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Are happiness and productivity lower among young people with newly-divorced parents? An experimental and econometric approach

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Abstract High rates of divorce in western society have prompted much research on the repercussions for well-being and the economy. Yet little is known about the important topic of whether parental divorce has deleterious consequences upon adult children. By combining experimental and econometric survey-based evidence, this study attempts to provide an answer. Under controlled conditions, it measures university students' subjective well-being and productivity (in a standardized laboratory task). It finds no evidence that either of these is negatively associated with recent parental divorce. If anything, happiness and productivity appear to be slightly greater, particularly among males, if their parents have divorced. Using longitudinal data from the British Household Panel Survey—to control for so-called fixed effects—we then cross-check this result, and confirm the same finding, on various random samples of young British adults.

Keywords Labor productivity · Divorce · Mental health · Well-being · Happiness · Experimental economics

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1 Introduction

One of the noticeable social-science phenomena of the last 50 years has been the rise in the rate of divorce and marital dissolution. In the United States, about 50%

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of children now experience parental divorce (National Center for Health Statistics 2008). In the UK, over the period 1997–2007, parental divorces each year affected approximately 1% of the population of young people aged between 16 and 23.[1] The long-run consequences of this phenomenon, especially upon the next generation, are not yet fully known.

From the economist's perspective, it is natural to be interested in whether:

(i) parental divorce has a negative impact on children's ability to perform well in education,
(ii) there are potential effects upon children's eventual productivity in the workplace,
(iii) there are implications for those children's long-run earnings.

At the macroeconomic level, more speculatively, these translates into a desire to understand what high divorce rates might mean for economic growth through the potential effects upon the children of divorced parents.

There is a modern literature on the effects of divorce upon those adults who choose to dissolve their relationships (such as Pevalin and Ermisch 2009) and upon young dependent children (such as Amato 2001). However, what remains to be understood are the effects on older, adult children—such as children of university age. The present paper is a study of divorce and its consequences for grown children. It builds on, and is complementary to, an emerging branch of modern work such as Collishaw et al. (2007) that seems to be finding smaller negative effects than used to be believed within an earlier era, and on research such as Gardner and Oswald (2006) and Stevenson and Wolfers (2006) who examine the potential positive effects of divorce, albeit not directly linked to the children of divorcees.

The nature of the paper's analysis appears to be the first of its kind. The paper uses, in part, an experimental setup to try to understand the influence of parental divorce upon university students, and in part a survey-based econometric approach.

We provide evidence against the idea that an increase in single or stepparent families can account for trends in young individuals' problems. We construct a laboratory experiment in which we can directly observe performance in a paid task and relate this to each subject's recent experience (or not) of parental divorce. While our methodology differs from that of previous scholars, our results are in alignment with some recent econometric and psychological studies (discussed below) in indicating a less worrying impact, than might traditionally have been expected, of parental divorce upon children's outcomes.

Using a methodology developed in Oswald et al. (2009), we design and conduct a laboratory experiment in a UK university, where subjects—all of whom were students—were asked to reveal their level of happiness[2] at the very beginning of the

[1] Our own elaboration based on the British Household Panel Survey.

[2] Although the validity of self-reported well-being measures remains a somewhat open question, more and more evidence points to a robust correlation between answers to subjective well-being questions and more objective measures of personal well-being. For example, answers to subjective well-being questions have been shown to be correlated with physical evidence of affect such as smiling, laughing, heart rate measures, and electrical activity in the brain (Diener 1984), capacity of wound healing (Ebrecht et al. 2004) and resisting viruses, and in aggregate, correlated objective measures like compensating differentials in wage rates (Oswald and Wu 2010).

experiment, and then to carry out *a task designed to measure their productivity and their ability to concentrate*. At the end, the subjects reveal if and when their parents are divorced.[3]

The group chosen seem of particular interest given their age (almost all are 18–23) and thus proximity to full-time work, and because for many in the sample the experience of parental divorce is fairly recent (1–5 years).

As a complement to the laboratory test, a second form of econometric evidence is described. This follows a group of young people longitudinally using the British Household Panel Survey (BHPS). We examine the reported happiness levels of a sample of individuals of approximately the same age as the sample participating in our laboratory experiment (although the BHPS has no productivity data, unlike our experiment). The use of a panel allows us to control for individuals' and households' characteristics, which is not fully possible in the laboratory setting. We buttress this with an analysis of the answers to a life satisfaction question in the BHPS which has the advantage of being a finer (7-point) measure than the happiness measure (which is only a 4-point measure) but may reflect a longer-term view of wellbeing.

Contrary to our own expectations and to the fears of some parents and commentators, both forms of analysis—laboratory and survey (relating to both reported happiness and life satisfaction)—suggest that divorce has no detectable negative consequences. The data are consistent with, if anything, a slight positive effect of parental divorce on children's reported happiness. Nor does the laboratory experiment uncover negative effects on productivity. In fact, there is evidence consistent with a small positive impact on the productivity of males.

In the applied psychology literature, there exists some controversy—and also uncertainty—about the impact of divorce on children. An early literature was unambiguous in finding a correlation between lower academic achievement (and a reduced ability to internalize problems) and divorce—described in a literature such as Amato (2001). However, the most recent contributions suggest a more complex picture, with an effect that is likely to be negative, but moderately small, and one generally less important for children of older age. Moreover, the need to control for socio-economic status suggests that the lack of controls may be overstating the negative tone of the conclusions prevalent in the psychology literature (see Lansford 2009 for a survey).[4]

In recent years, some economists have added to the broader social-science literature—sometimes finding that divorce does not have the scale of impact indicated within much of the psychology literature. Gruber (2004) employs cross-country data to assess the impact of the change of US divorce regulation on children's long-term achievement, and González and Viitanen (2008) test the difference in regulation for

[3]Some bad life events, such as family illness and bereavement, do have a significant negative effect on subjects' happiness and productivity, both measured in the same general way as here (Oswald et al. 2009). Hence it is not simply that the nature of the test is intrinsically one of low power.

[4]In this respect, as Stevenson and Wolfers (2007) notice: "while children from divorced households fare worse along a range of outcomes than those from intact households, this observation does not speak to the policy-relevant question of whether those children would have been better off if their parents had not divorced. The conflict in these households may be so severe that children are actually better served by their parents divorcing. Thus comparisons of the "happily married" with the "unhappily divorced" are likely irrelevant for those choosing between an unhappy marriage and an unhappy divorce".

