. Column 1 uses all 30 instruments; Column 2 uses the core IVs plus 14 wave 1 characteristics (i.e the 19 excluding the five age difference dummies), Column 3 uses the core IVs plus 12 wave 1 characteristics (i.e. excluding age difference dummies and two children variables); Column 4 uses the core IVs plus eight wave 1 characteristics (cohabiting, number of former marriages, age relationship started, log duration of relationship spell, mother in employment, mother unemployed, father in employment, father unemployed); Column 5 uses the core IVs plus just four wave 1 characteristics (cohabiting, number of former marriages, age relationship started, log duration of relationship spell); and Column 6 uses the core IVs alone. The tables here report results where mother's education is treated as exogenous – allowing for the endogeneity of this variable has no effect on the results and these estimates are available on request.

---

[9] Note that all six specifications pass both the first stage tests (they have high partial R^2 and F-tests that are significant at the 1% level) and the over-identification test of all instruments in the second stage. These first stage results are available on request.

The results are stable with respect to instrument sets and show no significant effect of non-intactness on happiness (Table 8a); a perversely signed but insignificant effect on intention to leave school early (Table 8b); .... (Table 8c); and .... (Table 8d). This is strong support for the idea that the earlier results are generated by selection by unobservables. Only for intention to leave at 16 do we find significant income effects (in Table 8b) – where doubling income would approximately offset the adverse effect of a stepfather.

Table 8a   Exogenous parental education: Youth Unhappiness
           (robust s.e's in brackets)

	1	2	3	4	5	6
Log income	-0.084	-0.081	-0.086	-0.083	-0.127	-0.084
	(0.063)	(0.065)	(0.066)	(0.071)	(0.078)	(0.082)
Non-intact	0.042	0.040	0.027	0.002	-0.041	0.068
	(0.105)	(0.106)	(0.111)	(0.135)	(0.144)	(0.164)
Mother Repartnered	-0.075	-0.086	-0.045	-0.013	0.014	0.309
	(0.214)	(0.226)	(0.238)	(0.269)	(0.278)	(0.402)
Mother's education	0.004	0.004	0.004	0.004	0.006	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
R-sq	0.1421	0.1422	0.1427	0.1443	0.1301	0.1201
Hansen J stat	34.855	27.249	25.616	23.104	15.995	14.635
Chi-sq (df)	(27)	(22)	(20)	(16)	(12)	(8)
P-value	0.143	0.202	0.179	0.111	0.191	0.067

Table 8b   Exogenous parental education: Intention to Leave School at 16
           (robust s.e's in brackets)

	1	2	3	4	5	6
Log income	**-0.093**	**-0.114**	**-0.153**	**-0.166**	**-0.183**	**-0.153**
	(0.044)	(0.046)	(0.049)	(0.053)	(0.055)	(0.058)
Non-intact	-0.053	-0.061	-0.156	-0.203	-0.225	0.015
	(0.095)	(0.095)	(0.097)	(0.123)	(0.131)	(0.149)
Mother Repartnered	0.417	0.495	0.233	0.209	0.210	0.286
	(0.233)	(0.262)	(0.262)	(0.299)	(0.311)	(0.427)
Mother's education	**-0.008**	**-0.008**	-0.005	-0.004	-0.004	-0.007
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
R-sq	0.1287	0.1022	0.1298	0.1170	0.1021	0.1101
Hansen J stat	38.350	32.839	22.112	19.180	16.322	6.305
Chi-sq (df)	(27)	(22)	(20)	(16)	(12)	(8)
P-value	0.073	0.064	0.334	0.259	0.177	0.613

5. Conclusions

Our least squares results suggest that parental separation has strong effects on child well-being and this result seems to be robust to adding additional control variables. Moreover, the result carries over to our matching modelling. The estimated effect of the non-intact variable is about 20% of a standard deviation of our unhappiness measure[10]. Father's income, in addition to his presence, seems to also matter for unhappiness – the departure of a rich father has a bigger impact than the departure of a poor one. Similarly, with intention to leave school at the earliest opportunity: father's departure seems to matter – although reducing the odds of staying only by 3.5% which amounts to just 10% of a standard deviation. Again, the departure of a rich father matters more. Finally, academic achievement is also affected: coming from a non-intact family appears to imply about a 13% lower chance of passing 5 or more GCSEs which is approximately a quarter of a standard deviation.