EU countries. Both find some negative impact of divorce on young people. Sanz-de-Galdeano and Vuri (2007) draw upon data from the National Education Longitudinal Study. The authors control for the potential endogeneity of parental divorce by employing double and triple difference models that rely on observing teenagers from intact and divorced backgrounds before and after the occurrence of parental divorce. The authors conclude that parental divorce does not negatively affect teenagers' cognitive skills. They also suggest that cross-sectional estimates overstate the detrimental effect of parental divorce. This conclusion is in line with our later analysis of the BHPS where controlling for family background actually leads the estimated effect of parental divorce on happiness to become moderately positive. Our later results are also broadly consistent with Liu (2007) and Piketty (2003), who use individual data to test the relationship between divorce and children's education attainments; both conclude that it is not the divorce per se that generates lower attainments but rather the environment before the divorce. Similar conclusions are reached by Hoekstra (2009).

In the next two sections, we describe the laboratory experiment and present its results; a later section describes the BHPS-based analysis; tables and questionnaires related to the laboratory experiment are provided in the supplementary online material.

2 Experimental methodology

We designed and conducted a laboratory experiment in which subjects—all of whom were students at the University of Warwick—were asked to carry out a task designed to measure their productivity and their ability to concentrate. Afterwards, the subjects revealed if and when their parents were divorced.

The full set of experimental instructions is provided in the supplementary online material. To summarize the design of the experiment: we first asked subjects to enter their reported happiness using a seven-point scale into a spreadsheet (a copy of the precise question is found in the supplementary online material). It seems particularly important here to avoid 'priming', namely, to avoid reminding students of recent and significant positive or negative life shocks just prior to asking for reported happiness.[5]

The subjects were then asked to carry out two paid piece-rate tasks. They had 10 minutes to add as many sets of numbers together as they could. Each set of numbers consisted of 5 two-digit numbers; for example, one such problem might have been:

51	14	74	33	85	

They were paid 25p (about one third of a US dollar) for each correct addition. Hence they had a monetary incentive to correctly do as many as they could within the 10 minutes. This task also allowed us potentially to distinguish between the raw number of attempts and the percentage that are calculated correctly (which will both

[5] For more on the role of priming in surveys, see Sgroi et al. (2010).

matter in terms of payment). The second task was a short GMAT-style test designed to help control for intelligence, a copy of which is provided in the supplementary online material. Finally, subjects completed a long questionnaire, which included questions about parental divorce in the last 5 years, and gathered information on other useful variables (designed to generate socio-economic data, and further background data about each subject). A copy of the questionnaire is provided in the supplementary online material.

We carried out the experiment over 3 days, with 12 sessions and 269 subjects. No subject was allowed to participate more than once and no subject was allowed to have taken part in a similar experiment before.

3 Results and discussion

Table 1 presents a description of the data. While the great majority of subjects completed the questionnaire in full, we could not coerce them into doing so. Therefore,

Table 1 Descriptive statistics for the sample of 269 laboratory subjects

VARIABLES	Full #obs	Mean	Std. Dev.	Min	Max
Happiness[a]	269	4.843	0.941	2	7
No Divorce	269	0.918	0.274	0	1
Divorce less than 1 year ago	269	0.007	0.086	0	1
Divorce 1 year ago	269	0.015	0.121	0	1
Divorce 2 years ago	269	0.022	0.148	0	1
Divorce 3 years ago	269	0.018	0.135	0	1
Divorce 4 years ago	269	0.007	0.086	0	1
Divorce 5 years ago	269	0.018	0.135	0	1
Divorce 3	269	0.055	0.275	0	1
Last 3 years					
Divorce 5	269	0.082	0.230	0	1
Last 5 years					
Years since divorce	269	5.702	1.061	0	6
Age	259	19.610	1.547	18	30
Male	261	0.521	0.500	0	1
High School Grades	255	0.535	0.256	0	1
Gmat score	269	3.610	1.466	0	5
Additions[b]	267	18.097	6.864	2	50
Life Satisfaction[c]	268	7.018657	1.674782	2	10

[a] 'Happiness' is the student's reported happiness (on a scale from 1 = low to 7 = high) at the start of the whole experiment

[b] 'Additions' is the number of correct numerical additions in the timed productivity task in the laboratory

[c] 'Life Satisfaction' is the student's reported life satisfaction (on a scale from 1 = low to 10 = high) at the end of the experiment

we do not have a full set of 269 observations for every questionnaire answer, although we always have more than 250.[6]

Data—among those with divorced parents—on the share of parental divorces in each year (from 0 to 5 years earlier) are presented in Table 1. We aggregated these into the following dummies:

- *Divorce less than 3 yr ago* if the divorce took place less than 3 years ago
- *Divorce less than 5 yr ago* if the divorce took place in the last 5 years
- *Years since divorce*, set to the year of the divorce if *Divorce less than 5 yr ago* = 1, and 6 otherwise.[7]

Note that there is overlap between *Divorce less than 3 yr ago* and *Divorce less than 5 yr ago*.

- *Happiness* is the level of happiness reported by the subjects at the very beginning of the experiment (it lies on a 7-point scale). They declared this number prior to undertaking the piece-rate tasks or seeing the questionnaire.
- *High School Grades* is the ratio of top grades to the total of school-level subjects studied, so is a control for overall ability.
- *Gmat* is the result from a short GMAT-style test performed as the second task, and is a further control for innate ability.
- *Additions* is the number of correct additions performed in 10 minutes during the piece-rate task.

Finally, the variables *Age* and *Year study* are an individual's age and university year.

Table 2 gives the first regression-equation results. 'Happiness' is the dependent variable and is measured on a 7-point scale; for the sake of simplicity, and to make our analysis more consistent with the second part of this paper, we estimate the model using a simple OLS estimator. However, a similar (unreported) exercise using an Ordered Probit estimator yielded very similar results; those findings are available from the authors upon request.

As is immediately visible in Table 2, the association between parental divorce and subjects' happiness is not negative. The same finding was to emerge in a range of settings.

For example, if we consider in Table 2 the variable for parental divorce in the last 3 years, this variable enters with a coefficient that is positive and significantly different from zero at the 5% level in columns 1 and 2. The dummy for divorce in the

[6] For two subjects we reluctantly decided to drop data on the additions score. One of these was in session 9, ID04, who was a severely disabled student who could not cope with the task (correct additions = 1) and another in session 12, ID12, who suffered from a severe misunderstanding of the task, attempting to add the number vertically rather than horizontally (correct additions = 0). Our paper's findings do not depend on this deletion.