However, all of these results are open to being generated by unobservables. Thus, we re-estimate the models using instrumental variables, with a variety of instrument sets, and find no evidence at all of a causal effect of non-intactness on any of the outcomes. Thus, our overall conclusion is that the effects frequently recorded elsewhere are due to selection by unobservables. The income effect remains significant in the intention to leave school, but is only marginally significant in the youth happiness equations.

---

[10] See Table A9 in the Appendix for impacts on standardized outcomes.

References

Amato, P.R. and B. Keith (1991), "Parental divorce and the well-being of children: A meta-analysis", **Psychological Bulletin**, 110, 26-47

Amato, P.R. (2001), "Children of divorce in the 1990s: an update of the Amato and Keith (1991) meta-analysis", **Journal of Family Psychology**, 153,355-70.

Booth, A.L. and H.J. Kee "Birth Order Matters: The Effect of Family Size and Birth Order on Educational Attainment", **IZA Discussion Paper** 1713.

Gregg, P, Propper C., Washbrook E. and S. Burgess (2005), "The Effects of Early Maternal Employment on Child Development in the UK", **Economic Journal**, Vol. 115, F48-80.

Gruber, J. (2004), "Is making divorce easier bad for children? The long-run implications of unilateral divorce", **Journal of Labor Economics**, 22, 799-833.

Haveman, R. and B. Wolfe (1995), "The determinants of children's attainments: A review of methods and findings", **Journal of Economic Literature**, 33, 1829-1878.

Lundberg, S. (2005), "Men and islands: Dealing with the family in empirical labour economics", **Labour Economics**, 12, 591-612.

Piketty, T. (2003), "The impact of divorce on school performance: Evidence from France, 1968-2001", **CEPR Working Paper** 4146.

Rhum, C.J. (2004), "Parental employment and child cognitive development", **Journal of Human Resources**, 39, 155–92.

Sanz De Galdeano, A. and D. Vuri (2004), "Does parental divorce affect adolescent cognitive development? Evidence from longitudinal data", **IZA Discussion Paper** 1206.

Van Praag, B. M. S. and A. Ferrer-i-Carbonell (2004), **Happiness Quantified – A Satisfaction Calculus Approach**, Oxford University Press.

Walker, I. and Y. Zhu (2005), "Child support liability and partnership dissolution" **Economic Journal,** forthcoming.

Winkelmann, R. (2003), "Parental separation and the well-being of youths", **IZA Discussion Paper** No. 894.

APPENDIX

Table A2:   Ordered Probit of General Happiness on Domain Happiness
(robust s.e's in brackets)

	(1)	(2)	(3)	(4)
Happiness With Schoolwork	0.210*** (0.011)	0.208*** (0.011)	0.196*** (0.014)	0.201*** (0.015)
Happiness With Appearances	0.296*** (0.011)	0.299*** (0.011)	0.304*** (0.014)	0.298*** (0.014)
Happiness With Family	0.283*** (0.013)	0.281*** (0.013)	0.278*** (0.016)	0.285*** (0.017)
Happiness With Friends	0.193*** (0.014)	0.194*** (0.014)	0.191*** (0.017)	0.195*** (0.018)
Non-intact		-0.117*** (0.028)	-0.282*** (0.214)	-0.298*** (0.214)
Non-intact * Happiness With Schoolwork			0.026 (0.022)	0.022 (0.022)
Non-intact * Happiness With Appearances			-0.013 (0.022)	-0.007 (0.022)
Non-intact * Happiness With Family			0.007 (0.025)	0.007 (0.026)
Non-intact * Happiness With Friends			0.010 (0.029)	0.012 (0.030)
Log income				-0.005 (0.021)
Youth characteristics				Yes
Mother characteristics				Yes
Wave dummies				Yes
Region dummies				Yes
N	7090	7090	7090	6998
χ^2(d.f.)	3066.24 (4)	3083.59 (5)	3085.43 (9)	3121.95 (47)
Log likelihood	-8597.35	-8588.67	-8587.75	-8419.57
Adding-up hypothesis	0.984 (0.019)	0.981 (0.019)	0.969 (0.023)	0.979 (0.024)

Note: Standard errors in brackets, *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Adding-up refers to the sum of the four domain happiness coefficients.