[7] This is not a crucial issue, but literally implies that we think the effect of the divorce completed faded away after 6 years, so individuals whose parents have divorced more than 5 years ago are not distinguishable from all individuals who did not experienced this event. We also note that setting *Years since divorce* = 10, when no divorce occurred in the last 5 years, makes this coefficient of *Years since divorce* generally more significant.

Table 2 Regression equations in which students' happiness is the dependent variable—with a variable for parental divorce in the last 3 years and 5 years

VARIABLES	(1) Happiness	(2) Happiness	(3) Happiness	(4) Happiness	(5) Happiness
Divorce less than 3 yr ago	0.539**	0.575**			
	(0.260)	(0.259)			
Divorce less than 5 yr ago			0.270	0.295	
			(0.216)	(0.215)	
Years since Divorce					−0.0271
					(0.0569)
Male	0.0148		0.0257		0.0333
	(0.124)		(0.124)		(0.125)
Age	−0.880*		−0.842*		−0.831*
	(0.483)		(0.486)		(0.487)
Age sq.	0.0176		0.0168		0.0166
	(0.0110)		(0.0110)		(0.0111)
Year Study	0.138		0.133		0.133
	(0.0855)		(0.0859)		(0.0862)
HS Grades	0.0446		0.0675		0.0562
	(0.240)		(0.241)		(0.242)
Observations	254	269	254	269	254
R-squared	0.093	0.070	0.082	0.059	0.077

Here and in later tables, the numbers in parentheses are standard errors. * Is significance at 10%; ** at 5%; *** at 1%

last 5 years, in columns 3 and 4 of Table 2, is positive but not statistically significant. And *Years since divorce*, in column 5 of Table 2, is negative and non-significant. The value of the coefficient of *Divorce less than 5 yr ago* (where 5 yr stands for five years) in regression 1 is approximately half the value of the coefficient in *Divorce less than 3 yr ago* in regression 2. This is consistent with the (perhaps somewhat natural) hypothesis that any effects from parental divorce tend to fade away over time as the child ages. The further back the divorce, the smaller the measured consequences.

Table 3 gives separate results for males (columns 1–3) and females (columns 4 and 5). For male subjects, there appears to be a fairly large and positive effect from parental divorce; the coefficient on *Divorce less than 5 yr ago* (in column 2 of Table 3) is about half in magnitude of the coefficient on *Divorce less than 3 yr ago* (in column 1). The estimated positive and declining effect of parental divorce with respect of the year of the divorce is consistent with the regression presented in column 3. Again, the *Years since divorce* coefficient, although not statistically significantly different from zero, has a negative sign. These results provide again some support for the idea of perhaps even a positive effect of parental divorce on self-reported happiness and one that diminishes over time. In the last two columns of Table 3, divorce does not have statistically significant effects among the sub-sample of female subjects.

Table 3 Regression equations in which students' happiness is the dependent variable—with a variable for parental divorce in the last 3 years and 5 years

VARIABLES	(1) Happiness only male	(2) Happiness only male	(3) Happiness only male	(4) Happiness only female	(5) Happiness only female
Divorce less than 3 yr ago	0.748**			−0.0676	
	(0.322)			(0.468)	
Divorce less than 5 yr ago		0.389			0.0839
		(0.272)			(0.373)
Years since Divorce			−0.105		
			(0.0757)		
Year Study	0.344***	0.350***	0.349***	0.0231	0.0260
	(0.127)	(0.129)	(0.129)	(0.120)	(0.120)
HS Grades	−0.398	−0.370	−0.397	0.249	0.253
	(0.336)	(0.340)	(0.341)	(0.355)	(0.355)
Age	−0.782	−0.591	−0.678	−0.460	−0.449
	(1.282)	(1.302)	(1.301)	(0.617)	(0.617)
Age sq.	0.0107	0.00596	0.00831	0.0102	0.00998
	(0.0313)	(0.0318)	(0.0318)	(0.0136)	(0.0136)
Observations	134	134	134	120	120
R-squared	0.216	0.194	0.193	0.112	0.113

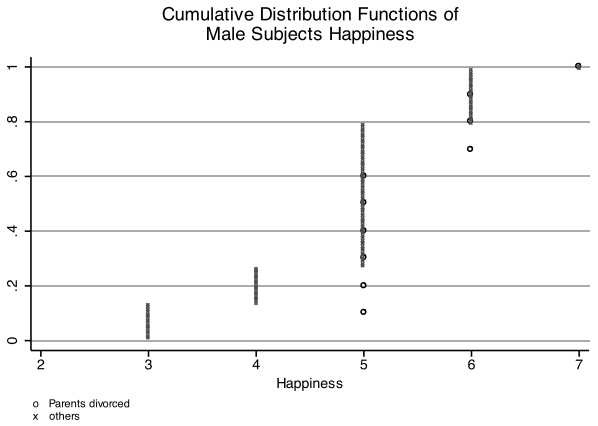

Fig. 1 Cumulative distribution functions of male subjects' Happiness self reports

The coefficients of *Divorce less than 3 yr ago* and *Divorce less than 5 yr ago* are statistically indistinguishable from zero.

In Fig. 1, we provide a graphical analysis of the effect of parental divorce on life satisfaction for male subjects (for whom we saw, in Table 2, that parental divorce seems to have a positive effect in terms of happiness). From a comparison between the two Cumulative Distribution Functions, we note that the one for the sub-sample of subjects with divorced parent clearly dominates the CDF of the others. A key

difference is that none of subjects with divorced parents reported a level of happiness below 5.

Tables 2 and 3 include a variable for High School Grades. This is done partly to control for the possibility of an omitted variable linked to the personal qualities of divorced parents, which might also be reflected in their children.

Nevertheless, and necessarily, given the nature of these data, students from the divorced and non-divorced families might differ in subtle unobservable ways. In order to cope more formally with this potential problem—namely, the potential heterogeneity of individuals and family background—we show later in the paper that the positive statistical effect of parental divorce on happiness holds even when we base our analysis on data from the British Household Panel Survey. Panel data then allow us to introduce a control for individuals' characteristics, courtesy of the use of individual fixed effects.