Table A4a: *Ordered Probit for Domain and General Youth Happiness*
(robust s.e's in brackets)

	Happiness With Schoolwork	Happiness With Appearances	Happiness With Family	Happiness With Friends	Happiness With Life as a Whole
Non-intact	-0.138***	-0.045	-0.295***	-0.030	-0.181***
	(0.052)	(0.050)	(0.056)	(0.053)	(0.051)
Mother Repartnered	-0.014	0.030	0.028	-0.034	-0.008
	(0.066)	(0.064)	(0.072)	(0.067)	(0.066)
Log income	0.011	-0.003	-0.020	-0.022	-0.001
	(0.024)	(0.025)	(0.028)	(0.028)	(0.025)
Youth Boy	-0.113	0.232***	0.064*	-0.073**	0.167***
	(0.034)	(0.034)	(0.038)	(0.036)	(0.035)
Youth only child	-0.047	-0.073	-0.056	-0.041	-0.038
	(0.056)	(0.057)	(0.062)	(0.057)	(0.056)
Number of children	-0.028	-0.005	-0.029	-0.013	-0.032
	(0.020)	(0.020)	(0.022)	(0.021)	(0.020)
Youth age	-0.059***	-0.051***	-0.178***	-0.025**	-0.057***
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
Step brother/sister	-0.120	-0.164	-0.096	-0.226**	-0.094
	(0.095)	(0.102)	(0.106)	(0.107)	(0.091)
New brother/sister	0.245**	0.159	0.227*	0.249*	0.226*
	(0.121)	(0.130)	(0.134)	(0.128)	(0.122)
Mother nonwhite	0.210***	0.133	-0.079	-0.138	0.010
	(0.075)	(0.085)	(0.089)	(0.083)	(0.075)
Owns House	0.086**	0.046	-0.062	0.043	0.070
	(0.043)	(0.042)	(0.049)	(0.044)	(0.043)
Mother age	-0.002	-0.013***	-0.013***	-0.009**	-0.006
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Mother age left school	-0.015**	-0.015**	-0.021***	-0.004	-0.006
	(0.006)	(0.007)	(0.008)	(0.007)	(0.007)
Wave dummies	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes
N	7041	7036	7046	7040	7034
χ^2	172.86	179.36	465.97	100.79	148.36
(d.f.)	(40)	(40)	(40)	(40)	(40)
Log likelihood	-10762.32	-10120.88	-7686.95	-8312.06	-9924.57

Note: Standard errors in brackets, *: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level.

Table A9.   Propensity Score Matching estimates of impact of parental separation on Standardized Outcomes

	Mother's GHQ12	Father's GHQ12	Parents' mean GHQ12
Youth Happiness (scale 1-7), N=5465			
Unmatched	-0.232 (0.035)	-0.232 (0.035)	-0.232 (0.035)
ATT	-0.223 (0.046)	-0.235 (0.051)	-0.219 (0.047)
ATU	-0.217 (0.046)	-0.224 (0.046)	-0.226 (0.045)
Binary Unhappy Indicator, N=5485			
Unmatched	0.201 (0.035)	0.201 (0.035)	0.201 (0.035)
ATT	0.172 (0.048)	0.182 (0.049)	0.161 (0.046)
ATU	0.171 (0.056)	0.183 (0.056)	0.178 (0.050)
Intention to Leave School at 16, N=4607			
Unmatched	0.173 (0.038)	0.173 (0.038)	0.173 (0.038)
ATT	0.098 (0.051)	0.136 (0.050)	0.111 (0.043)
ATU	0.088 (0.052)	0.071 (0.054)	0.109 (0.054)
Actually Left School at 16, N=4607			
Unmatched			
ATT			
ATU			
5 good GCSE grades, N=1004			
Unmatched	-0.339 (0.087)	-0.339 (0.087)	-0.339 (0.087)
ATT	-0.274 (0.082)	-0.263 (0.090)	-0.246 (0.092)
ATU	-0.220 (0.090)	-0.151 (0.092)	-0.199 (0.094)

Notes: Standard error in parentheses bootstrapped with 100 repetitions. The treatment group (non-intact families) and the control group (intact families) are matched on parental GHQ12 scores, log total household net income and mother's age in wave 1, as well as contemporary measures of youth's gender and age, whether only child, number of children in the household, whether owns house, and mother's age, education and ethnicity.