Table 4 examines the determinants of productivity in the laboratory. It sets out regression equations in which the number of correct additions under timed pressure in the laboratory, *Additions*, is the dependent variable. The spirit of the results is similar to those in Tables 2 and 3. Divorce seems to have no discernible deleterious effect on subjects and their ability to perform. Interestingly, the sign seems, if anything, positive, and—once again—the coefficient is slightly larger when the regressor is *Divorce less than 3 yr ago* (column 1) than when the regressor is *Divorce less than 6 yr ago* (column 2).

From columns 3 and 4 of Table 4, for the subsample of males, the key coefficient is not negative, even if, in this case, the coefficient of *Divorce less than 5 yr ago* now becomes larger than the coefficient of *Divorce less than 3 yr ago*. None of the coefficients are statistically significantly different from zero at the 5 percent level. As in the happiness regression presented in Table 3, the sign of the number of years elapsed since the divorce—the variable *Years since divorce* defined as above—is negative but not statistically significant. From columns 6 and 7 of Table 4, female subjects' productivity is apparently untouched by parental divorce; this, once more, is broadly in line with the spirit of the happiness regressions of Table 3.

Evidence of a beneficial effect (though only at the 90% confidence level) on productivity associated with parental divorce for the male subjects can be observed in Fig. 2, where we perform an analysis analogous to Fig. 1. Here we plot the cumulative distributions of the correct additions for men who experienced a parental divorce in the last 5 years and those who did not.

The cumulative distribution of correct additions for the Male subject with divorced parents (CDFPdiv) nearly first-order dominates the one with subjects whose parents have not recently divorced (CDVnonPdiv). Importantly, there is no almost difference between low and high performers: the medium performers with divorced parents are the ones doing better than the rest.

We conclude this section with one further observation. As can be seen from the paper's tables, the finding of no damaging effect from parental divorce is not simply because of Type II errors or any repeated failure to reject the null of zero on a negative coefficient. The estimated coefficients are typically positive rather than negative. It is not merely that there are large standard errors around negative coefficients.

Table 4 Regression equations in which students' productivity in a laboratory task is the dependent variable—with a variable for parental divorce in the last 3 or 5 years

VARIABLES	(1) Additions all	(2) Additions all	(3) Additions male	(4) Additions male	(5) Additions male	(6) Additions female	(7) Additions female
Divorce less than 3 yr ago	1.941		3.632			1.610	
	(1.749)		(2.539)			(2.547)	
Divorce less than 5 yr ago		1.365		3.864*			−1.269
		(1.443)		(2.104)			(2.021)
Years since Divorce					−0.720		
					(0.590)		
Male	−0.337	−0.322					
	(0.870)	(0.870)					
Age	1.795	1.937	−8.491	−6.990	−7.931	5.703*	5.481
	(3.255)	(3.254)	(10.10)	(10.05)	(10.12)	(3.321)	(3.325)
Age sq.	−0.0391	−0.0422	0.208	0.171	0.195	−0.125*	−0.120
	(0.0738)	(0.0737)	(0.247)	(0.246)	(0.247)	(0.0728)	(0.0729)
Year Study	−0.500	−0.518	0.160	0.171	0.176	−1.138*	−1.188*
	(0.576)	(0.576)	(1.003)	(0.997)	(1.005)	(0.646)	(0.644)
HS Grades	2.257	2.337	2.491	2.591	2.447	1.666	1.553
	(1.656)	(1.658)	(2.704)	(2.689)	(2.712)	(1.958)	(1.961)
GMAT	1.225***	1.237***	1.359**	1.436***	1.371**	0.987***	0.978***
	(0.296)	(0.297)	(0.534)	(0.531)	(0.535)	(0.319)	(0.319)
Observations	252	252	134	134	134	118	118
R-squared	0.176	0.175	0.189	0.198	0.185	0.318	0.318

Table 5 Descriptive statistics for the sample in the British household panel study (BHPS): all waves

Variable	Observations	Mean	Std. Dev.	Min	Max
GHQL-Happiness[a]	30263	3.082973	0.6337045	1	4
Life Satisfaction[b]	23130	5.241807	1.187956	1	7
Par. Divorce	32393	0.0118853	0.1083715	0	1
Age	32393	21.67706	4.160363	15	30
Male	32187	0.5071302	0.4999569	0	1
Income	30493	7.86653	8.577413	0	400.4861
Student	32393	0.2747507	0.4463955	0	1
Unemployed	32393	0.0742753	0.2622224	0	1
Disabled	32393	0.0123483	0.1104366	0	1
Still with Parents	32393	0.6503566	0.4768647	0	1
Married	32393	0.0868706	0.2816497	0	1
Cohabiting	32393	0.1311086	0.3375243	0	1

[a]Calculated using the question: 'Have you been feeling reasonably happy, all things considered?'. Where the possible responses are: More so than usual (coded 4); About same as usual (coded 3); Less so than usual (coded 2); Much less than usual (coded 1). In the BHPS dataset the scale of this variable is reverted

[b]It is the answer to the question "All things considered, how satisfied are you with your life as a whole these days?" (1 = low, 7 = high)

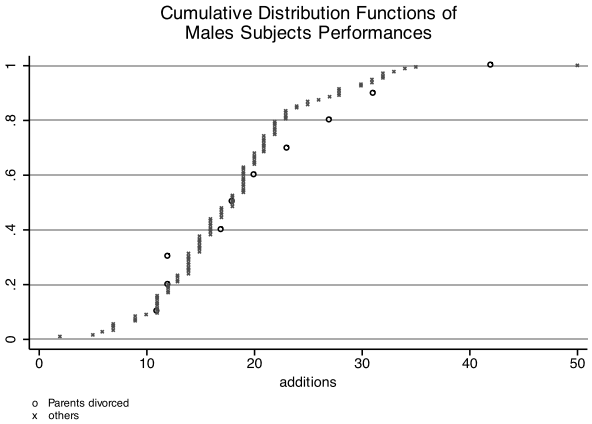

Fig. 2 Cumulative distribution functions of male subjects' performance in the adding-numbers task

4 A cross-check: testing for the effects of parental divorce on happiness using the British household panel survey

The paper's laboratory setting has the advantage of measuring student productivity in a controlled environment. But this procedure has two possible drawbacks: (i) that of us not being able to control fully for possible household effects. Divorce is not randomly assigned in the world. Hence the necessary maintained assumption in our experiment—as in Corak 2001 and much of the literature—is that what happens to the parent does not become innately passed on, through genes or some other mechanism, to the child's happiness and productivity; (ii) Warwick students are not representa-

Table 6 Descriptive statistics for the sample in the British household panel study (BHPS): wave 17

Variable	Observations	Mean	Std. Dev.	Min	Max
GHQL-Happiness	2256	3.074468	0.6782949	1	4
Life Satisfaction	2347	5.229655	1.188754	1	7
Age	2502	24.53517	3.669493	18	30
Male	2404	0.4563228	0.4981923	0	1
Div. less 3 yr ago	1737	0.0305124	0.1720419	0	1
Div. less 5 yr ago	1737	0.0489349	0.2157942	0	1
Years since Divorce	2278	5.863038	0.776032	0	6

tive of the whole of UK society so the analysis may suffer from a sample selection bias. For these reasons, we decided to complement the laboratory experiment presented above with an econometric study based on the British Household Panel Survey (BHPS henceforth), which is representative of Great Britain and allows us to control more fully for individuals' heterogeneity.

We introduce a control for individuals (and then households) through fixed effects estimation. BHPS data allow us to identify those young individuals who experience a parental divorce. We construct a sample of individuals with an age equal to or below 30 who appear in the BHPS data with at least one parent. We then estimate the effect on those young people of a parental divorce in that year and in the years immediately prior—controlling for other factors such as income, age, employment, student status and disability.

The data come from the first 17 waves of the BHPS. This is a nationally representative sample of more than 5000 British households, containing over 10000 adult individuals, conducted between September and Christmas of each year from 1991. Respondents are interviewed in successive waves; households who move to new residences are interviewed at their new location; if an individual splits off from the original household, all adult members of their new household are also interviewed. Children are interviewed from 16 years of age. The sample has remained broadly representative of the British population.[8] The people we refer to are the children, aged between 16 and 30, of the couple who appears to be legally married in 1991 or in subsequent waves.

Table 6 presents a summary of the raw data. The well-being variable here it is drawn from a sub-question of the so-called GHQ section of the British Household Panel data, and is calculated using the question: *'Have you been feeling reasonably happy, all things considered?'* where the possible responses are: More so than usual (coded 1). About same as usual. Less so than usual. Much less than usual (coded 4). Hence this variable captures 'unhappiness'. For expositional simplicity, we reverted

[8]To examine how the well-being of children changes over time in response to parental dissolution, we would ideally know the literal date at which individuals felt their marriage ended, as opposed to the legal date of divorce. The approach that is taken in the paper, as in Gardener and Oswald (2006) for the study of adults' well-being, is to define 'divorce' (marital termination) as being *either a legal divorce or a marital separation*. Our data record formal marital breakdown; they do not cover the dissolution of cohabiting relationships.

Table 7 Cross-wave breakdown of individuals aged between 16 and 30: BHPS

Wave	Parental divorce		Total
	0	1	
2	1,269	25	1,294
3	1,286	27	1,313
4	1,395	13	1,408
5	1,427	18	1,445
6	1,567	19	1,586
7	1,607	43	1,650
8	1,797	27	1,824
9	1,840	15	1,855
10	2,276	28	2,304
11	2,359	20	2,379
12	2,469	36	2,505
13	2,503	20	2,523
14	2,494	21	2,515
15	2,576	23	2,599
16	2,583	19	2,602
17	2,560	31	2,591
Total	32,008	385	32,393

the scale of this variable so that 1 corresponds to low and 4 corresponds to high. We can then refer to this variable as 'happiness'. Table 7 records the number of students aged between 16 and 30 who have experienced a parental divorce across the different waves—corresponding to the period 1990–2007.

Our first step is to ensure that young individuals who experienced a parental divorce present in the BHPS dataset have a similar reaction in terms of happiness than the ones in our laboratory experiment. Therefore, using the BHPS data, we perform a similar econometric exercise to the one performed in Table 2 with our laboratory sample. We consider the last wave in our dataset (wave 17, year 2007) that, as we observe from Table 7, records the highest number of divorces.[9] In order to aid the comparability with the results from the laboratory analysis, we multiply the GHQ-happiness index by 7/4, so as to ensure that the highest value is 7 as in the happiness banding in the laboratory experiment. The main difference compared to Table 2 concerns the control variables. In the BHPS there is no record of students' performances and we substitute it instead with academic qualifications.

The results are presented in Table 8. We note that the coefficients that indicate a divorce in the last 3 and 5 years are positive, and the one related to *years since the divorce* is negative as in the earlier Table 2. The coefficients on *divorce less than 3 years ago* and *years since the divorce* are roughly similar in the two tables, while the coefficient of *divorce less than 5 years ago* appears to be larger for the BHPS sample.

Next, we consider the entire panel in the BHPS dataset. Figure 3 provides the simplest form of longitudinal evidence. It plots the average level of GHQ-Happiness

[9] Similar analysis using previous waves generally produces comparable results.

Table 8 Regression equations in which students' happiness is the dependent variable—with a variable for parental divorce in the last 3 years and 5 years. BHPS dataset wave 17

VARIABLES	(1) Happiness	(2) Happiness	(3) Happiness	(4) Happiness	(5) Happiness
Divorce less than 3 yr ago	0.512	0.389			
	(0.483)	(0.470)			
Divorce less than 5 yr ago			0.868**	0.792**	
			(0.390)	(0.383)	
Years since Divorce					−0.152*
					(0.0879)
Male	0.0967		0.106		0.0517
	(0.129)		(0.128)		(0.122)
Age	0.263		0.254		0.382
	(0.345)		(0.342)		(0.298)
Age2	−0.00530		−0.00510		−0.00814
	(0.00782)		(0.00776)		(0.00661)
Academic Qualifications+	Yes	No	Yes	No	Yes
Observations	328	330	328	330	356
R-squared	0.012	0.002	0.024	0.013	0.016

+A series of dummy indicating the highest academic qualifications achieved (higher degree, 1st degree, teaching, a level, o level, cse, none of these)

for young people aged between 18–30—therefore the same age range as in our laboratory experiment—in the 2 years before their parents' divorce and then after the divorce (the divorce happens at time t). There is a spike in happiness in the year of the divorce. Afterwards, the GHQ-Happiness score reverts to approximately the level before divorce. Figures 4 and 5 repeat the exercise for females and males respectively. The same increase in happiness for males appears a period before.[10] Finally, in Fig. 6, we consider as an additional robustness check the subset of BHPS individuals who are students aged 18–30 (this is the same population used in our earlier laboratory experiment). Although the number of subject is now too low (30 in total) for statistically significant results, we again observe an increase in GHQ-Happiness in the period of the parental divorce.

The results in Figs. 3–6 are consistent with the paper's earlier laboratory findings. Subjects apparently emerge not only approximately unscathed by parental divorce: there is some evidence that they actually report a statistically significant increase in personal happiness.

One objection to this (perhaps surprising) finding is that it might be driven by omitted variables. Therefore, we perform a further analysis that controls for other influences on young people's well-being. Table 9 reports a set of BHPS happiness

[10]Recall that t is the year of the legal divorce, so a separation is likely to have taken place before.

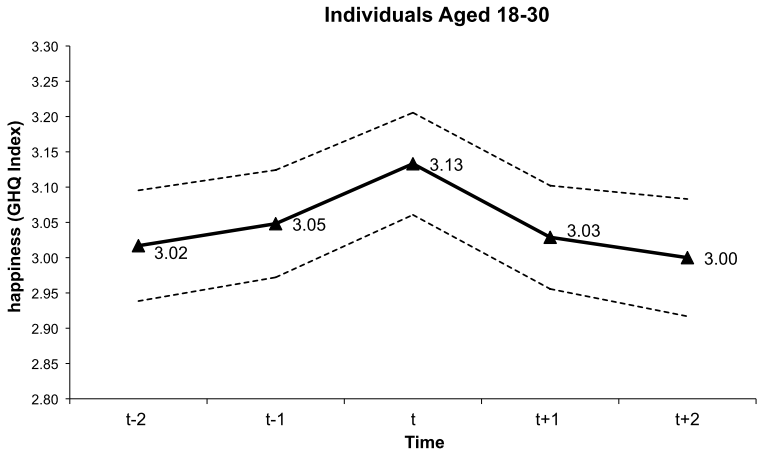

Fig. 3 Happiness in the years around parental divorce (at time t), with 95% confidence intervals

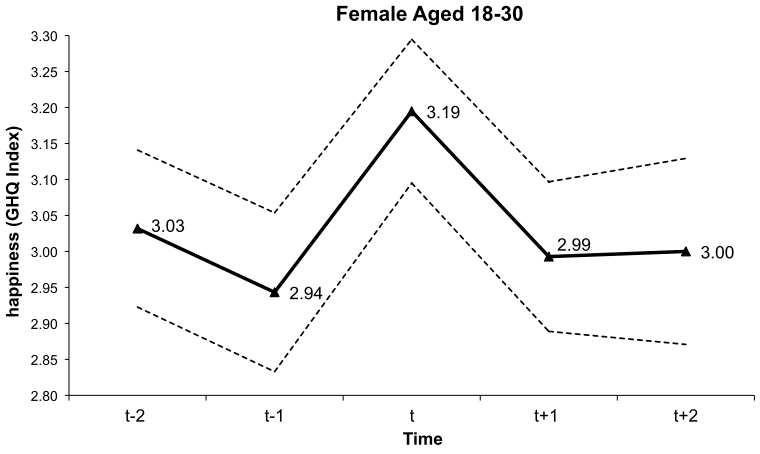

Fig. 4 Happiness of females in the years around parental divorce, with 95% confidence intervals

regression equations with a number of control variables, again, to simplify the exposition and the comparability with the laboratory experiment, we multiply GHQ-Happiness index by 7/4 like in the regression in Table 8. Table 9 provides the results from OLS estimation with individual (and wave) fixed effects. In order to enlarge our sample, we introduce also individuals aged 16 and 17; then, in Table 10, we go on to report the same estimation for the subsample aged 18–30 years old.

Consistently with our findings using laboratory data, from Table 9 we note that the divorce variable is estimated to have a positive effect on happiness in the year in which parents divorce (coefficient 0.165); this effect is not generally significantly different from zero in the second period, or in the year before the divorce.[11] Compar-

[11] None of the preceding years are significant when we include them in the regression model.

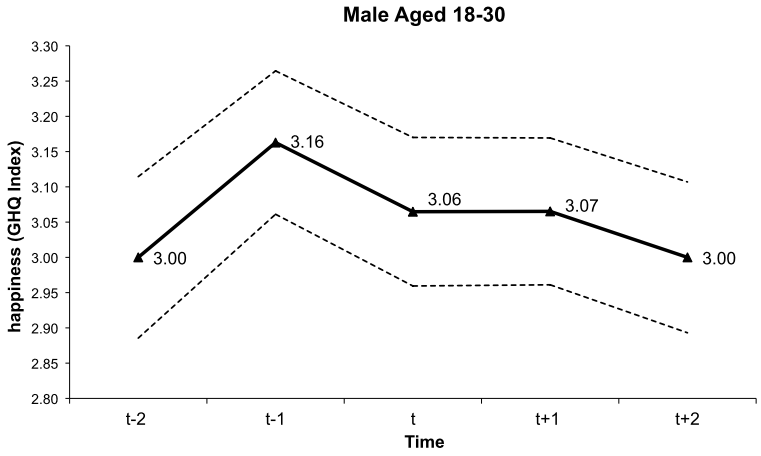

Fig. 5 Happiness of males in the years around parental divorce, with 95% confidence intervals

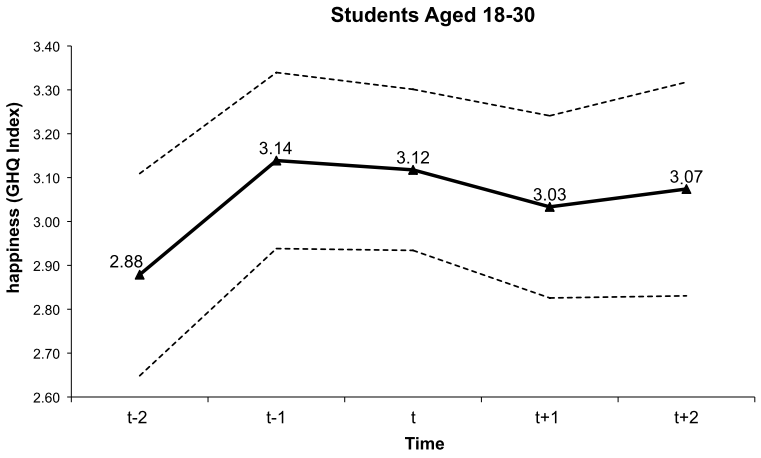

Fig. 6 Happiness of students in the years around parental divorce, with 95% confidence interval

ing columns 2 and 3 of Table 9, the 'beneficial' consequences of the parental divorce are evident for both females (column 2) and males (column 3); but—as we can also observe in Figs. 4 and 5—for males the positive and significant effect appears with a slightly different lag than for females.

Column 4 of Table 9 provides a further specification check. The substantive findings are unchanged.[12]

[12] In Tables 8 and 9, the sign of the income variable upon happiness is sometimes positive for male subjects. The occasional occurrence of this counter-intuitive result is known to scholars who analyse the BHPS dataset. One possible explanation is that there are omitted variables that correlate with both mental distress and income—things like long commutes and stress that comes with particular jobs (see Clark 2003 and Powdthavee (2010) for more details).

Table 9 Fixed-effect estimation of parental divorce in year t on the happiness of individuals aged between 16 and 30 (BHPS data)

VARIABLES	(1) Happiness	(2) Happiness female	(3) Happiness male	(4) Happiness male
Parent Divorce $t+1$	−0.0655	−0.153	0.0444	0.0756
	(0.0725)	(0.107)	(0.0974)	(0.103)
Parent Divorce t	0.165**	0.301***	0.0281	−0.0618
	(0.0736)	(0.108)	(0.0994)	(0.111)
Parent Divorce $t-1$	0.0776	−0.0221	0.193*	0.251**
	(0.0721)	(0.105)	(0.0985)	(0.110)
Age	0.0473	0.0703	0.0251	0.0323
	(0.0417)	(0.0630)	(0.0551)	(0.0655)
Age sq.	−0.000639	−0.00192**	0.000560	0.000978
	(0.000621)	(0.000937)	(0.000827)	(0.00103)
Income	−0.00384*	0.00418	−0.0120***	−0.00985**
	(0.00217)	(0.00331)	(0.00352)	(0.00383)
Income sq.	4.23e-06	−3.34e-05	8.88e-05	4.71e-05
	(2.32e-05)	(2.74e-05)	(5.99e-05)	(6.25e-05)
Student	−0.0268	0.0177	−0.0651	−0.0858*
	(0.0298)	(0.0435)	(0.0407)	(0.0478)
Unemployed	−0.318***	−0.266***	−0.364***	−0.378***
	(0.0366)	(0.0582)	(0.0462)	(0.0534)
Disabled	−0.702***	−0.581***	−0.807***	−0.790***
	(0.101)	(0.159)	(0.128)	(0.143)
Still with Parents	0.0458	0.00772	0.0954**	0.109***
	(0.0282)	(0.0417)	(0.0380)	(0.0418)
Married	0.0659	0.0553	0.0864	0.109*
	(0.0427)	(0.0607)	(0.0605)	(0.0651)
Cohabiting	0.0998***	0.0512	0.161***	0.186***
	(0.0318)	(0.0451)	(0.0449)	(0.0484)
Observations	20933	10416	10517	8487
R-squared	0.009	0.009	0.017	0.019
Number of Individuals	4083	2002	2081	1736

The dependent variable here is calculated using the question: 'Have you been feeling reasonably happy, all things considered?' where the possible responses are: More so than usual; About same as usual; Less so than usual; Much less than usual

Finally, Table 10 restricts the sample to only the age range of the laboratory experiment and the one used to compute the averages plotted in Figs. 3–6. The findings are approximately the same: the only real difference is in column 1, where the coefficient of parental divorce at time period t loses its significance, although the coefficient is

Table 10 Fixed-effect estimation of parental divorce in year T on the happiness of individuals aged between 18 and 30 (BHPS data)

VARIABLES	(1) Happiness	(2) Happiness female	(3) Happiness male
Parent Divorce $t+1$	−0.0206	−0.0910	0.0703
	(0.0791)	(0.119)	(0.104)
Parent Divorce t	0.102	0.259**	−0.0568
	(0.0832)	(0.124)	(0.111)
Parent Divorce $t-1$	0.0789	−0.0763	0.257**
	(0.0815)	(0.119)	(0.111)
Parent Divorce $t-2$	0.0217	−0.0154	
	(0.0830)	(0.120)	
Age	0.0493	0.0387	0.0616
	(0.0526)	(0.0797)	(0.0691)
Age sq.	−1.59e-05	−0.000737	0.000526
	(0.000806)	(0.00122)	(0.00107)
Income	−0.00359	0.00298	−0.00981**
	(0.00236)	(0.00359)	(0.00385)
Income sq.	1.95e-06	−2.59e-05	4.83e-05
	(2.38e-05)	(2.82e-05)	(6.26e-05)
Student	−0.0159	0.0540	−0.0880*
	(0.0354)	(0.0516)	(0.0485)
Unemployed	−0.334***	−0.295***	−0.373***
	(0.0422)	(0.0662)	(0.0537)
Disabled	−0.672***	−0.535***	−0.790***
	(0.112)	(0.175)	(0.143)
Still with Parents	0.0827***	0.0640	0.108**
	(0.0316)	(0.0472)	(0.0421)
Married	0.0930**	0.0874	0.109*
	(0.0467)	(0.0671)	(0.0653)
Cohabiting	0.125***	0.0779	0.186***
	(0.0346)	(0.0493)	(0.0486)
Observations	16663	8299	8364
Number of Individuals	3388	1671	1717
R-squared	0.010	0.009	0.018

still negative. This is perhaps to be expected given the smaller sample of individuals. The results for male and female subjects are similar to those in Table 8.

5 Divorce and life satisfaction

Our questions on happiness and the GHQL-Happiness index are usually considered as measures of emotional and short-run well-being. The question "How satisfied are

with your whole life these days" perhaps reflect a more considered longer-run measure of well-being. We asked this question at the end of our experiment (coded from 1 = low to 10 = high), and a similar question is present in the BHPS survey (coded from 1 = low to 7 = high).

It seems instructive to consider the impact of parental divorce on answers to this question as well. In Table 11 we present the effect of divorce on life satisfaction for the subject of our laboratory experiment (columns 1 to 3) and for students aged between 18 and 30 in the wave 17 of the BHPS (columns 4 to 6). Although the signs of the three relevant variables are the expected ones *(Divorce less than 3 yr ago* and *Divorce less than 5 yr ago* are positive and *Years since divorce* are negative in both datasets), only the *Divorce less than 5 yr ago* in the BHPS sample is significant at 5 percent level.

Furthermore, in Table 12, where we present a regression based on the entire panel controlling for individual fixed effects, we find that variables concerning the divorce are *all* insignificant, which seems to suggest that the significant coefficients found in Table 11 might be due to some unobserved heterogeneity.

Therefore the results of Tables 10 and 11 arguably lend some further support to the view that divorce has a non-negative impact on young individuals' subjective well-being. Furthermore, if we consider happiness to reflect a short-run, perhaps more emotional measure of well-being, and life satisfaction a longer-run, perhaps more considered, measure then comparing the results across both of these well-being indicators we might conclude that any small positive effect is more evident in the short-run.

6 Conclusions

The study has attempted to estimate the effects of parents' divorce upon grown children. This area of quantitative social science is a potentially emotive one, and one in which systematic evidence has been lacking. We began the study, which blends two kinds of analytical approaches, expecting to discover some harmful consequences from recent parental divorce. Despite those priors, we were unable to find such evidence.

In a laboratory setting with controlled conditions, university students' productivity and happiness levels appear to be approximately unaffected, and never negatively affected, by whether they have recently experienced a parental divorce. There is some evidence—as in column 1 of Table 3—that reported happiness and productivity are actually greater among male students whose parents have divorced. Nevertheless, there is a potential objection to these laboratory findings. It is that, for some unobservable reason, those university students in our sample from families in which there has been a divorce may be intrinsically different from (perhaps more productive than) those students who come from families with no divorce. This is not an entirely persuasive objection—a critic who believed that divorce is bad for offspring would have to argue that the stay-together parents in our sample have children who are inherently less happy than others—but it deserves to be considered.

The paper therefore performs a further exercise, in which young people are followed longitudinally through time. This allows the same individuals to be observed

Table 11 Regression equations in which students' life satisfaction is the dependent variable—with a variable for parental divorce in the last 3 years and 5 years. Lab experiment and BHPS data

VARIABLES	(1) Life satisf. Lab. exp.	(2) Life satisf. Lab. exp.	(3) Life satisf. Lab. exp.	(4) Life satisf. BHPS data	(5) Life satisf. BHPS data	(6) Life satisf. BHPS data
Divorce less than 3 yr ago	0.185			0.0679		
	(0.338)			(0.469)		
Divorce less than 5 yr ago		0.203			0.868**	
		(0.278)			(0.390)	
Years since Divorce			−0.0141			−0.152*
			(0.0732)			(0.0879)
Male	0.0902	0.0904	0.0964	0.180	0.106	0.0517
	(0.161)	(0.160)	(0.160)	(0.125)	(0.128)	(0.122)
Age	−0.353	−0.343	−0.336	0.343	0.254	0.382
	(0.627)	(0.626)	(0.626)	(0.334)	(0.342)	(0.298)
Age sq.	0.00822	0.00799	0.00784	−0.00888	−0.00510	−0.00814
	(0.0142)	(0.0142)	(0.0142)	(0.00758)	(0.00776)	(0.00661)
Year Study	−0.0449	−0.0460	−0.0467			
	(0.111)	(0.111)	(0.111)			
HS Grades	0.605*	0.617**	0.609*			
	(0.311)	(0.311)	(0.311)			
Academic Qualifications+	No	No	No	Yes	Yes	Yes
Observations	254	254	254	328	328	356
R-squared	0.044	0.045	0.043	0.041	0.024	0.016

+A series of dummy indicating the highest academic qualifications achieved (higher degree, 1st degree, teaching, a level, o level, cse, none of these)

Table 12 Fixed-effect estimation of parental divorce in year t on the life satisfaction of individuals aged between 16 and 30 (BHPS data)

VARIABLES	(1) Life satisfaction	(2) Life satisfaction female	(3) Life satisfaction male	(4) Life satisfaction male
Parent Divorce $t+1$	−0.0161	−0.0725	0.0539	0.0706
	(0.0762)	(0.109)	(0.106)	(0.109)
Parent Divorce t	0.0452	0.0692	0.0218	0.0302
	(0.0762)	(0.110)	(0.106)	(0.113)
Parent Divorce $t-1$	0.0173	−0.0406	0.0752	0.114
	(0.0753)	(0.106)	(0.107)	(0.115)
Parent Divorce $t-2$				0.0147
				(0.118)
Age	−0.115***	−0.0384	−0.204***	−0.209***
	(0.0433)	(0.0626)	(0.0602)	(0.0679)
Age sq.	0.00240***	0.000491	0.00461***	0.00543***
	(0.000654)	(0.000950)	(0.000916)	(0.00108)
Income	0.00251	0.00136	0.00735*	0.00810**
	(0.00219)	(0.00321)	(0.00383)	(0.00398)
Income sq.	−1.43e-05	−4.68e-06	−9.11e-05	−0.000106
	(2.14e-05)	(2.43e-05)	(6.46e-05)	(6.55e-05)
Student	0.0420	0.0815*	0.0118	0.0204
	(0.0310)	(0.0431)	(0.0451)	(0.0501)
Unemployed	−0.337***	−0.240***	−0.421***	−0.427***
	(0.0388)	(0.0575)	(0.0526)	(0.0569)
Disabled	−0.556***	−0.352**	−0.753***	−0.784***
	(0.103)	(0.148)	(0.143)	(0.151)
Still with Parents	−0.0487	−0.0571	−0.0338	−0.00613
	(0.0297)	(0.0420)	(0.0422)	(0.0440)
Married	0.196***	0.229***	0.141**	0.154**
	(0.0452)	(0.0613)	(0.0678)	(0.0692)
Cohabiting	0.138***	0.148***	0.119**	0.142***
	(0.0324)	(0.0437)	(0.0487)	(0.0499)
Observations	16029	8086	7943	6867
R-squared	0.019	0.014	0.031	0.032
Number of Indiv.	3816	1895	1921	1655

before and after their parents split up. Fixed-effects models are estimated in which happiness—among a random sample of young British adults—is the dependent variable. No evidence is found for the existence of deleterious effects on young adults from the dissolution of parents' marriages when data drawing on replies to happiness and life satisfaction questions are considered. Indeed, as in the laboratory experiment,

there is some evidence that grown children actually gain from a parental divorce (at least when we focus on reported happiness).

Although consistent with the spirit of other important works, this paper's results should be treated with appropriate caution. The present paper is designed as a tentative contribution to an important but complex issue in which greater knowledge is needed. For example, our focus was on those with newly-divorced parents, and not on the longer-run lifetime impact of parental divorce, something beyond the scope of the present paper. Those long-term effects deserve to be studied in future research.

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